



2014 SHARP-TAILED GROUSE HARVEST SURVEY

Brian J. Frawley

ABSTRACT

A survey was completed to determine the number of people hunting sharp-tailed grouse, the number of days hunting, and the number of sharp-tailed grouse harvested in Michigan. In 2014, 3,500 people were identified as potential sharp-tailed grouse hunters. About 8% of these people hunted sharp-tailed grouse in 2014 (289 hunters). The number of hunters was not statistically different between 2013 and 2014 (348 versus 289). In 2014, sharp-tailed grouse hunters spent 1,132 days afield and harvested 134 sharp-tailed grouse ($\bar{x} = 0.5$ grouse/hunter). In comparison, grouse hunters spent 1,427 days afield and harvested 146 sharp-tailed grouse in 2013. Hunting effort and harvest were not significantly different between 2013 and 2014. About 24% of the hunters in 2014 harvested at least one sharp-tailed grouse. Hunters spent an average of \$254 per year hunting sharp-tailed grouse. Collectively, hunters spent \$73,380 hunting sharp-tailed grouse in 2014. About 46% of hunters were either satisfied or somewhat satisfied with their hunting experience. Moreover, 91% of hunters reported that they were very likely or somewhat likely to continue hunting sharp-tailed grouse during the next two years.

INTRODUCTION

In 2014, hunters could hunt sharp-tailed grouse (*Tympanuchus phasianellus*) in portions of two counties in the Upper Peninsula of Michigan (Chippewa and Mackinac counties) during October 10-31 (Figure 1). About 17% of the area open to hunting was publicly owned land (i.e., land owned by federal, state, county, or township governmental agencies). In addition, the Department of Natural Resources (DNR) leased nearly 2,300 acres of private lands for public hunting of sharp-tailed grouse in Chippewa County through the Hunting Access Program (HAP) in 2014. In order to hunt sharp-tailed grouse, hunters were required to obtain



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a base hunting license (i.e., small game) and a free sharp-tailed grouse hunting stamp. Hunters could harvest up to two birds per day with a seasonal limit of six birds.

The DNR and Natural Resources Commission have the authority and responsibility to protect and manage the wildlife resources of the state of Michigan. Harvest surveys are one of the management tools used by the DNR to accomplish its statutory responsibility. Estimating harvest, hunting effort, and hunter satisfaction are among the primary objectives of these surveys.

METHODS

For 2014, hunting license types in Michigan were revised (see Public Act 108 of 2013). As a result, all hunters were required to purchase a newly created base hunting license before purchasing any other type of hunting license, except for youth less than 10 years old. The base license allowed hunters to pursue small game and purchase additional licenses. Once people had purchased a base license, they were immediately presented an option to obtain the sharp-tailed grouse stamp for free. A large number of the hunters selected this option. As a result, the number of stamps issued increased sharply in 2014 to 73,651, compared to only 3,867 stamps issued in 2013.

In order to conduct a meaningful, statistically valid survey of sharp-tailed grouse hunters, only the 2014 stamp holders that had obtained a sharp-tailed grouse stamp in one of the prior four years (2010-2013) were considered potential sharp-tailed grouse hunters in 2014. From the 73,651 stamp holders in 2014, 3,500 had obtained a stamp during one of the prior four years (2010-2013).

Following the 2014 sharp-tailed grouse hunting season, a questionnaire (Appendix A) was sent to 3,500 people that had been identified as potential sharp-tailed grouse hunters in 2014. Hunters receiving the questionnaire were asked to report if they hunted sharp-tailed grouse, number of days spent afield, and number of sharp-tailed grouse they harvested. Hunters also were asked to indicate whether they normally hunted with the aid of a dog, satisfaction with the hunting season, hunting expenditures, and the likelihood of hunting sharp-tailed grouse during the next two years.

Estimates were calculated using a simple random sampling design (Cochran 1977) and were presented along with their 95% confidence limit (CL). This CL can be added and subtracted from the estimate to calculate the 95% confidence interval. The confidence interval is a measure of the precision associated with the estimate and implies that the true value would be within this interval 95 times out of 100. Estimates were not adjusted for possible response or nonresponse bias.

Statistical tests are used routinely to determine the likelihood that 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 during early December 2014, and two follow-up

questionnaires were mailed to nonrespondents. Although 3,500 people were sent the questionnaire, 36 surveys were undeliverable resulting in an adjusted sample size of 3,464. Questionnaires were returned by 1,781 people, yielding a 51% response rate excluding undeliverables.

RESULTS

In 2014, 3,500 people were identified as potential sharp-tailed grouse hunters in 2014 (hereafter referred to as stamp holders), which was 9% fewer than last year (3,867 stamp holders in 2013). The group of potential hunters in 2014 was predominantly males (3,326). In addition, the average age of the group was 48 years (Figure 2), and 2.6% (91) of the group were younger than 17 years old.

About $8 \pm 1\%$ of the people that obtained a stamp actually went afield to hunt sharp-tailed grouse (289 hunters, Table 1). The number of hunters in 2014 was similar to the number of hunters in 2013 (Figure 3). Hunters spent 1,132 days hunting ($\bar{x} = 3.9 \pm 0.5$ days/hunter), and harvested 134 sharp-tailed grouse ($\bar{x} = 0.5$ birds/hunter). Hunting effort and harvest were not significantly different between 2013 and 2014. (In 2013, grouse hunters spent 1,427 days afield and harvested 146 sharp-tailed grouse.) The estimated number of grouse seen per hunter was not significantly different between 2013 and 2014 (5.4 grouse per hunter in 2013 and 6.0 grouse per hunter in 2014). Hunters most frequently hunted during the weekend (Figures 5 and 6).

About $20 \pm 3\%$ of the sharp-tailed grouse hunters had hunted on HAP lands in 2014 (59 ± 15 hunters). Furthermore, $10 \pm 3\%$ of the hunters indicated they would not have hunted sharp-tailed grouse in 2014 if HAP lands had not existed (29 ± 10 hunters).

About 24% of hunters in 2014 successfully harvested at least one sharp-tailed grouse. About 12% of hunters took one grouse; 6% took two grouse, 2% took three grouse; 2% took four grouse; and about 1% took five or six grouse (Figure 7). Most grouse were taken from Chippewa County.

About $46 \pm 6\%$ of the hunters used a dog to locate sharp-tailed grouse (Table 2). The proportion of hunters harvesting a sharp-tailed grouse was similar among hunters using a dog and hunters not using a dog (25% versus 24%); however, hunters using dogs appeared more efficient because it required less hunting effort to see or harvest a grouse than for hunters without a dog.

Of the estimated 289 people hunting sharp-tailed grouse in 2014, 46% of these hunters were satisfied with their hunting experience (Table 3). Nearly 25% of the hunters rated their experience as neutral. About 24% of the hunters were dissatisfied with their experience. Overall hunter satisfaction was not significantly different between 2013 and 2014 (40% versus 46% of hunters satisfied). Approximately 35% of hunters in 2014 were satisfied with the number of grouse seen, a significant increase from the 25% satisfaction in 2013. Twenty percent of hunters were satisfied with the number of grouse harvested, which was not significantly different from 2013.

Hunters were asked whether they were satisfied with their opportunities to access land to hunt sharp-tailed grouse, the area open to hunting, length of the hunting season, and the timing of the hunting season (Table 3). About 50% of hunters were satisfied with the opportunities they had to access land in 2014. Nearly 41% of hunters were satisfied with the amount of area open to hunting and the length of the hunting season. In addition, 54% of hunters were satisfied with the timing of the season.

Hunters spent an average of $\$254 \pm \75 per year hunting sharp-tailed grouse. Expenditures included the costs of ammunition, food, travel, and lodging. Collectively, hunters spent about $\$73,380 (\pm \$21,744)$ hunting sharp-tailed grouse in 2014.

Among people that hunted sharp-tailed grouse in 2014, $91 \pm 3\%$ of the hunters were very likely or somewhat likely to hunt sharp-tailed grouse during the next two years. About $6 \pm 3\%$ of the hunters indicated that they were not very likely or not at all likely to hunt sharp-tailed grouse during the next two years. About 2% of the hunters were not sure whether they would hunt sharp-tailed grouse again during the next two years. Finally, 1% of the hunters failed to indicate whether they would hunt sharp-tailed grouse again. The proportion of hunters likely to hunt grouse during the next two years was significantly higher than 2013 (91% versus 85% of hunters were likely to hunt in the future).

ACKNOWLEDGEMENTS

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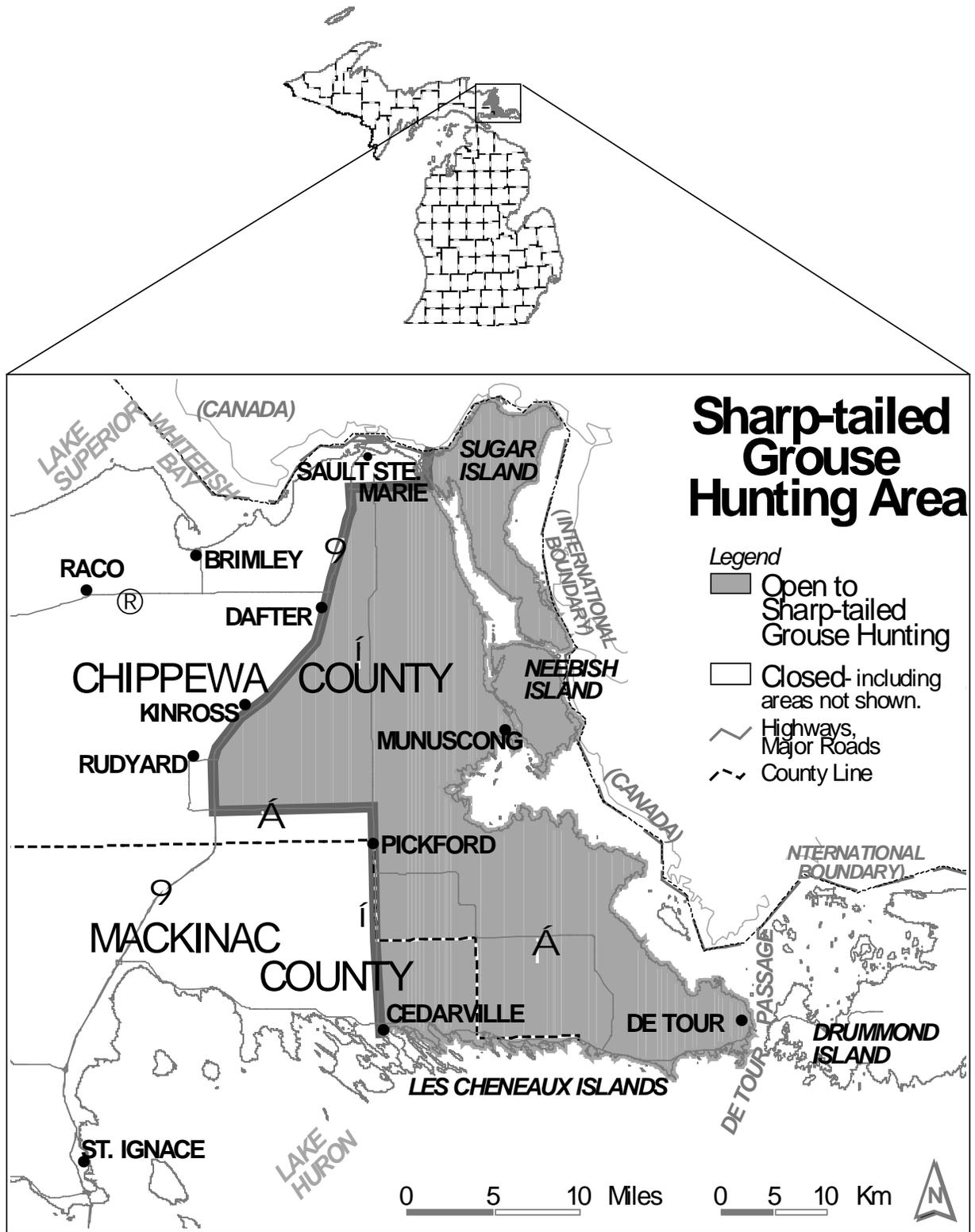


Figure 1. Area open for hunting sharp-tailed grouse in Michigan during 2014 hunting season.

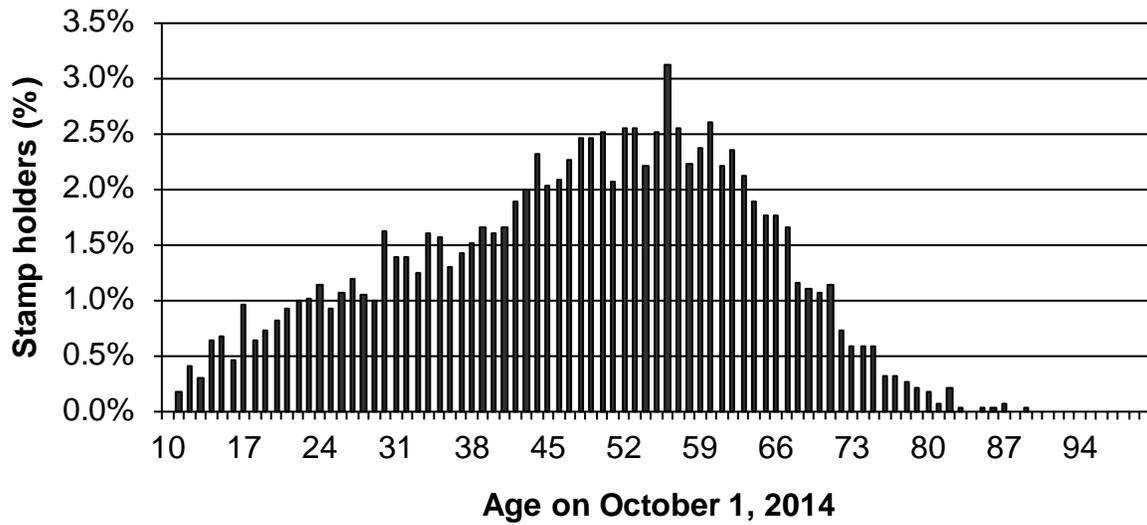


Figure 2. Age of people that obtained a sharp-tailed grouse hunting stamp and were likely to hunt sharp-tailed grouse in Michigan (\bar{x} = 48 years). In 2014, 3,500 people were identified as potential sharp-tailed grouse hunters.

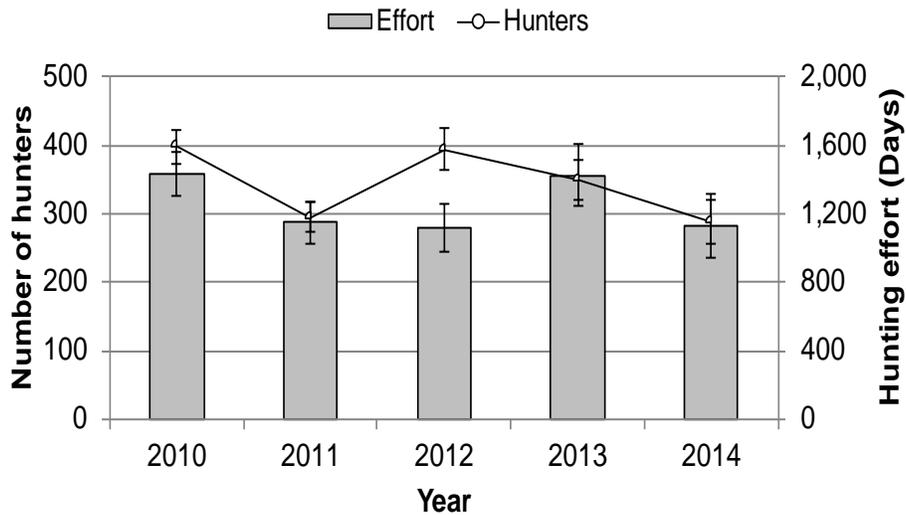


Figure 3. Estimated number of people hunting sharp-tailed grouse and the number of days of hunting effort during 2010-2014. Vertical bars represent the 95% confidence interval.

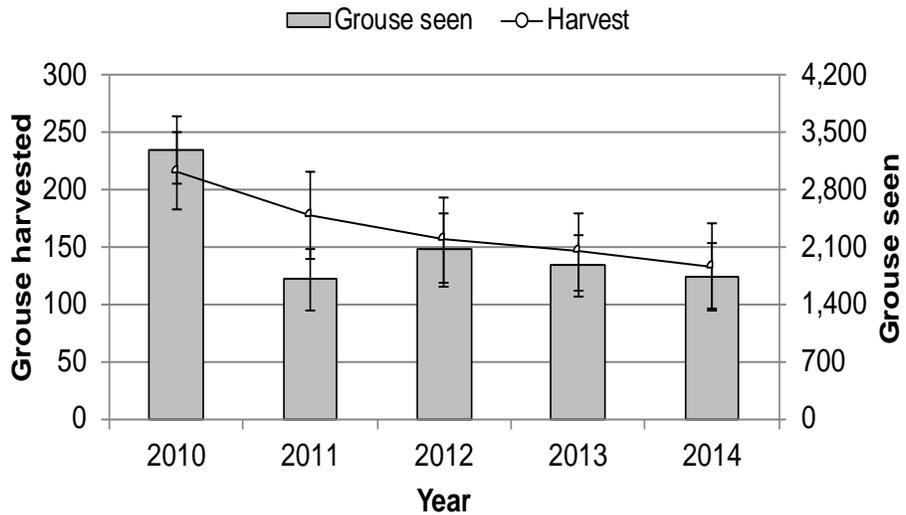


Figure 4. Estimated number of sharp-tailed grouse seen by hunters and the number of sharp-tailed grouse harvested during 2010-2014. Vertical bars represent the 95% confidence interval.

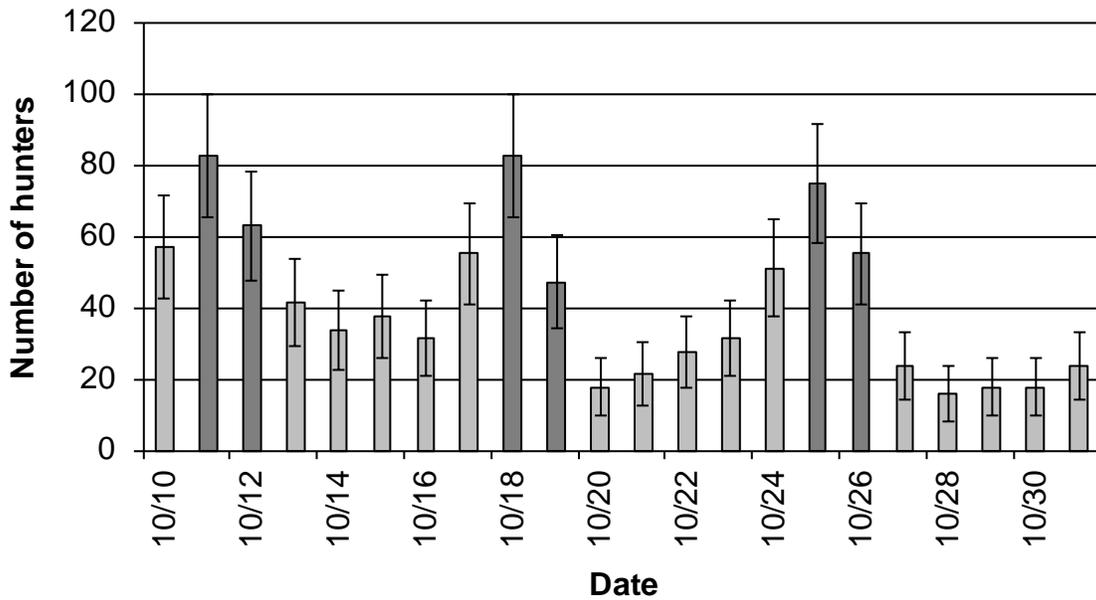


Figure 5. Estimated number of people hunting sharp-tailed grouse by date during the 2014 hunting season. Gray-shaded bars indicate weekends. Vertical bars represent the 95% confidence interval.

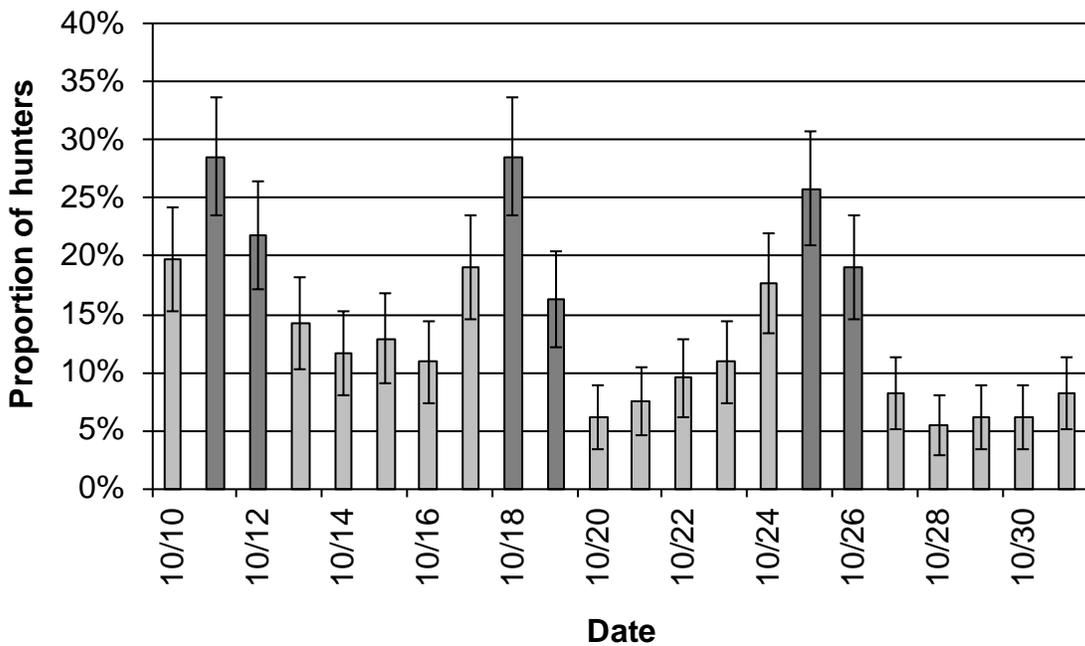


Figure 6. Estimated proportion of sharp-tailed grouse hunters afield by date during the 2014 hunting season. Gray-shaded bars indicate weekends. Vertical bars represent the 95% confidence interval.

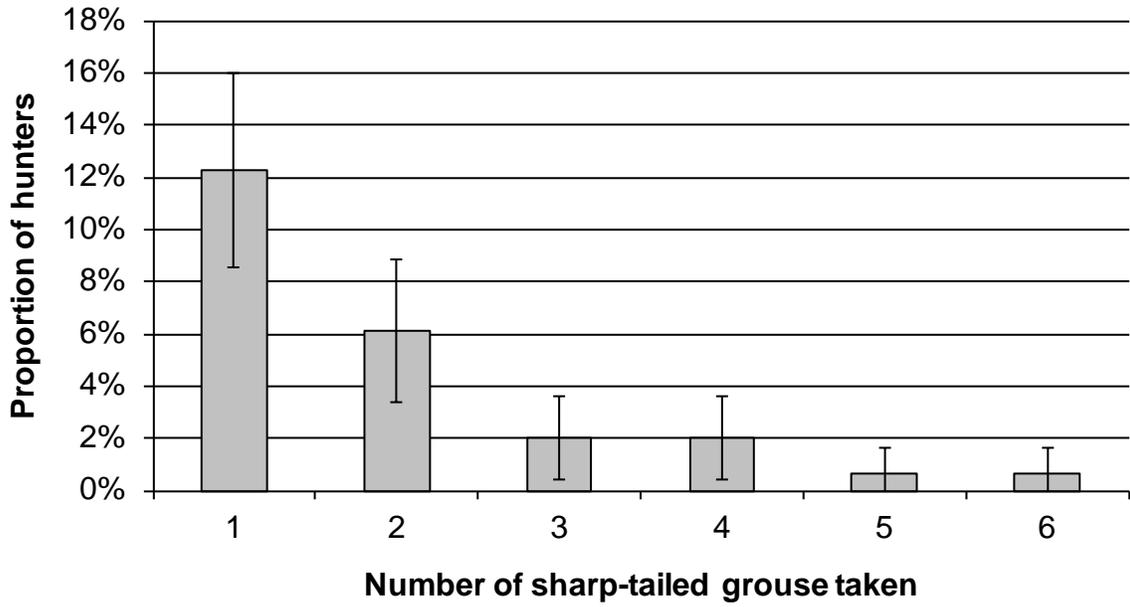


Figure 7. Estimated proportion of sharp-tailed grouse hunters that harvested one or more grouse during the 2014 hunting season, summarized by number of birds taken. Vertical bars represent the 95% confidence interval.

Table 1. Estimated number of hunters, hunting effort, sharp-tailed grouse seen, harvest, hunter success, grouse seen per hunter, and harvest per hunter during the 2014 sharp-tailed grouse hunting season in Michigan, summarized by county and land type where hunting occurred (private or public).

Area and land type	Hunters		Hunting effort (days)		Grouse seen		Harvest		Success ^a		Grouse seen per hunter		Harvest per hunter ^b	
	No.	95%	No.	95%	No.	95%	No.	95%	%	95%	No.	95%	No.	95%
		CL		CL		CL		CL		CL		CL		
Chippewa County														
Private lands	92	18	277	80	593	256	39	17	26	9	6.4	2.5	0.4	0.2
Public lands	79	17	257	86	450	202	37	21	20	9	5.7	2.3	0.5	0.2
Both lands	69	16	387	125	519	237	39	21	31	11	7.5	3.0	0.6	0.3
Unknown	2	3	2	3	0	0	0	0	0	0	0.0	0.0	0.0	0.0
Subtotal	242	29	924	170	1,562	401	116	34	25	5	6.5	1.5	0.5	0.1
Mackinac County														
Private lands	8	5	28	20	41	34	8	8	50	34	5.3	2.4	1.0	0.7
Public lands	26	10	65	29	47	35	8	9	15	14	1.8	1.2	0.3	0.3
Both lands	24	9	108	50	69	39	2	3	8	11	2.9	1.2	0.1	0.1
Unknown	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0
Subtotal	57	14	200	61	157	63	18	12	17	10	2.8	0.8	0.3	0.2
Unknown County														
Subtotal	4	4	8	8	16	22	0	0	0	0	4.0	3.9	0.0	0.0
All areas														
Private lands	96	19	305	85	635	259	47	19	29	9	6.6	2.4	0.5	0.2
Public lands	102	19	326	92	497	205	45	23	19	8	4.9	1.8	0.4	0.2
Both lands	92	18	499	136	603	240	41	21	26	9	6.5	2.3	0.4	0.2
Unknown	2	3	2	3	0	0	0	0	0	0	0.0	0.0	0.0	0.0
Grand total ^c	289	31	1,132	183	1,735	408	134	37	24	5	6.0	1.3	0.5	0.1

^aPercentage of hunters harvesting at least one sharp-tailed grouse.

^bThe season bag limit was six birds.

^cNumber of hunters does not add up to statewide total because hunters can hunt in more than one area.

Table 2. Estimated number of hunters, hunting effort, sharp-tailed grouse seen, harvest, hunter success, grouse seen per hunter, and harvest per hunter during the 2014 sharp-tailed grouse hunting season in Michigan, summarized by primary hunting method (used dogs or no dogs used).

Primary hunt method	Hunters		Hunting effort (days)		Grouse seen		Harvest		Success ^a		Grouse seen per hunter		Harvest per hunter ^b	
	No.	95% CL	No.	95% CL	No.	95% CL	No.	95% CL	%	95% CL	No.	95% CL	No.	95% CL
Used dog	134	22	356	77	1,110	372	77	31	25	7	8.3	2.4	0.6	0.2
Did not use dog	145	23	702	155	613	172	57	21	24	7	4.2	1.0	0.4	0.1
Unknown	10	6	75	65	12	12	0	0	0	0	1.2	1.0	0.0	0.0
Total	289	31	1,132	183	1,735	408	134	37	24	5	6.0	1.3	0.5	0.1

^aPercentage of hunters harvesting at least one sharp-tailed grouse.

^bThe season bag limit was six birds.

Table 3. Hunters' level of satisfaction with the 2014 sharp-tailed grouse hunting season.

Index	Satisfaction level							
	Satisfied ^a		Neutral		Dissatisfied ^b		No answer or not applicable	
	%	95% CL	%	95% CL	%	95% CL	%	95% CL
Grouse seen	35	5	22	5	37	5	7	3
Grouse harvested	20	5	28	5	35	5	16	4
Hunting experience	46	6	25	5	24	5	5	2
Access to hunting land	50	6	28	5	15	4	7	3
Area open to hunting	41	6	29	5	24	5	5	3
Length of season	45	6	34	5	18	4	3	2
Timing of season	54	6	35	5	9	3	3	2

^aIncluded hunters who were "very satisfied" or "somewhat satisfied."

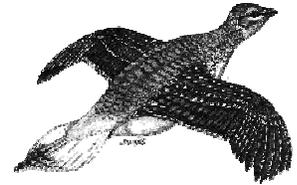
^bIncluded hunters who were "somewhat dissatisfied" or "strongly dissatisfied."

Appendix A. The questionnaire sent to a sample of sharp-tailed grouse hunters in this study.



2014 SHARP-TAILED GROUSE 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 sharp-tailed grouse in Michigan during 2014.

1. Did you attempt to hunt sharp-tailed grouse in Michigan during the 2014 season?

- ¹ Yes ² No, *Skip to question number 10.*

2. If you attempted to hunt sharp-tailed grouse during the 2014 season, please complete the following table. *Sharp-tailed grouse could be hunted only in portions of Chippewa and Mackinac counties, and you could harvest a maximum of 6 grouse during the entire season.*

COUNTY HUNTED <i>(List each county that you hunted)</i>	NUMBER OF DAYS HUNTED <i>(maximum=22 days)</i>	TYPE OF LAND	NUMBER OF SHARP-TAILED GROUSE SEEN	NUMBER OF SHARP-TAILED GROUSE HARVESTED <i>(maximum=6 grouse)</i>
		¹ <input type="checkbox"/> Private ² <input type="checkbox"/> Public ³ <input type="checkbox"/> Both		
		¹ <input type="checkbox"/> Private ² <input type="checkbox"/> Public ³ <input type="checkbox"/> Both		

3. In 2014, the Department of Natural Resources leased nearly 2,300 acres of private lands for public hunting of sharp-tailed grouse in Chippewa County through the Hunting Access Program (HAP). Did you hunt sharp-tailed grouse on this HAP land during 2014?

- ¹ Yes ² No, *Skip to question number 5.*

4. If you hunted on HAP lands, would you have hunted sharp-tailed grouse during the past year if the private lands enrolled in HAP were not available for hunting? (Select one.)

- ¹ Yes ² No ³ Not sure

Questions continued on next page.

October 2014						
S	M	T	W	T	F	S
					10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

5. Using the adjacent calendar, please circle [O] the days that you hunted. Circle only the days you actually went afield to hunt sharp-tailed grouse in Michigan.

6. Did you normally use a dog to hunt sharp-tailed grouse in Michigan during 2014?

1 Yes 2 No

7. Please indicate how satisfied or dissatisfied you were with the following for the 2014 sharp-tailed grouse hunting season in Michigan:

(Select one choice per item.)

	Very Satisfied	Somewhat Satisfied	Neutral	Somewhat Dissatisfied	Strongly Dissatisfied	Not Applicable
a. Number of sharp-tailed grouse you saw.	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. Number of sharp-tailed grouse you harvested.	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. Your overall sharp-tailed grouse hunting experience.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
d. Access to land for hunting sharp-tailed grouse	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
e. Size of the area open to sharp-tailed grouse hunting	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
f. Length of the sharp-tailed grouse hunting season	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
g. Timing of the sharp-tailed grouse hunting season	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>

In the next two questions, you will be asked about all your hunting trips to hunt sharp-tailed grouse in 2014. A hunting trip includes trips that take place during a single day, as well as, trips that require an overnight stay away from home. Consequently, the cost of these hunting trips can vary greatly. On a long trip you may spend money for food, travel, and lodging, while on a short trip you may only spend money for gas.

8. How many trips did you take primarily to hunt sharp-tailed grouse during 2014?

_____ Trips

9. How much did an average trip cost you during 2014 when you went primarily to hunt sharp-tailed grouse (for example, fuel, food, lodging, ammunition)?

\$_____ per trip

10. How likely is it that you will hunt sharp-tailed grouse in Michigan in the next 2 years?

1 Very likely 2 Somewhat likely 3 Not very likely 4 Not at all likely 5 Not sure

11. Do you have any comments or suggestions about sharp-tailed grouse management in Michigan?

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