

Summary of Grouse Hunting in Minnesota

2010



Minnesota Cooperative Fish and Wildlife Research Unit
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Introduction and Study Overview

Grouse populations in Minnesota cycle on an approximately 10-year period in Minnesota. During the 20th century grouse hunter participation fluctuated with the population cycle. However, grouse hunter participation during the 2008-2009 seasons was dramatically less (87,000) than peak hunter participation (142,000) during the same point in the grouse population cycle in the late 1990s. We conducted a statewide survey of small game hunters to understand: grouse hunting behavior and participation, motivations for grouse hunting; preferences for regulations and hunting experiences; and potential reasons for not participating in grouse hunting.

This report provides a summary overview of the descriptive findings from the study data. Future investigational reports will provide more detailed analyses of the data and discussion of the findings relative to the specific study objectives.

Study Methods

Data Collection

We used a mail survey to collect data from Minnesota resident small game hunters concerning their experiences and attitudes related to grouse hunting and grouse hunting management in the state. We defined the target population as all adult (18 and older) residents of Minnesota that purchased a license to hunt small game in Minnesota during 2010. We used the Minnesota DNR database for the Electronic Licensing System as the sampling frame and randomly selected 2,500 license purchasers (total $n = 5,000$) in each of two strata: Twin Cities Metro (7-county Metro area, $N = 81,590$) and Greater Minnesota ($N = 178,664$). Our final target sample size was $n = 400$ within each of the two strata. Data collection involved two phases. First, we identified small game hunters who hunted for ruffed grouse in 2010 by using a mailback postcard (Appendix B) that was sent to all 5000 study participants. We asked respondents if they hunted for ruffed grouse in 2010, and if they would be willing to participate in a study about ruffed grouse hunting in Minnesota. If they responded “yes” to both questions, we included them in the second phase of the study.

Mailback Survey Instrument

Researchers from the Minnesota Cooperative Fish and Wildlife Research Unit and Minnesota Department of Natural Resources (MnDNR) staff developed the mailback questionnaire for this study.

The mailback survey was designed to gather data on:

- Socio-demographic characteristics
- Past and current grouse hunting behavior
- Motivations for and commitment to grouse hunting
- Satisfaction with grouse hunting and harvest
- Perceptions of crowding and conflict
- Use of grouse hunting information and resources
- Support for grouse limits and DNR management
- Concerns and experience with Lyme disease

We generally used the protocols outlined in Dillman’s (2007) Tailored Design Method (TDM) to ensure a high response rate. The TDM involves designing a survey that is relatively easy to complete along with multiple, written contact information that encourages response by highlighting the importance of study participation and the social utility of the study.

We sent postcards out in mid-January 2011 and, due to lower than expected recruitment rates, again in mid-February. We sent surveys out to grouse hunters in March 2011 after 935 participants were recruited. We included a survey, cover letter, and postage-paid return envelope in the mailing packet. Four weeks after the initial mailing, we mailed another survey and cover letter to non-respondents. A third replacement, that included a \$1 incentive, was sent 12 weeks after the first mailing.

Sample Characteristics

Although the original study population was defined as all resident small game hunters 18 and older, all 5,000 selected study participants were 19 or older as of January 1, 2011. The sample was primarily male (Metro 97.4%, Greater MN 95.3%). The age distribution of the sample is summarized by age categories in Table 1.

Mail-back Response

We received 2313 (n = 1,125 Metro; n = 1,188 Greater Minnesota) of an initial 5,000 recruitment postcards that were mailed with 249 addresses identified as undeliverable (48.7% response rate). The proportion of postcard respondents under the age of 45 was less than and the proportion over the age of 50 was greater than the initial study sample. For this reason we weighted the data to correct for this age bias in response. The weights used to correct the age bias are presented in Table 1 along with the actual age distribution of the postcard respondents. After weighting data to correct for the age bias in response, 41.8 % in Greater Minnesota and 50.7% in the Twin Cities Metro area who responded to the postcard reported that they had hunted for ruffed grouse in 2010 (n = 569 Metro; n = 496 Greater Minnesota). The proportion in each age category who reported hunting for grouse in 2010 is reported by stratum in Table 2.

Table 1. Age distribution in study sample strata.

Age	<u>Initial Sample</u>		<u>Postcard Respondents</u>		<u>Weights</u>	
	Twin Cities Metro %	Greater Minnesota %	Twin Cities Metro %	Greater Minnesota %	Twin Cities	Greater Minnesota
19 thru 24	9.6%	11.2%	6.8%	8.1%	1.406	1.383
25 thru 29	10.8%	9.2%	7.5%	7.4%	1.451	1.244
30 thru 34	10.4%	9.6%	9.5%	7.3%	1.102	1.317
35 thru 39	9.0%	8.9%	7.9%	6.3%	1.148	1.409
40 thru 44	11.6%	10.8%	9.9%	9.7%	1.170	1.115
45 thru 49	13.4%	13.0%	14.0%	12.9%	0.959	1.004
50 thru 54	13.1%	11.9%	15.0%	14.4%	0.871	0.831
55 thru 59	8.2%	9.6%	9.2%	11.3%	0.892	0.845
60 thru 64	7.7%	6.4%	10.6%	8.4%	0.724	0.764
65 thru 69	3.0%	4.2%	4.6%	5.8%	0.664	0.718
70 and older	3.1%	5.2%	5.1%	8.4%	0.609	0.623
	100.0%	100.0%	100.0%	100.0%		

Table 2. Percent of postcard respondents who reported hunting for ruffed grouse in 2010 by stratum and age categories.

Age	<u>Unweighted</u>		<u>Weighted</u>		<u>Hunted Grouse and Chose to Receive Survey</u>	
	Twin Cities Metro %	Greater Minnesota %	Twin Cities Metro %	Greater Minnesota %	Twin Cities Metro %	Greater Minnesota %
19 thru 24	51.5%	41.0%	51.6%	40.9%	45.8%	32.2%
25 thru 29	56.3%	47.6%	55.9%	48.0%	48.4%	39.2%
30 thru 34	46.5%	48.1%	46.8%	48.0%	44.4%	46.5%
35 thru 39	55.2%	30.8%	55.0%	30.9%	52.0%	29.4%
40 thru 44	50.8%	41.7%	50.7%	41.8%	43.2%	35.8%
45 thru 49	51.8%	41.4%	51.6%	41.4%	48.8%	36.9%
50 thru 54	57.3%	44.0%	57.4%	44.1%	53.5%	37.9%
55 thru 59	44.5%	46.9%	44.9%	46.7%	41.8%	42.6%
60 thru 64	41.0%	41.2%	40.9%	41.0%	35.2%	34.6%
65 thru 69	51.9%	33.8%	52.8%	34.7%	42.9%	22.9%
70 and older	40.4%	34.7%	40.0%	34.9%	34.3%	25.4%
Total Strata	50.1%	41.6%	50.7%	41.8%	46.0%	36.0%

The weights to correct for age bias in response did not substantially change the estimates of the proportion of respondents who hunted for ruffed grouse in 2010. However, our estimates of the percentages of small game hunters who hunted for ruffed grouse in 2010 are substantially greater than the estimate determined through the survey of small game hunters completed by the Minnesota DNR (32.8%) during the spring of 2011. Both surveys had similar age bias response, but the small game survey asked respondents to report all the small game species that they hunted in Minnesota in 2010. Because our postcard questionnaire asked only about ruffed grouse and woodcock, the estimates for percentage of ruffed grouse hunters are likely biased upward as grouse hunters were more likely to respond than those who did not hunt grouse. The small game survey also included respondents aged 16-18 in the sample.

A total of 935 hunted for ruffed grouse and agreed to participate in the study (n = 514 Metro; n = 421 Greater Minnesota). A greater proportion of postcard respondents aged 19-29 who reported hunting grouse in 2010 chose not to participate in the survey study (Table 2). A total of 767 (n = 411 Twin Cities Metro; n = 356 Greater Minnesota) returned a completed survey for a response rate of 82.0%.

Based upon statewide small game license sales and the proportion of respondents residing in each study strata that reported grouse hunting in 2010, we estimated that statewide 35.6% of grouse hunters were from the Twin Cities while 64.4% lived in Greater Minnesota. For this reason, we calculated and applied weights to the data to make accurate statewide estimates of responses for each question. Tables 3 and 4 provide a summary of the estimates used to calculate both strata and age category weights applied to the data.

Table 3. Estimates of grouse hunting and weight calculations for statewide estimates.

	Number of Small Game Licenses Minnesota 2010	Percent of Postcard Respondents that Reported Hunting Grouse in 2010	Total Estimated Grouse Hunters in each Stratum in 2010	Percent of Grouse Hunters Statewide in each Stratum	Percent of Grouse Hunters in Survey Data in Each Stratum	Weight applied to Reflect Proportional Distribution of Grouse Hunters Statewide
Metro	81590	50.7%	41366	35.65%	53.59%	0.665
Greater Minnesota	178664	41.8%	74682	64.35%	46.41%	1.387

Table 4. Estimates and weight calculation to correct for age bias related to disproportional response to the survey across age categories.

Age	Weighted Sample Estimates		Survey Respondents		Weights	
	Twin Cities Metro %	Greater Minnesota %	Twin Cities Metro %	Greater Minnesota %	Twin Cities	Greater Minnesota
19 thru 24	8.7%	9.6%	4.4%	4.2%	1.9908	2.2672
25 thru 29	9.3%	10.0%	4.1%	6.2%	2.2370	1.6116
30 thru 34	9.1%	10.0%	8.5%	9.6%	1.0656	1.0428
35 thru 39	9.8%	6.9%	9.2%	5.3%	1.0585	1.2948
40 thru 44	12.5%	11.4%	9.5%	7.9%	1.3126	1.4472
45 thru 49	14.8%	13.2%	13.1%	12.1%	1.1241	1.0938
50 thru 54	15.8%	13.0%	19.5%	17.7%	0.8136	0.7351
55 thru 59	7.8%	11.6%	11.7%	16.3%	0.6704	0.7111
60 thru 64	6.4%	6.5%	10.0%	9.3%	0.6421	0.7017
65 thru 69	3.4%	3.5%	3.6%	3.4%	0.9263	1.0251
70 and older	2.5%	4.5%	6.3%	8.1%	0.3938	0.5489
Total Strata	100.0%	100.0%	100.0%	100.0%		

Analysis

Data were professionally keypunched and were analyzed on a PC using the Statistical Program for the Social Sciences (SPSS/PC+ 17.0). Names and addresses of all respondents were deleted from data sets to ensure anonymity.

Prior to additional analyses, we weighted data to provide accurate statewide estimates and to correct for age response bias. Analyses included basic descriptive statistics, frequency distributions, measures of central tendency (mean, median, and mode), and percentages. We used Chi-square tests and independent sample t-tests to compare differences across the two study strata.

The Chi-Square Test (χ^2) procedure tabulates a variable into categories and computes a chi-square statistic. This goodness-of-fit test compares the observed and expected frequencies in each category to test that all categories contain the same proportion of values. We used this procedure to test how different the distributions of nominal (e.g., gender) and ordinal (e.g., strongly agree to strongly disagree) variables were between the two study strata. T-test compares sample means by calculating Student's t and displays the two-tailed probability of the difference between the means. We assumed independent samples (different groups of cases) between the Twin Cities Metro and Greater Minnesota strata. We used T-test to assess differences on ratio or interval level variables (e.g., income and age).

Selected Study Results

This section of the report presents findings of data analyses considering all respondents. The following topics are covered:

- Socio-demographic characteristics of grouse hunters;
- Hunting behavior of grouse hunters;
- Commitment to and motivations for grouse hunting;
- Satisfaction with grouse hunting and harvest;
- Perceptions of crowding and conflict;
- Use of grouse hunting information and resources;
- Support for grouse limits and DNR management;
- Concerns and experience with Lyme disease.

Each section contains response frequencies and percentages for survey questions related to the section topic. A total of 767 individuals completed surveys (n = 411 Twin Cities Metro; n = 356 Greater Minnesota). These sample sizes provide estimates at the 95% confidence level within $\pm 4.8\%$ for the Twin Cities and $\pm 5.2\%$ for Greater Minnesota. Statewide estimates are within $\pm 3.8\%$ at the 95% confidence level.

Unless otherwise indicated, all estimates presented in the report and tables are the weighted responses of individuals who completed a mailback survey. Percentages and means were calculated after eliminating those who did not answer or were not required to answer the survey question.

A. Socio-demographic Characteristics of Grouse Hunters

Respondents to the grouse survey differed across regional strata on gender (96.8% male Twin Cities Metro [Metro]; 93.5% male Greater Minnesota [GM]), but not age (Metro = 47.4; GM = 48.5) or length of residence (Metro = 44.2; GM = 46.0) in Minnesota (Tables 5-7). As discussed, compared to the population of Minnesota residents who bought a small game license in 2010, the respondent sample was older (Small Game Hunter Mean Age: Metro = 43.7; GM = 44.5). After applying the age category weights (Table 6), age did not differ from the initial sample means in either stratum (Metro = 43.0; GM = 44.1).

Compared to Greater Minnesota respondents, Metro respondents were more likely to have a college degree (Table 8), had higher average household incomes (Table 9), and were less likely to take their children grouse hunting (Table 12).

Table 5. What is your gender?(Q54)

Gender	Twin Cities Metro %	Greater Minnesota %	Statewide %
Male	96.8	93.5	94.8
Female	3.2	6.5	5.2
$\chi^2 = 4.637, P = 0.031$			

Source: Mail-back questionnaire, question 54.

Table 6. What year were you born? (Q55--Age)

Mean Age	Twin Cities Metro	Greater Minnesota	Statewide
Unweighted	47.4	48.5	--
Weighted	43.0	44.1	43.7
$t = -1.187, P = 0.236$			

Source: Mail-back questionnaire, question Q55. Age = (2011 – Birth Year).

Table 7. How many years have you lived in Minnesota?(Q56)

	Twin Cities Metro	Greater Minnesota	Statewide
Mean Years	39.2	41.4	40.9
$t = -2.06, p = 0.040$			

Table 8. What is the highest level of education you have completed? (Q57)

Education level	Twin Cities Metro	Greater Minnesota	Statewide
Grade school	--	--	--
Some high school	1.2%	.3%	0.5%
High school diploma or GED	7.7%	11.1%	9.8%
Some vocational or technical school	4.7%	9.7%	8.0%
Vocational or technical school	15.1%	21.6%	19.2%
Some college	24.3%	22.2%	22.9%
Four-year college	32.2%	20.2%	24.5%
Some graduate school	3.5%	3.7%	3.7%
Graduate/professional degree(s)	11.4%	11.4%	11.4%

$\chi^2 = 26.06, p < 0.001$

Source: Mail-back questionnaire, question Q57.

Table 9. What was your total (gross) household income before taxes last year (2010)? (Q58)

	Twin Cities Metro	Greater Minnesota	Statewide
Mean	\$104,089	\$80,757	\$89,056

t = 4.232, p < 0.001

Source: Mail-back questionnaire, question Q58.

Table 10. Which of the following best describes your current marital status? (Q59)

Education level	Twin Cities Metro %	Greater Minnesota %	Statewide
Single	20.5%	23.1%	22.3%
Divorced or widowed	4.0%	5.1%	4.8%
Living with a partner	4.5%	4.0%	4.2%
Married	71.0%	67.7%	68.8%

$\chi^2 = 1.55, p = 0.549$

Table 11. Do you have children under the age of 19 living at home? (Q60)

Children?	Twin Cities Metro	Greater Minnesota	Statewide
No	58.6%	64.2%	62.1%
Yes	41.4%	35.8%	37.9%
$\chi^2 = 2.42, p = 0.12$			

Table 12. If yes, did they hunt grouse with you in 2010?(Q60a)

Did children hunt with you?	Twin Cities Metro	Greater Minnesota	Statewide
Yes	39.3%	53.1%	47.8%
No	60.7%	46.9%	52.2%
$\chi^2 = 5.62, p = 0.018$			

Table 13. Do you own a dog(s) that you use to hunt ruffed grouse? (Q51)

Dog(s)	Twin Cities Metro	Greater Minnesota	Statewide
No	55.3%	56.9%	56.3%
Yes	44.7%	43.1%	43.7%
$\chi^2 = 0.19 p = 0.66$			

Table 14. If yes, how many dogs?(Q51A)

Dog(s)	Twin Cities Metro	Greater Minnesota	Statewide
Mean	1.25	1.34	1.31
$t = -0.127, p = 0.205$			

B. Hunting behavior of grouse hunters

Compared to Metro respondents, respondents from Greater Minnesota were more likely to have begun grouse hunting during the 1960's and less likely to have begun in the 1990's (Tables 15 and 16), and had grouse hunted for more total years (Metro = 21.0 years; GM = 23.9 years; Table 17). While both groups hunted more days in October than in other months (Table 19), Greater Minnesota respondents hunted more days each month and in total than did Metro respondents (Average Total Days: Metro = 9.56; GM = 11.95).

St. Louis, Itasca, Cass, Aitken were the most popular counties, with Pine County also popular among Metro respondents and Beltrami popular among Greater Minnesota Respondents (Table 20).

On average Metro respondents traveled a greater distance (Metro = 119.12 miles; GM = 64.54 miles) to hunt grouse and were willing to travel farther (Metro 153.15 miles; GM = 101.33 miles) than Greater Minnesota respondents (Tables 21-22). Average expenditures (~\$400) for grouse hunting in 2010 did not differ between the two groups (Table 24).

Almost 1 in 3 respondents in both strata reported a preference for grouse hunting on state forest lands, followed by private lands they own, National Forests and county owned. Use levels closely matched the stated preference indicating that access to preferred lands was not a problem (Tables 25 and 26). These preference and use levels did not differ between the study strata. Few respondents (Metro = 3.2%; GM = 1.7%) traveled outside Minnesota to hunt ruffed grouse.

Most respondents reported hunting for ruffed grouse in Minnesota each of the past 12 years (back to 1998), with almost 90% hunting in 2009 and incrementally declining to about two-thirds in 1998. Participation rates differed between the strata only during 2007 and 2005 (Table 28).

About 15% of grouse hunters (Metro = 14.4%; GM = 15.3%), reported that they chose not to hunt grouse during years with low grouse numbers, and about half of the grouse hunters in both strata (Metro = 41.4%; GM = 53.7%) indicated they hunted fewer times during seasons with low grouse numbers (Table 29). The other half reported that they did not really change how often they hunted grouse when numbers were low (Metro = 53.6%; GM = 44.6%). Greater Minnesota respondents were more likely to hunt less when grouse numbers were low (Table 29). Seven out of 10 respondents reported that they definitely will hunt grouse in Minnesota the Fall of 2011, and more than 1 in 5 indicated they would probably go. Less than 5% are unlikely to hunt grouse next year in either stratum (Table 32). The top reasons for not hunting grouse next season included lack of time, expense and health.

Respondents in both strata hunted in similar ways, with most walking and not using a dog (Metro 54.9%; GM = 59.8%). About one-third reported at least frequently using a dog to hunt (Metro = 39.1%; GM = 32.1%) (Table 33). While most grouse hunters did not use an ATV/OHV, a larger proportion of Greater Minnesota respondents reported at least occasionally using an ATV/OHV to hunt grouse (Metro = 17.0%, GM = 25.7%). On average, respondents indicated they spent

slightly more than 40% of their time off trail on foot while hunting grouse, with almost 20% of hunters reporting they spent 80% or more of their time off trail (Tables 36 and 37).

Table 15. In what year did you first hunt ruffed grouse, not necessarily in Minnesota? If uncertain please estimate.(Q1)

	Twin Cities Metro	Greater Minnesota	Statewide
Years			
1940-1949	.5%	.6%	.6%
1950-1959	2.5%	5.6%	4.5%
1960-1969	9.7%	15.9%	13.6%
1970-1979	23.1%	23.8%	23.5%
1980-1989	22.1%	21.5%	21.8%
1990-1999	27.9%	17.6%	21.3%
2000-2009	12.7%	14.1%	13.6%
2010	1.5%	.9%	1.1%

$\chi^2 = 19.39, p = 0.009$

Source: Mail-back questionnaire, question 1.

Table 16. In what year did you first hunt ruffed grouse, in Minnesota? (Q2)

	Twin Cities Metro	Greater Minnesota	Statewide
Years			
1940-1949	.5%	.6%	.6%
1950-1959	2.5%	5.5%	4.3%
1960-1969	9.6%	15.6%	13.4%
1970-1979	22.1%	22.8%	22.5%
1980-1989	22.1%	23.1%	22.7%
1990-1999	28.9%	16.8%	21.2%
2000-2009	13.0%	14.5%	14.0%
2010	1.5%	1.2%	1.3%

$\chi^2 = 22.51, p = 0.002$

Source: Mail-back questionnaire, question 1.

Table 17. Since the first time you hunted ruffed grouse in Minnesota, how many total years have you gone grouse hunting at least once in Minnesota? (Q3)

	Twin Cities Metro	Greater Minnesota	Statewide
Total years			
Mean	21.0	23.9	22.8

t = -2.94, p = 0.003

Table 18. Did you hunt for ruffed grouse in Minnesota during the 2010-2011 season?(Q4)

	Twin Cities Metro	Greater Minnesota	Statewide
No	2.9%	3.1%	3.0%
Yes	97.1%	96.9%	97.0%

$\chi^2 = 0.022, p = 0.883$

Table 19. Think back over the season to the times you went hunting for ruffed grouse and report how many days you hunted ruffed grouse during each month. (Q5)

Months ¹	Statewide— Mean number of days	Twin Cities Metro-- Mean number of days	Greater Minnesota--Mean number of days	t-test
September	2.82	2.21	3.18	-3.15 P =0.002
October	5.43	4.49	5.93	-4.02 P <0.001
November	2.12	1.91	2.22	-1.48 P =0.138
December	0.60	0.65	0.56	0.73 P = 0.47
January	0.09	0.12	0.07	1.13 P = 0.24
Total Days	11.10	9.56	11.95	-2.97 P = 0.003

Source: Mail-back questionnaire, question Q5.

Table 20. Please list up to 5 counties in Minnesota in which you most often hunted ruffed grouse.(Q6)

County	Code	Twin Cities Metro Count	Greater Minnesota Count	Total	Twin Cities Metro %	Greater MN %	Statewide %
St. Louis	72	84	106	190	22.46%	32.12%	28.74%
Aitkin	1	73	22	95	19.52%	6.67%	11.17%
Itasca	31	64	64	128	17.11%	19.39%	18.59%
Cass	11	56	44	100	14.97%	13.33%	13.90%
Pine	58	52	10	62	13.90%	3.03%	6.83%
Crow Wing	18	31	13	44	8.29%	3.94%	5.46%
Cook	16	30	12	42	8.02%	3.64%	5.17%
Lake	38	23	28	51	6.15%	8.48%	7.66%
Carlton	9	21	17	38	5.61%	5.15%	5.31%
Hubbard	29	16	22	38	4.28%	6.67%	5.83%
Mille Lacs	48	16	9	25	4.28%	2.73%	3.27%
Beltrami	4	14	37	51	3.74%	11.21%	8.60%
Kanabec	33	11	7	18	2.94%	2.12%	2.41%
Becker	3	9	11	20	2.41%	3.33%	3.01%
Lake of the Woods	39	8	9	17	2.14%	2.73%	2.52%
Clearwater	15	7	9	16	1.87%	2.73%	2.43%
Koochiching	36	7	29	36	1.87%	8.79%	6.37%
Sherburne	70	6	3	9	1.60%	0.91%	1.15%
Isanti	30	5	0	5	1.34%	0.00%	0.47%
Anoka	2	4	1	5	1.07%	0.30%	0.57%
Morrison	49	4	7	11	1.07%	2.12%	1.75%
Mahnomen	43	3	2	5	0.80%	0.61%	0.68%
Marshall	44	3	8	11	0.80%	2.42%	1.85%
Otter Tail	56	3	3	6	0.80%	0.91%	0.87%
Todd	77	3	8	11	0.80%	2.42%	1.85%
Wadena	80	3	8	11	0.80%	2.42%	1.85%
Hennepin	27	2	0	2	0.53%	0.00%	0.19%
Houston	28	2	1	3	0.53%	0.30%	0.38%
Wabasha	79	2	3	5	0.53%	0.91%	0.78%
Winona	85	2	1	3	0.53%	0.30%	0.38%
Wright	86	2	0	2	0.53%	0.00%	0.19%
County unidentifiable/not in MN/unclear	88	2	3	5	0.53%	0.91%	0.78%
Carver	10	1	0	1	0.27%	0.00%	0.14%
Douglas	21	1	0	1	0.27%	0.00%	0.14%
Kittson	35	1	3	4	0.27%	0.91%	0.57%
Pennington	57	1	3	4	0.27%	0.91%	0.57%
Polk	60	1	3	4	0.27%	0.91%	0.57%
Ramsey	62	1	0	1	0.27%	0.00%	0.09%
Roseau	68	1	8	9	0.27%	2.42%	1.28%

Table 20. continued

County	Code	Twin Cities Metro Count	Greater Minnesota Count	Total	Twin Cities Metro %	Greater MN %	Statewide %
Waseca	81	1	0	1	0.27%	0.00%	0.09%
Yellow Medicine	87	1	0	1	0.27%	0.00%	0.09%
Benton	5	0	0	0	0.00%	0.00%	0.00%
Big Stone	6	0	0	0	0.00%	0.00%	0.00%
Blue Earth	7	0	0	0	0.00%	0.00%	0.00%
Brown	8	0	0	0	0.00%	0.00%	0.00%
Chippewa	12	0	0	0	0.00%	0.00%	0.00%
Chisago	13	0	1	1	0.00%	0.30%	0.19%
Clay	14	0	0	0	0.00%	0.00%	0.00%
Cottonwood	17	0	0	0	0.00%	0.00%	0.00%
Dakota	19	0	1	1	0.00%	0.30%	0.19%
Dodge	20	0	0	0	0.00%	0.00%	0.00%
Faribault	22	0	0	0	0.00%	0.00%	0.00%
Fillmore	23	0	3	3	0.00%	0.91%	0.59%
Freeborn	24	0	0	0	0.00%	0.00%	0.00%
Goodhue	25	0	2	2	0.00%	0.61%	0.39%
Grant	26	0	0	0	0.00%	0.00%	0.00%
Jackson	32	0	1	1	0.00%	0.30%	0.19%
Kandiyohi	34	0	0	0	0.00%	0.00%	0.00%
Lac qui Parle	37	0	0	0	0.00%	0.00%	0.00%
Le Sueur	40	0	0	0	0.00%	0.00%	0.00%
Lincoln	41	0	0	0	0.00%	0.00%	0.00%
Lyon	42	0	0	0	0.00%	0.00%	0.00%
Martin	45	0	1	1	0.00%	0.30%	0.19%
McLeod	46	0	0	0	0.00%	0.00%	0.00%
Meeker	47	0	0	0	0.00%	0.00%	0.00%
Mower	50	0	0	0	0.00%	0.00%	0.00%
Murray	51	0	0	0	0.00%	0.00%	0.00%
Nicollet	52	0	0	0	0.00%	0.00%	0.00%
Nobles	53	0	0	0	0.00%	0.00%	0.00%
Norman	54	0	0	0	0.00%	0.00%	0.00%
Olmsted	55	0	0	0	0.00%	0.00%	0.00%
Pipestone	59	0	0	0	0.00%	0.00%	0.00%
Pope	61	0	0	0	0.00%	0.00%	0.00%
Red Lake	63	0	1	1	0.00%	0.30%	0.19%
Redwood	64	0	0	0	0.00%	0.00%	0.00%
Renville	65	0	0	0	0.00%	0.00%	0.00%
Rice	66	0	0	0	0.00%	0.00%	0.00%
Rock	67	0	0	0	0.00%	0.00%	0.00%
Scott	69	0	0	0	0.00%	0.00%	0.00%
Sibley	71	0	0	0	0.00%	0.00%	0.00%

Table 20. continued

County	Code	Twin Cities Metro Count	Greater Minnesota Count	Total	Twin Cities Metro %	Greater MN %	Statewide %
Stearns	73	0	0	0	0.00%	0.00%	0.00%
Steele	74	0	0	0	0.00%	0.00%	0.00%
Stevens	75	0	0	0	0.00%	0.00%	0.00%
Swift	76	0	0	0	0.00%	0.00%	0.00%
Traverse	78	0	0	0	0.00%	0.00%	0.00%
Washington	82	0	0	0	0.00%	0.00%	0.00%
Watonwan	83	0	0	0	0.00%	0.00%	0.00%
Wilkin	84	0	0	0	0.00%	0.00%	0.00%
Total		374	330	704	100.00%	100.00%	100.00%

Table 21. On a typical day trip hunting grouse in Minnesota in 2010, how far did you travel one-way from home to hunt?(Q7)

Total years	Twin Cities Metro Miles	Greater Minnesota Miles	Statewide
Mean	119.12	64.54	83.66
t = 9.15, p < 0.001			

Table 22. What is the maximum distance you would be willing to travel in a day to hunt grouse in Minnesota?(Q8)

	Twin Cities Metro Miles	Greater Minnesota Miles	Statewide
Mean	153.15	101.33	120.00
t = 8.65, p < 0.001			

Table 23. Did you take any overnight or multiple day trips to hunt grouse in Minnesota?(Q9)

	Twin Cities Metro %	Greater Minnesota %	Statewide %
No	22.6%	47.4%	38.5%
Yes	77.4%	52.6%	61.5%
$\chi^2 = 51.43$ p < 0.001			
How many? (mean)	t=-0.395, p = 0.693	3.79	3.98

Table 24. In total about how much did you spend on grouse hunting in Minnesota in 2010? (Q10)

Total years	Twin Cities Metro	Greater Minnesota	Statewide
Mean	\$451.05	\$397.32	\$416.66
Median			\$250.00
t = 1.386, p = 0.166			

Table 25. When you hunted ruffed grouse in Minnesota in 2010 how much of your time did you spend hunting in the following areas? (Q11)

Property types	Twin Cities Metro Mean of %	Greater Minnesota Mean of %	Statewide Mean of %
County Owned Land	14.31	17.32	16.25
State Wildlife Management Areas	10.74	8.39	9.23
National Forest	18.59	14.44	15.92
National Wildlife Refuge	1.96	2.16	2.09
State Forest Lands	29.85	27.59	28.40
Private Land I Own*	12.58	17.41	15.69
Private Land I Do Not Own	11.57	12.46	12.14
Commercial/Industrial Forest	3.52	3.49	3.50
Other	1.07	1.37	1.26

*significantly different at $p < 0.05$

Table 26. What type of area do you most prefer to hunt for ruffed grouse in Minnesota?(Q12)

Property types	Twin Cities Metro	Greater Minnesota	Statewide
County Owned Land	10.0%	12.2%	11.3%
State Wildlife Management Areas	9.4%	7.5%	8.1%
National Wildlife Refuge	2.4%	.6%	1.4%
State Forest Lands	32.9%	30.6%	31.4%
National Forest	14.0%	11.9%	12.6%
Private Land I Own	14.8%	24.1%	20.8%
Private Land I Do Not Own	11.1%	9.1%	9.8%
Commercial/Industrial Forest	2.7%	2.8%	2.8%
No preference	1.9%	0.3%	1.0%

$\chi^2 = 17.96, p = 0.036$

Table 27. Did you hunt for ruffed grouse in a state or province other than Minnesota in 2010? (Q13)

	Twin Cities Metro	Greater Minnesota	Statewide
No	96.8%	98.3%	97.7%
Yes	3.2%	1.7%	2.3%

$\chi^2 = 1.63, p = 0.202$

Table 28. Since 1998, indicate which years you hunted ruffed grouse in Minnesota?(Q14)

Years	Twin Cities Metro % YES	Greater Minnesota % YES	Statewide % YES
2009	88.5%	84.3%	85.8%
2008	85.6%	82.9%	83.8%
2007*	82.7%	76.4%	78.7%
2006	79.0%	77.2%	77.8%
2005*	79.3%	71.9%	74.5%
2004	77.1%	71.3%	73.3%
2003	75.9%	70.2%	72.2%
2002	72.0%	71.1%	71.5%
2001	71.2%	72.2%	71.9%
2000	72.4%	71.6%	72.0%
1999	70.0%	68.0%	68.7%
1998	68.3%	66.6%	67.2%

*Different at p <0.05.

Table 29. We are interested in knowing if changes in ruffed grouse numbers influenced whether or how you hunted for ruffed grouse in Minnesota over the past 10 years. (Q15)

		Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	χ^2	
I chose not to hunt ruffed grouse at all during some years with low grouse numbers.	Twin Cities Metro	46.1%	30.4%	9.3%	10.8%	3.4%	$\chi^2 = 15.00,$ $p = 0.005$	
	Greater Minnesota	40.8%	28.3%	15.3%	11.3%	4.2%		
Unless something else prevented me, I hunted ruffed grouse in Minnesota every year.	Twin Cities Metro	5.1%	8.3%	8.0%	26.3%	52.3%		
	Greater Minnesota	4.3%	7.1%	10.0%	29.3%	49.3%		
I hunted fewer times during seasons when the grouse numbers were low.*	Twin Cities Metro	20.0%	23.6%	15.0%	33.3%	8.1%		
	Greater Minnesota	12.2%	21.3%	12.8%	40.9%	12.8%		
I did not really change how often I went hunting during the season.*	Twin Cities Metro	4.7%	22.4%	19.4%	32.2%	21.4%		$\chi^2 = 10.23,$ $P = 0.037$
	Greater Minnesota	8.0%	27.0%	20.5%	30.1%	14.5%		
I hunted more often when grouse numbers were low.	Twin Cities Metro	27.0%	43.9%	26.2%	1.0%	2.0%		
	Greater Minnesota	23.7%	50.6%	22.9%	2.3%	.6%		
I focused more on woodcock when grouse numbers were low.	Twin Cities Metro	45.2%	29.0%	17.4%	6.6%	1.7%		
	Greater Minnesota	44.0%	32.3%	18.9%	4.3%	.6%		
I changed how I hunted when grouse numbers were low.	Twin Cities Metro	16.0%	32.3%	19.0%	27.6%	5.2%		
	Greater Minnesota	16.6%	25.7%	22.3%	30.9%	4.6%		
I changed where I hunted in Minnesota when numbers were low.	Twin Cities Metro	22.9%	42.0%	18.4%	14.3%	2.5%		
	Greater Minnesota	21.3%	35.2%	20.5%	19.6%	3.4%		
I hunted ruffed grouse even when populations were low because of my dog (s).	Twin Cities Metro	26.8%	21.3%	20.3%	21.6%	9.9%		
	Greater Minnesota	27.1%	18.1%	25.4%	21.3%	8.2%		
I hunted ruffed grouse as often, but did not stay out as long.	Twin Cities Metro	12.3%	31.5%	28.8%	24.6%	2.7%		
	Greater Minnesota	13.4%	27.9%	34.2%	20.8%	3.7%		
I do NOT track grouse numbers.	Twin Cities Metro	16.5%	35.6%	17.0%	23.1%	7.9%		
	Greater Minnesota	13.2%	35.6%	17.2%	21.6%	12.4%		

Only χ^2 significant at $p \leq 0.05$ are reported.

Table 30. STATEWIDE-- We are interested in knowing if changes in ruffed grouse numbers influenced whether or how you hunted for ruffed grouse in Minnesota over the past 10 years. (Q15)

	Strongly Disagree %	Disagree %	Neither %	Agree %	Strongly Agree %
I chose not to hunt ruffed grouse at all during some years with low grouse numbers.	42.7	29.1	13.2	11.1	3.9
Unless something else prevented me, I hunted ruffed grouse in Minnesota every year.	4.5	7.5	9.3	28.3	50.4
I hunted fewer times during seasons when the grouse numbers were low.*	14.9	22.1	13.6	38.2	11.2
I did not really change how often I went hunting during the season.*	6.8	25.3	20.1	30.9	16.9
I hunted more often when grouse numbers were low.	24.9	48.2	24.0	1.8	1.1
I focused more on woodcock when grouse numbers were low.	44.4	31.1	18.4	5.1	1.1
I changed how I hunted when grouse numbers were low.	16.4	28.1	21.2	29.6	4.7
I changed where I hunted in Minnesota when numbers were low.	21.8	37.7	19.7	17.7	3.0
I hunted ruffed grouse even when populations were low because of my dog (s).	27.0	19.3	23.6	21.4	8.7
I hunted ruffed grouse as often, but did not stay out as long.	12.9	29.2	32.3	22.2	3.4
I do NOT track grouse numbers.	14.4	35.6	17.1	22.2	10.7

Table 31. When ruffed grouse numbers were lower in Minnesota during the past 10 years, did you do another activity in place of ruffed grouse hunting?(Q16)

	Twin Cities Metro	Greater Minnesota	Statewide
No	71.0%	66.0%	67.8%
Yes	29.0%	34.0%	32.2%
$\chi^2 = 2.18, p = 0.140$			

Table 32. How likely are you to hunt for ruffed grouse in Minnesota next Fall 2011? (Q17)

	Twin Cities Metro	Greater Minnesota	Statewide
Definitely Will Not Go	1.7%	2.8%	2.2%
Probably Will Not Go	1.5%	1.4%	1.5%
Uncertain	3.0%	4.8%	3.8%
Probably Will Go	23.0%	21.0%	22.0%
Definitely Will Go	70.9%	70.0%	70.4%
$\chi^2 = 3.09, p = 0.543$			

Table 33. If you do NOT go ruffed grouse hunting in 2011, what are your top 2 reasons for not going?(Q18)

	Strata Combined %
Lack of time	27.4%
Money/Cost of gas	13.2%
Other hunting	10.3%
Health	7.2%
Poor hunting/Too few Birds	5.7%
Weather	5.4%
Other interests	3.7%

Table 34. Please let us know how you typically hunt for ruffed grouse in Minnesota.(Q33)

		Not at all	Seldom	Occasionally	Frequently	Always	χ^2
Walk without using a dog	Twin Cities Metro	16.6%	13.6%	14.9%	26.2%	28.7%	$\chi^2 = 15.32$ P = 0.004
	Greater Minnesota	11.6%	12.7%	15.9%	30.6%	29.2%	
Walk and use a dog	Twin Cities Metro	31.6%	16.9%	11.4%	21.9%	18.2%	
	Greater Minnesota	37.6%	16.5%	11.3%	22.0%	12.7%	
Stay on established trails	Twin Cities Metro	3.8%	10.5%	34.8%	47.0%	4.0%	
	Greater Minnesota	3.5%	10.7%	33.3%	47.2%	5.2%	
Walk off trail to hunt	Twin Cities Metro	1.2%	12.7%	34.2%	45.6%	6.2%	
	Greater Minnesota	2.3%	14.9%	36.4%	39.3%	6.9%	
Hunt by driving along roads	Twin Cities Metro	41.2%	27.0%	18.1%	12.4%	1.2%	
	Greater Minnesota	37.0%	29.8%	22.6%	9.5%	1.1%	
Use a dog to hunt	Twin Cities Metro	33.6%	17.3%	10.0%	20.8%	18.3%	
	Greater Minnesota	39.4%	17.8%	10.8%	17.2%	14.9%	
Use and ATV or OHV to hunt along trails	Twin Cities Metro	71.2%	11.8%	9.6%	5.9%	1.5%	
	Greater Minnesota	57.8%	16.4%	13.6%	9.3%	2.8%	
Hunt on DNR/WMA Hunter Walking Trails	Twin Cities Metro	40.8%	24.1%	22.4%	12.5%	.2%	
	Greater Minnesota	43.6%	25.9%	21.7%	7.4%	1.4%	
Other	Twin Cities Metro	35.7%	--	14.3%	35.7%	14.3%	
	Greater Minnesota	37.0%	3.7%	3.7%	51.9%	3.7%	

Only χ^2 significant at $p \leq 0.05$ are reported.

Table 35. STATEWIDE--Please let us know how you typically hunt for ruffed grouse in Minnesota.(Q33)

	Not at all %	Seldom %	Occasionally %	Frequently %	Always %
Walk without using a dog	13.4	13.0	15.5	29.0	29.0
Walk and use a dog	35.5	16.6	11.2	21.9	14.7
Stay on established trails	3.6	10.6	33.9	47.2	4.7
Walk off trail to hunt	2.0	14.2	35.6	41.6	6.6
Hunt by driving along roads	38.5	28.8	21.1	10.5	1.1
Use a dog to hunt	37.2	17.6	10.6	18.4	16.1
Use and ATV or OHV to hunt along trails	62.5	14.8	12.2	8.2	2.3
Hunt on DNR/WMA Hunter Walking Trails	42.5	25.3	21.9	9.2	1.0
Other	35.3	2.7	8.0	45.5	8.5

Table 36. What percent of your time grouse hunting would you estimate you spend OFF TRAIL walking?(Q34)

	Twin Cities Metro Mean of %	Greater Minnesota Mean of %	Statewide Mean of %
Mean	44.3	42.8	43.3
t = 0.735, p = 0.463			

Table 37. What percent of your time grouse hunting would you estimate you spend OFF TRAIL walking? (Q34)

	0%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%	100%
Twin Cities Metro	1.0	6.6	8.1	12.0	19.4	9.8	9.8	4.9	8.8	10.3	3.9	3.7	1.7
Greater Minnesota	3.1	6.8	9.0	14.4	12.1	8.2	15.8	5.9	6.8	8.2	5.4	3.9	0.6
Statewide	2.3	6.7	8.8	13.5	14.6	8.7	13.7	5.6	7.4	9.0	4.9	3.8	0.9

$\chi^2 = 22.85, p = 0.029$

C. Commitment to and motivations for grouse hunting

Less than 2% of respondents indicated that grouse hunting was their most important recreational activity, but almost half (45.8%) of Metro and one-third of Greater Minnesota (31.64%) identified it as one of their most important recreational activities (Table 38). Even though all respondents hunt ruffed grouse, less than two-thirds of the respondents actually consider themselves to be “grouse hunters” (Table 39). About half of the respondents considered their grouse hunting skills to be intermediate, while 4 out of 10 identified their skills as expert or advance (Table 40).

The motivations for grouse hunting were very similar between the two strata, but Metro respondents were more likely to report “hunting with friends” and “hunting with a dog” as very or extremely important to their hunting satisfaction compared to Great Minnesota respondents (Table 41). Overall, enjoying nature, getting away from crowds, good behavior among other hunters, hunting areas open to the public, access to lot of different areas, and reducing tension and stress were the most important aspects contributing to grouse hunting satisfaction (Table 41). Getting food, getting a limit, and a large bag limit were reported as least important.

Table 38. How important is ruffed grouse hunting to you? (Q21).

	Twin Cities Metro	Greater Minnesota	Statewide
My most important recreational activity	1.0%	2.5%	2.1%
One of my most important recreational activities	45.8%	31.4%	36.4%
No more important than my other recreational activities	40.3%	49.4%	46.2%
Less important than my other recreational activities	10.4%	15.0%	13.3%
One of my least important recreational activities	2.5%	1.7%	2.0%
$\chi^2 = 19.91, p = 0.001$			

Table 39. How would you describe your identification with ruffed grouse hunting? (Q22).

	Twin Cities Metro	Greater Minnesota	Statewide
I go grouse hunting, but I do not really consider myself a grouse hunter	24.3%	28.5%	27.1%
I am in the process of becoming a grouse hunter	6.9%	7.6%	7.4%
I consider myself a grouse hunter	64.6%	57.3%	59.9%
I used to be a grouse hunter, but no longer consider myself to be	4.2%	6.5%	5.7%
$\chi^2 = 4.97, p = 0.176$			

Table 40. How would you describe your skills as a ruffed grouse hunter? (Q23).

	Twin Cities Metro	Greater Minnesota	Statewide
Novice	10.3%	9.0%	9.4%
Intermediate	50.6%	50.8%	50.8%
Expert	32.9%	34.5%	34.0%
Advance	6.1%	5.6%	5.8%
$\chi^2 = 0.532, p = 0.912$			

Table 41. Please indicate how *IMPORTANT* you feel each of the following is to satisfaction with your ruffed grouse hunting experience in Minnesota. (Q24)

		Not at all	Slightly important	Somewhat important	Very Important	Extremely important	χ^2
A large daily grouse bag limit	Twin Cities Metro	44.1%	26.8%	24.9%	2.5%	1.7%	
	Greater Minnesota	46.3%	27.3%	21.0%	3.1%	2.3%	
Access to a lot of different hunting areas	Twin Cities Metro	4.0%	5.7%	18.0%	46.2%	26.2%	
	Greater Minnesota	6.2%	8.8%	22.0%	39.3%	23.7%	
Bagging grouse	Twin Cities Metro	5.2%	20.8%	45.8%	22.8%	5.4%	
	Greater Minnesota	7.1%	24.0%	45.7%	20.0%	3.1%	
Being on my own	Twin Cities Metro	15.5%	15.0%	25.6%	30.5%	13.3%	
	Greater Minnesota	16.4%	16.4%	24.6%	30.3%	12.2%	
Hunting with friends	Twin Cities Metro	5.0%	9.4%	24.1%	40.4%	21.1%	
	Greater Minnesota	6.8%	9.3%	32.5%	34.2%	17.2%	
Developing my skills and abilities	Twin Cities Metro	5.7%	15.5%	33.3%	34.2%	11.3%	
	Greater Minnesota	6.2%	11.6%	39.0%	32.2%	11.0%	
Hunting with family	Twin Cities Metro	7.6%	7.4%	20.2%	36.0%	28.8%	
	Greater Minnesota	4.0%	7.9%	15.5%	41.5%	31.1%	
Enjoying nature and the outdoors	Twin Cities Metro		.5%	2.0%	28.3%	69.2%	
	Greater Minnesota	.3%	.3%	2.3%	31.4%	65.7%	
Getting away from crowds of people	Twin Cities Metro	1.0%	1.2%	6.9%	29.0%	61.9%	
	Greater Minnesota	1.1%	1.1%	8.2%	33.3%	56.2%	
Getting food for me or my family	Twin Cities Metro	45.9%	23.7%	20.7%	4.9%	4.7%	
	Greater Minnesota	33.1%	25.5%	20.7%	13.6%	7.1%	
Getting information about grouse hunting seasons and conditions from the DNR	Twin Cities Metro	11.6%	24.4%	36.0%	22.7%	5.2%	
	Greater Minnesota	15.3%	23.6%	36.4%	18.8%	6.0%	
Getting my limit	Twin Cities Metro	53.8%	29.5%	13.0%	3.2%	.5%	
	Greater Minnesota	52.3%	26.0%	17.1%	3.7%	.9%	
Good behavior among other grouse hunters	Twin Cities Metro	.7%	3.2%	9.8%	37.8%	48.4%	
	Greater Minnesota	.8%	2.0%	9.3%	39.7%	48.2%	
Having a long grouse season	Twin Cities Metro	7.6%	13.0%	35.0%	30.4%	14.0%	
	Greater Minnesota	10.8%	16.1%	31.4%	27.5%	14.2%	
Hunting areas open to the public	Twin Cities Metro	1.7%	5.4%	10.6%	40.1%	42.1%	$\chi^2 = 13.46$
	Greater Minnesota	4.0%	5.7%	18.2%	35.8%	36.4%	p = 0.009
Hunting with a dog	Twin Cities Metro	27.8%	14.8%	18.5%	16.3%	22.7%	$\chi^2 = 9.95$
	Greater Minnesota	36.3%	13.9%	19.5%	15.0%	15.3%	p = 0.041
Reducing tension and stress	Twin Cities Metro	4.7%	4.7%	24.4%	37.4%	28.8%	
	Greater Minnesota	2.8%	5.7%	23.9%	37.0%	30.5%	

Only χ^2 significant at $p \leq 0.05$ are reported.

Table 41. Continued

		Not at all	Slightly	Somewhat	Very	Extremely	χ^2
		important	important	important	Important	important	
Flushing a lot of grouse	Twin Cities Metro	2.7%	19.3%	43.5%	25.9%	8.6%	$\chi^2 = 12.98$ p = 0.011
	Greater Minnesota	8.2%	20.1%	43.2%	21.5%	7.1%	
Sharing my hunting skills and knowledge	Twin Cities Metro	8.6%	19.8%	36.0%	25.2%	10.4%	
	Greater Minnesota	8.8%	14.5%	34.7%	31.8%	10.2%	
Thinking about personal values	Twin Cities Metro	7.2%	13.8%	30.1%	32.3%	16.5%	
	Greater Minnesota	6.5%	9.4%	29.8%	36.4%	17.9%	
Using my shotgun	Twin Cities Metro	6.9%	17.8%	37.3%	26.4%	11.6%	
	Greater Minnesota	8.0%	18.0%	31.1%	28.9%	14.0%	
Training and working with my dog to hunt grouse	Twin Cities Metro	38.2%	12.4%	19.4%	13.2%	16.9%	
	Greater Minnesota	42.3%	12.5%	14.2%	17.6%	13.4%	
Enjoying strenuous exercise	Twin Cities Metro	5.4%	10.8%	35.2%	36.2%	12.3%	
	Greater Minnesota	7.1%	8.8%	32.9%	34.0%	17.3%	
Testing my endurance	Twin Cities Metro	15.0%	18.9%	33.7%	23.3%	9.1%	
	Greater Minnesota	16.4%	18.6%	28.2%	23.7%	13.0%	

Only χ^2 significant at $p \leq 0.05$ are reported.

Table 42. STATEWIDE--Please indicate how *IMPORTANT* you feel each of the following is to satisfaction with your ruffed grouse hunting experience in Minnesota. (Q24)

	Not at all %	Slightly important %	Somewhat important %	Very Important %	Extremely important %
A large daily grouse bag limit	45.5	27.1	22.4	2.9	2.1
Access to a lot of different hunting areas	5.3	7.7	20.6	41.7	24.7
Bagging grouse	6.4	22.9	45.7	21.0	3.9
Being on my own	16.1	16.0	24.9	30.4	12.6
Hunting with friends	6.1	9.3	29.6	36.4	18.6
Developing my skills and abilities	6.0	13.0	37.0	33.0	11.1
Hunting with family	5.2	7.7	17.2	39.6	30.2
Enjoying nature and the outdoors	0.2	0.5	2.2	30.3	66.9
Getting away from crowds of people	1.1	1.1	7.8	31.8	58.3
Getting food for me or my family	37.6	24.9	20.7	10.6	6.2
Getting information about grouse hunting seasons and conditions from the DNR	14.0	23.9	36.3	20.1	5.7
Getting my limit	52.7	27.2	15.7	3.6	0.8
Good behavior among other grouse hunters	0.8	2.4	9.4	39.0	48.4
Having a long grouse season	9.6	15.0	32.8	28.4	14.1
Hunting areas open to the public	3.1	5.7	15.5	37.4	38.3
Hunting with a dog	33.2	14.3	19.2	15.4	17.9
Reducing tension and stress	3.4	5.4	24.1	37.3	29.8
Flushing a lot of grouse	6.2	19.8	43.2	23.2	7.6
Sharing my hunting skills and knowledge	8.7	16.4	35.2	29.5	10.2
Thinking about personal values	6.7	10.9	30.1	34.9	17.4
Using my shotgun	7.6	18.0	33.3	28.1	13.1
Training and working with my dog to hunt grouse	40.9	12.4	16.0	15.9	14.7
Enjoying strenuous exercise	6.5	9.5	33.7	34.7	15.5
Testing my endurance	15.8	18.7	30.2	23.6	11.6

D. Satisfaction with grouse hunting and harvest

In general, most respondents were not dissatisfied with any of the aspects of the 2010 grouse hunting season in Minnesota (Table 43). Most respondents in both strata were moderately or very satisfied with their general grouse hunting experiences (Metro = 60.6%; GM = 61.9%), the quality of the grouse habitat (Metro = 57.3%; GM = 57.8%), and the length of the grouse season (Metro = 67.4%; GM = 69.1%). About 1 in 4 respondents, however, reported some dissatisfaction with the number of grouse they flushed. While a majority were satisfied with both bag and possession limits, a larger percentage of Metro respondents were neither satisfied nor dissatisfied with the limits (Table 43).

In general most respondents perceived that general grouse hunting, the number of grouse flushed, the quality of grouse habitat and access had either remained the same or gotten better during the last 5 and 10 years (Tables 45 and 46). More respondents (~30%), however, perceived crowding to have gotten worse than better during those time frames (Tables 45 and 46).

On average, Greater Minnesota respondents (mean = 8.88) reported bagging more grouse than Metro respondents (mean = 6.13) (Table 48). Both groups of respondents reported flushing an average of ~1.5 grouse per hour (Table 49). For respondents who reported that it mattered to them, Metro and Greater Minnesota respondents reported the same mean minimum flush rates for considering going grouse hunting (1.1 - 1.2/hour) and rating grouse hunting as good (2.3 - 2.5/hour) or excellent (3.7 - 3.8/hour) quality (Tables 50-52).

Table 43. During the 2010-11 Minnesota grouse hunting season, how satisfied or dissatisfied were you with the following? (Q25)

		Very dissatisfied	Moderately dissatisfied	Slightly dissatisfied	Neither	Slightly satisfied	Moderately satisfied	Very satisfied	χ^2
General grouse hunting experience	Twin Cities Metro	.5%	1.7%	7.9%	8.4%	20.8%	36.0%	24.6%	$\chi^2 = 17.18$ p = 0.009
	Greater Minnesota	1.1%	2.0%	7.7%	8.8%	18.5%	37.5%	24.4%	
Number of grouse you flush	Twin Cities Metro	3.5%	6.7%	14.6%	6.0%	24.3%	30.5%	14.4%	
	Greater Minnesota	3.7%	7.7%	13.1%	6.3%	21.9%	30.2%	17.1%	
Quality of the grouse habitat	Twin Cities Metro	.5%	2.3%	5.0%	10.8%	24.3%	37.8%	19.5%	
	Greater Minnesota	1.1%	1.4%	5.4%	10.5%	23.6%	38.7%	19.1%	
Access to public areas to hunt	Twin Cities Metro	1.5%	1.8%	7.0%	20.5%	18.3%	34.8%	16.3%	
	Greater Minnesota	.9%	2.3%	5.1%	18.6%	19.1%	32.9%	21.1%	
Bag limit (5) for ruffed grouse	Twin Cities Metro	1.2%	1.5%	3.2%	32.7%	10.6%	21.3%	29.5%	
	Greater Minnesota	1.7%	1.1%	3.4%	27.2%	8.0%	29.8%	28.7%	
Possession limit (10) for ruffed grouse	Twin Cities Metro	3.0%	3.0%	5.9%	35.6%	8.7%	16.1%	27.7%	
	Greater Minnesota	2.8%	5.1%	6.8%	27.4%	6.8%	26.2%	24.8%	
Length of the grouse season	Twin Cities Metro	.5%	2.7%	1.7%	16.3%	11.4%	30.9%	36.5%	
	Greater Minnesota	.3%	2.0%	2.0%	17.0%	9.7%	34.4%	34.7%	
Number of other people you saw	Twin Cities Metro	1.2%	6.2%	7.4%	25.8%	20.1%	22.6%	16.6%	
	Greater Minnesota	.6%	3.1%	7.4%	23.1%	17.1%	25.9%	22.8%	

Only χ^2 significant at $p \leq 0.05$ are reported.

Table 44. STATEWIDE--During the 2010-11 Minnesota grouse hunting season, how satisfied or dissatisfied were you with the following? (Q25)

	Very dissatisfied %	Moderately dissatisfied %	Slightly dissatisfied %	Neither %	Slightly satisfied %	Moderately satisfied %	Very satisfied %
General grouse hunting experience	0.9	1.9	7.8	8.7	19.3	37.0	24.4
Number of grouse you flush	3.6	7.3	13.7	6.1	22.8	30.4	16.1
Quality of the grouse habitat	0.9	1.7	5.3	10.5	23.9	38.4	19.2
Access to public areas to hunt	1.0	2.1	5.8	19.3	18.8	33.5	19.4
Bag limit (5) for ruffed grouse	1.6	1.3	3.3	29.1	9.0	26.8	28.9
Possession limit (10) for ruffed grouse	2.8	4.3	6.6	30.4	7.6	22.6	25.8
Length of the grouse season	0.4	2.2	1.8	16.8	10.3	33.1	35.4
Number of other people you saw	0.7	4.3	7.4	24.0	18.2	24.8	20.6

Table 45. Think about changes related to your grouse hunting over the last 5 years in Minnesota, how much better or worse do you think the following have become?(Q26)

		Much worse	Somewhat worse	Neither	Somewhat better	Much better	Don't Know	χ^2	P
General grouse hunting experience	Twin Cities Metro	.5%	12.1%	50.9%	25.2%	8.4%	3.0%		
	Greater Minnesota	2.0%	12.7%	51.3%	21.8%	10.2%	2.0%		
Number of grouse you flush	Twin Cities Metro	3.0%	17.5%	29.4%	33.3%	13.8%	3.0%		
	Greater Minnesota	4.3%	18.2%	33.3%	26.2%	15.7%	2.3%		
Quality of the grouse habitat	Twin Cities Metro	1.0%	6.9%	52.2%	29.2%	6.7%	4.0%		
	Greater Minnesota	1.1%	7.4%	52.9%	29.4%	7.7%	1.4%		
Access to public areas to hunt	Twin Cities Metro	3.0%	12.4%	59.4%	17.8%	3.5%	4.0%		
	Greater Minnesota	3.1%	11.9%	59.9%	14.2%	8.8%	2.0%	13.00	P = 0.023
Crowding in the areas you hunt	Twin Cities Metro	3.7%	24.1%	55.9%	10.6%	1.7%	3.9%		
	Greater Minnesota	3.1%	26.3%	51.0%	14.2%	4.0%	1.4%	11.15	P = 0.048

Only χ^2 significant at $p \leq 0.05$ are reported.

Table 46. Think about changes related to your grouse hunting over the last 10 years in Minnesota, how much better or worse do you think the following have become?(Q27)

		Much worse	Somewhat worse	Neither	Somewhat better	Much better	Don't Know	χ^2	P
General grouse hunting experience	Twin Cities Metro	1.0%	15.8%	46.0%	23.5%	9.0%	4.8%		
	Greater Minnesota	1.1%	15.1%	45.3%	26.5%	9.4%	2.6%		
Number of grouse you flush	Twin Cities Metro	3.3%	19.0%	34.8%	27.8%	10.5%	4.8%		
	Greater Minnesota	4.3%	20.6%	32.9%	27.1%	11.7%	3.4%		
Quality of the grouse habitat	Twin Cities Metro	1.0%	10.3%	50.5%	27.0%	5.5%	5.8%		
	Greater Minnesota	1.1%	9.7%	52.7%	25.1%	8.8%	2.6%		
Access to public areas to hunt	Twin Cities Metro	3.2%	14.1%	55.3%	16.1%	5.0%	6.2%		
	Greater Minnesota	3.7%	12.3%	57.4%	15.1%	8.6%	2.9%		
Crowding in the areas you hunt	Twin Cities Metro	7.7%	23.6%	51.2%	8.2%	3.0%	6.2%		
	Greater Minnesota	6.6%	22.3%	53.4%	13.1%	2.6%	2.0%	$\chi^2 = 12.93$	P = 0.024

Only χ^2 significant at $p \leq 0.05$ are reported.

Table 47. STATEWIDE--Think about changes related to your grouse hunting over the last 5/10 years in Minnesota, how much better or worse do you think the following have become?(Q26)

		Much worse %	Somewhat worse %	Neither %	Somewhat better %	Much better %	Don't Know %
General grouse hunting experience	<i>Last 5 years</i>	1.5	12.5	51.1	23.0	9.6	2.3
	<i>Last 10 years</i>	1.2	15.3	45.6	25.4	9.2	3.3
Number of grouse you flush	<i>Last 5 years</i>	3.8	18.0	32.0	28.7	15.1	2.5
	<i>Last 10 years</i>	3.9	20.0	33.5	27.3	11.3	3.9
Quality of the grouse habitat	<i>Last 5 years</i>	1.1	7.3	52.6	29.4	7.4	2.4
	<i>Last 10 years</i>	1.1	9.9	52.0	25.7	7.6	3.7
Access to public areas to hunt	<i>Last 5 years</i>	3.0	12.0	59.8	15.5	7.0	2.7
	<i>Last 10 years</i>	3.6	13.1	56.6	15.5	7.3	4.0
Crowding in the areas you hunt	<i>Last 5 years</i>	3.3	25.7	52.8	12.9	3.1	2.2
	<i>Last 10 years</i>	7.0	22.7	52.6	11.3	2.8	3.5

Table 48. In total how many ruffed grouse did you personally bag last year? (Q28)

	Twin Cities Metro	Greater Minnesota	Statewide
Mean	6.13	8.88	7.90
t = -4.03, p < 0.001			

Table 49. On average, what was the typical number of ruffed grouse you flushed per hour while hunting in Minnesota in 2010?(Q29)

	Twin Cities Metro	Greater Minnesota	Statewide
Mean,	1.51	1.57	1.55
% Don't Know	11.1%	15.5%	11.9%

Means not different at p < 0.05

Table 50. On average, what is the minimum number of ruffed grouse you need to flush per hour before you would consider going grouse hunting?(Q30)

	Twin Cities Metro	Greater Minnesota	Statewide
Mean	1.10	1.18	1.15
It does not matter to me	53.2%	49.3%	49.5%
It matters but I cannot provide a number	10.8%	13.7%	11.3%

Means not different at p < 0.05

Table 51. On average, what is the minimum number of ruffed grouse you need to flush per hour before you would rate grouse hunting as good quality?(Q31)

	Twin Cities Metro	Greater Minnesota	Statewide
Mean	2.34	2.53	2.46
It does not matter to me	23.6%	26.4%	24.7%
It matters but I cannot provide a number	7.0%	10.6%	8.1%

Means not different at p < 0.05

Table 52. On average, what is the minimum number of ruffed grouse you need to flush per hour before you would rate grouse hunting as excellent quality?(Q32)

	Twin Cities Metro	Greater Minnesota	Statewide
Mean	3.65	3.83	3.76
It does not matter to me	19.8%	23.2%	21.3%
It matters but I cannot provide a number	6.4%	9.5%	6.8%

Means not different at $p < 0.05$

E. Perceptions of crowding and conflict

About 4 out of 10 respondents in both strata reported that they did not feel crowded (Table 53). About 4 out of 10 also indicated they were somewhat to moderately crowded, and almost 1 in 5 indicated they felt at least moderately crowded. About one-quarter of respondents reported they felt that other recreational users had interfered with their ruffed grouse hunting in 2010 and over the past 5 years (Tables 55 and 59). About 60% of those who reported feeling some interference to their grouse hunting, indicated that ATV/OHV users of some type had interfered with their grouse hunting (Tables 56 and 60).

Perceptions of ATV use and users varied considerably within the two strata (Table 63). In addition, Metro respondents (44.6%) were less likely to use ATVs at least occasionally for recreation compared to Greater Minnesota respondents (67.2%), and more Metro respondents (48.1%) reported having negative attitudes toward ATV use compared to Greater Minnesota respondents (35.2%). These divergent attitudes and perceptions of ATV use could lead to an increasing potential for conflict with other ATV users and among grouse hunters.

Table 53. Some hunters have expressed personal concerns with crowding and other conflicts when they grouse hunt. We would like to understand your views about potential crowding and conflicts when you hunt ruffed grouse in Minnesota.(Q35)

Using the scale presented below circle the one number that you feel best describes your perceptions of crowding from other people not hunting with you while you were ruffed grouse hunting in Minnesota during 2010.

	1	2	3	4	5	6	7	8	9
Metro	17.8%	26.5%	18.6%	11.9%	8.2%	12.1%	3.7%	0.7%	0.5%
Greater MN	21.1%	21.9%	18.2%	10.8%	10.5%	10.0%	6.6%	0.6%	0.3%
Statewide	19.8%	23.6%	18.4%	11.2%	9.7%	10.7%	5.6%	0.7%	0.3%
	Not at all Crowded		Somewhat Crowded		Moderately Crowded			Extremely Crowded	

Table 54. Mean scores for crowding among Metro and Greater Minnesota respondents (Q35)

	Twin Cities Metro	Greater Minnesota	Statewide
Mean	3.25	3.28	3.27
t = -0.257, p = 0.797			

Table 55. Did you feel that any other recreational users interfered with your ruffed grouse hunting in Minnesota in 2010?(Q36)

	Twin Cities Metro	Greater Minnesota	Statewide
NO	71.6%	73.9%	73.1%
YES	28.4%	26.1%	26.9%

Table 56. What kind of other recreational users interfered with your grouse hunting in Minnesota in 2010? (Q37) (Top 6 reported activities by % reported)

Activity	%
ATV/OHV	59.7%
Deer hunters	7.5%
Grouse/other bird hunters	7.0%
General other hunters	6.5%
Hikers	3.2%
Bear hunters	2.7%

Table 57. We would like to understand how you dealt with interference from others when you hunted grouse.(Q38)

		Not at all				To a great extent
		1	2	3	4	5
Stopped grouse hunting	Twin Cities Metro	57.1%	16.9%	9.7%	7.8%	8.4%
	Greater Minnesota	54.0%	11.9%	20.6%	7.1%	6.3%
Avoided certain areas when you grouse hunted.	Twin Cities Metro	8.9%	8.3%	17.2%	43.3%	22.3%
	Greater Minnesota	8.5%	9.3%	25.6%	35.7%	20.9%
Changed when you went grouse hunting.	Twin Cities Metro	31.0%	14.2%	21.3%	18.1%	15.5%
	Greater Minnesota	24.6%	19.7%	20.5%	20.5%	14.8%
Expressed frustration with the person(s) who interfered.	Twin Cities Metro	63.6%	17.5%	13.6%	3.9%	1.6%
	Greater Minnesota	67.7%	9.4%	14.2%	3.1%	4.9%
Tried to get others to leave or change their behavior.	Twin Cities Metro	82.6%	10.3%	3.9%	1.9%	1.3%
	Greater Minnesota	77.2%	12.6%	4.7%	3.9%	1.6%
Just avoided any direct confrontation with the other people.	Twin Cities Metro	15.3%	8.9%	10.8%	30.6%	34.4%
	Greater Minnesota	14.3%	8.7%	17.5%	23.0%	36.5%
Refused to get too serious about it.	Twin Cities Metro	10.9%	9.0%	28.2%	26.9%	25.0%
	Greater Minnesota	13.5%	4.0%	38.9%	24.6%	19.0%
Didn't let it get to me.	Twin Cities Metro	7.1%	11.6%	28.4%	25.2%	27.7%
	Greater Minnesota	9.4%	12.6%	32.3%	23.6%	22.0%
Tried just no to think about it.	Twin Cities Metro	7.1%	12.8%	36.5%	28.2%	15.4%
	Greater Minnesota	8.6%	11.7%	43.8%	18.8%	17.2%

No items significantly different at $p < 0.05$

Table 58. STATEWIDE--We would like to understand how you dealt with interference from others when you hunted grouse.(Q38)

	% Not at all 1	2	3	4	% To a great extent 5
Stopped grouse hunting	55.2	13.7	16.9	7.2	7.0
Avoided certain areas when you grouse hunted.	8.5	8.8	22.5	38.4	21.8
Changed when you went grouse hunting.	27.1	17.7	20.8	19.6	14.8
Expressed frustration with the person(s) who interfered.	66.2	12.4	13.8	3.7	4.0
Tried to get others to leave or change their behavior.	79.2	12.0	4.2	3.2	1.3
Just avoided any direct confrontation with the other people.	14.7	8.5	15.0	25.9	35.8
Refused to get too serious about it.	12.7	5.6	34.8	25.6	21.2
Didn't let it get to me.	8.5	12.3	31.1	24.3	23.9
Tried just no to think about it.	7.8	12.2	41.3	22.2	16.5

No items significantly different at $p < 0.05$

Table 59. Over the past 5 years, Did you feel that any other recreational users interfered with your ruffed grouse hunting in Minnesota in 2010?(Q39)

	Twin Cities Metro Mean of %	Greater Minnesota Mean of %	Statewide
NO	71.4%	76.6%	74.7%
YES	28.6%	23.5%	25.3%

Not different at $p < 0.05$

Table 60. What kind of other recreational users interfered with your grouse hunting in Minnesota during the past 5 years? (Q40) (Top 6 activities by % reported)

Activity	%
ATV/OHV	61.4
General other hunters	9.0
Grouse/other bird hunters	6.4
Deer hunters	4.7
Campers hikers	4.7
Bear hunters	2.6

Table 61. During the past five years, to what extent did you do the following in response to interference from other recreational users while trying to hunt for ruffed grouse?(Q41)

		Not at all				To a great extent
		1	2	3	4	5
Changed the days of the week I grouse hunt.	Twin Cities Metro	53.0%	11.9%	14.6%	11.9%	8.6%
	Greater Minnesota	35.0%	18.8%	22.2%	14.5%	9.4%
Stopped grouse hunting at some places.	Twin Cities Metro	32.3%	14.2%	14.8%	26.5%	12.3%
	Greater Minnesota	20.5%	15.4%	18.8%	32.5%	12.8%
I am grouse hunting in different places	Twin Cities Metro	25.3%	17.5%	23.4%	23.4%	10.4%
	Greater Minnesota	22.2%	13.7%	24.8%	29.1%	10.3%
Avoid hunting during certain times	Twin Cities Metro	37.1%	15.2%	12.6%	20.5%	14.6%
	Greater Minnesota	40.7%	16.1%	13.6%	19.5%	10.2%
I go grouse hunting less often	Twin Cities Metro	52.3%	21.6%	13.1%	9.8%	3.3%
	Greater Minnesota	59.8%	15.4%	9.4%	12.0%	3.4%
Behavior did not change, but type of experience has	Twin Cities Metro	19.4%	22.6%	30.3%	21.3%	6.5%
	Greater Minnesota	20.7%	26.7%	24.1%	22.4%	6.0%
Behavior did not change, but I am less satisfied*	Twin Cities Metro	23.0%	25.0%	31.6%	16.4%	3.9%
	Greater Minnesota	29.6%	29.6%	13.0%	23.5%	4.3%

* $\chi^2 = 12.81$ $p = 0.012$

Table 62. STATEWIDE-- During the past five years, to what extent did you do the following in response to interference from other recreational users while trying to hunt for ruffed grouse?(Q41)

	% Not at all				% To a great extent
	1	2	3	4	5
Changed the days of the week I grouse hunt.	41.9	16.0	19.3	13.8	9.1
Stopped grouse hunting at some places.	24.9	14.9	17.3	30.1	12.8
I am grouse hunting in different places	23.2	15.3	24.4	26.9	10.1
Avoid hunting during certain times	39.6	15.7	13.1	19.8	11.8
I go grouse hunting less often	56.5	18.0	11.0	10.9	3.6
Behavior did not change, but type of experience has	20.4	25.2	26.6	21.8	6.1
Behavior did not change, but I am less satisfied	26.9	28.0	20.2	20.7	4.3

No items significantly different at $p < 0.05$

Table 63. We are interested in knowing how you feel about ATV or OHV use in the areas you hunt ruffed grouse in Minnesota. (Q42)

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	χ^2
There are too many ATV users in the areas I hunt.	Twin Cities Metro	12.5%	18.7%	32.9%	20.6%	15.2%	12.50 P = 0.014
	Greater Minnesota	15.9%	22.4%	37.2%	15.3%	9.1%	
My ruffed grouse hunts are disrupted by ATV users.	Twin Cities Metro	14.0%	23.2%	23.9%	25.4%	13.5%	17.86 P = 0.001
	Greater Minnesota	17.2%	31.8%	25.8%	17.5%	7.7%	
The ATV users in my area do NOT stay on designated trails.	Twin Cities Metro	12.8%	25.5%	31.3%	16.8%	13.8%	
	Greater Minnesota	13.4%	30.3%	29.2%	19.0%	8.2%	
In general ATV users do not bother me when I am hunting ruffed grouse.	Twin Cities Metro	12.3%	22.5%	16.2%	38.0%	11.0%	15.02 P = 0.005
	Greater Minnesota	9.1%	13.7%	19.4%	41.9%	16.0%	
There really are NOT any problems associated with ATV use in the areas I hunt ruffed grouse	Twin Cities Metro	12.5%	24.8%	18.2%	32.2%	12.3%	13.79 P = 0.008
	Greater Minnesota	7.7%	19.4%	24.9%	30.9%	17.1%	
Using an ATV is an enjoyable way to hunt ruffed grouse.	Twin Cities Metro	29.7%	16.5%	30.0%	15.2%	8.6%	
	Greater Minnesota	21.4%	17.1%	32.0%	18.9%	10.6%	

Only χ^2 significant at $p \leq 0.05$ are reported.

Table 64. STATEWIDE--We are interested in knowing how you feel about ATV or OHV use in the areas you hunt ruffed grouse in Minnesota. (Q42)

	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %
There are too many ATV users in the areas I hunt.	14.8	21.1	35.6	17.2	11.2
My ruffed grouse hunts are disrupted by ATV users.	16.1	28.7	25.2	20.2	9.8
The ATV users in my area do NOT stay on designated trails.	13.2	28.7	29.8	18.1	10.2
In general ATV users do not bother me when I am hunting ruffed grouse.	10.2	16.8	18.2	40.5	14.2
There really are NOT any problems associated with ATV use in the areas I hunt ruffed grouse	9.5	21.5	22.4	31.3	15.4
Using an ATV is an enjoyable way to hunt ruffed grouse.	24.4	16.8	31.2	17.6	10.0

Table 65. Do you ever use an ATV for any recreation?(Q43)

	Twin Cities Metro	Greater Minnesota	Statewide
Not at all	32.4%	17.2%	22.7%
Seldom	22.9%	15.5%	18.2%
Occasionally	28.5%	39.0%	35.2%
Frequently	16.1%	28.2%	23.9%
$\chi^2 = 41.73, p < 0.001$			

Table 66. Overall is your attitude towards ATV use during the ruffed grouse season positive or negative?(Q44)

	Twin Cities Metro	Greater Minnesota	Statewide
Extremely Negative	12.8%	9.3%	10.5%
Quite Negative	16.3%	10.8%	12.8%
Slightly Negative	19.0%	15.0%	16.4%
Neutral	26.4%	22.9%	24.2%
Slightly Positive	7.2%	13.3%	11.1%
Quite Positive	11.9%	15.9%	14.4%
Extremely Positive	6.4%	12.7%	10.5%
$\chi^2 = 17.08, p < 0.001$			

F. Use of grouse hunting information and resources

Most respondents reported that they do not use at all or seldom use any of the maps identified in the survey questionnaire (Table 67). More than 30% of Metro and Greater Minnesota grouse hunters reported that maps of areas to hunt ruffed grouse were important to them (Table 69). Less than 20% disagreed with the statement that “there are enough sources of maps for ruffed grouse hunting”.

About one-third of respondents in both strata reported that spring drumming counts were important to them, but less than 10% reporting using the drumming counts to make decisions about hunting (Table 69). About half of Metro and one-third of Greater Minnesota respondents indicated they are interested in retrieving spring drumming counts from the Web in the future (Table 69).

About one-quarter of respondents frequently or always rely on the DNR Hunter Handbook and the *Outdoor News* as sources of information about grouse hunting. About one-third of the Metro respondents also at least frequently get information from the DNR website and the “Web” in general, while only about 15% of Greater Minnesota respondents use those sources at least frequently (Table 71).

Table 67. To what extent do you use the maps listed below when you grouse hunt in Minnesota?(Q45)

		Not at all	Seldom	Occasionally	Frequently	Always	χ^2
County plat maps	Twin Cities Metro	43.8%	10.9%	24.9%	15.0%	5.3%	19.79 P < 0.001
	Greater Minnesota	41.4%	15.7%	24.1%	14.8%	4.1%	
State Forest Maps	Twin Cities Metro	36.1%	12.0%	31.1%	15.3%	5.5%	
	Greater Minnesota	42.6%	17.2%	22.8%	16.3%	1.2%	
National Forest Maps	Twin Cities Metro	42.9%	16.0%	23.5%	12.9%	4.7%	
	Greater Minnesota	50.6%	18.3%	18.0%	12.1%	0.9%	
DNR/WM Hunter Walking Trail (HWT) maps	Twin Cities Metro	50.9%	14.7%	19.7%	11.6%	3.0%	
	Greater Minnesota	55.6%	18.2%	16.8%	7.9%	1.5%	
PRIM Maps	Twin Cities Metro	69.2%	11.7%	9.9%	7.8%	1.3%	
	Greater Minnesota	73.3%	14.3%	8.2%	3.6%	0.6%	
Other	Twin Cities Metro	41.4%	9.2%	8.0%	27.6%	13.8%	
	Greater Minnesota	55.8%	2.6%	9.1%	16.9%	15.6%	

Only χ^2 significant at $p \leq 0.05$ are reported.

Table 68. STATEWIDE--To what extent do you use the maps listed below when you grouse hunt in Minnesota?(Q45)

	Not at all %	Seldom %	Occasionally %	Frequently %	Always %
County plat maps	42.3	14.0	24.3	14.8	4.6
State Forest Maps	40.4	15.2	25.9	15.8	2.6
National Forest Maps	47.9	17.5	20.0	12.4	2.2
DNR/WM Hunter Walking Trail (HWT) maps	54.0	17.0	17.8	9.2	2.0
PRIM Maps	71.7	13.4	8.8	5.1	0.9
Other	50.8	4.5	8.6	21.0	15.0

Table 69. We are interested in knowing if you use maps and spring drumming counts when making decisions about grouse hunting.(Q46)

		Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	χ^2
Knowing spring drumming counts is important to me.	Twin Cities Metro	16.0%	19.5%	31.9%	29.1%	3.5%	
	Greater Minnesota	13.9%	19.9%	36.4%	26.9%	2.9%	
I use spring drumming counts when making a decision about whether to hunt ruffed grouse in the fall.	Twin Cities Metro	39.1%	33.9%	21.9%	4.9%	.2%	
	Greater Minnesota	32.9%	33.4%	26.3%	6.6%	.9%	
I use spring drumming counts to decide what area of the state to hunt in the fall.	Twin Cities Metro	33.7%	33.5%	22.9%	9.4%	.5%	
	Greater Minnesota	31.8%	33.2%	29.2%	5.2%	.6%	
I get spring drumming counts from the Web.	Twin Cities Metro	34.0%	22.7%	19.0%	19.2%	5.2%	26.85
	Greater Minnesota	37.4%	28.6%	23.7%	8.9%	1.4%	P < 0.001
In the future I am interested in getting spring drumming counts from the Web.	Twin Cities Metro	18.7%	9.6%	18.9%	40.8%	12.0%	27.36
	Greater Minnesota	21.4%	13.9%	30.1%	26.0%	8.7%	P < 0.001
I know where to find maps for ruffed grouse hunting.	Twin Cities Metro	13.4%	23.6%	19.9%	34.5%	8.7%	14.62
	Greater Minnesota	20.1%	20.9%	24.7%	30.2%	4.1%	P = 0.006
Maps of areas to hunt ruffed grouse are important to me.	Twin Cities Metro	8.9%	13.9%	32.0%	33.0%	12.2%	14.45
	Greater Minnesota	15.8%	14.0%	35.8%	26.9%	7.4%	P = 0.006
I believe there are enough sources of maps for ruffed grouse hunting.	Twin Cities Metro	5.4%	16.3%	47.0%	24.8%	6.4%	
	Greater Minnesota	9.2%	13.3%	47.0%	23.9%	6.6%	
I would use GPS maps if they were available for download.	Twin Cities Metro	14.1%	16.8%	26.7%	28.9%	13.6%	
	Greater Minnesota	14.9%	19.5%	27.0%	26.1%	12.4%	

Only χ^2 significant at $p \leq 0.05$ are reported.

Table 70. STATEWIDE--We are interested in knowing if you use maps and spring drumming counts when making decisions about grouse hunting.(Q46)

	Strongly Disagree %	Disagree %	Neither %	Agree %	Strongly Agree %
Knowing spring drumming counts is important to me.	14.7	19.8	34.7	27.7	3.2
I use spring drumming counts when making a decision about whether to hunt ruffed grouse in the fall.	35.1	33.6	24.8	5.9	0.6
I use spring drumming counts to decide what area of the state to hunt in the fall.	32.4	33.4	27.1	6.6	0.6
I get spring drumming counts from the Web.	36.3	26.5	22.0	12.5	2.7
In the future I am interested in getting spring drumming counts from the Web.	20.4	12.4	26.0	31.3	9.9
I know where to find maps for ruffed grouse hunting.	17.7	21.9	22.9	31.8	5.7
Maps of areas to hunt ruffed grouse are important to me.	13.3	14.0	34.4	29.1	9.2
I believe there are enough sources of maps for ruffed grouse hunting.	7.9	14.3	47.1	24.1	6.6
I would use GPS maps if they were available for download.	14.7	18.5	26.9	27.1	12.7

Table 71. What sources do you typically rely upon to get information about ruffed grouse hunting in Minnesota?(Q47)

		Not at all	Seldom	Occasionally	Frequently	Always	χ^2
Newspapers in general	Twin Cities Metro	29.4%	16.5%	36.0%	15.3%	2.7%	
	Greater Minnesota	34.3%	18.7%	33.7%	11.8%	1.4%	
Outdoor magazines in general	Twin Cities Metro	29.9%	18.8%	31.6%	18.3%	1.5%	
	Greater Minnesota	30.5%	21.2%	30.2%	16.6%	1.5%	
Television in general	Twin Cities Metro	47.0%	30.7%	19.1%	3.0%	.2%	
	Greater Minnesota	42.6%	32.9%	19.5%	3.8%	1.2%	
Outdoor shows on TV	Twin Cities Metro	44.0%	26.2%	24.0%	5.7%	.2%	
	Greater Minnesota	38.7%	31.8%	21.4%	6.4%	1.7%	
Radio in general	Twin Cities Metro	50.5%	28.1%	15.4%	5.7%	.2%	
	Greater Minnesota	50.1%	29.2%	16.6%	4.1%	--	
Outdoor shows on the radio	Twin Cities Metro	48.4%	24.8%	16.6%	9.4%	.7%	16.29
	Greater Minnesota	52.0%	28.5%	16.6%	2.9%	--	P = 0.003
The Web or internet	Twin Cities Metro	28.9%	15.7%	25.7%	23.4%	6.2%	30.57
	Greater Minnesota	39.0%	24.1%	21.8%	12.2%	2.9%	P < 0.001
Minneapolis Star-Tribune	Twin Cities Metro	38.5%	17.6%	26.1%	14.4%	3.5%	52.98
	Greater Minnesota	60.0%	20.3%	13.5%	5.3%	.9%	P < 0.001
St. Paul Pioneer Press	Twin Cities Metro	55.7%	20.3%	17.6%	5.0%	1.5%	46.35
	Greater Minnesota	71.7%	22.2%	5.2%	.6%	.3%	P < 0.001
Newspapers outside the Twin Cities	Twin Cities Metro	63.1%	20.9%	12.2%	3.2%	.5%	32.06
	Greater Minnesota	46.4%	21.4%	23.2%	8.7%	.3%	P < 0.001
Minnesota DNR website	Twin Cities Metro	25.7%	17.1%	25.2%	24.8%	7.2%	29.52
	Greater Minnesota	37.2%	20.3%	26.5%	13.7%	2.3%	P = 0.001
Outdoor sporting groups	Twin Cities Metro	54.1%	23.7%	15.0%	6.5%	.7%	
	Greater Minnesota	54.4%	22.4%	17.4%	5.5%	.3%	
The Outdoor News	Twin Cities Metro	30.8%	16.6%	24.8%	20.1%	7.7%	
	Greater Minnesota	33.6%	15.9%	22.9%	19.1%	8.4%	
DNR Hunter Handbook	Twin Cities Metro	24.7%	17.5%	28.9%	18.7%	10.2%	
	Greater Minnesota	30.8%	17.6%	25.5%	17.3%	8.8%	
MnDNR Conservation Volunteer	Twin Cities Metro	50.4%	21.3%	17.4%	7.2%	3.7%	
	Greater Minnesota	45.9%	23.5%	16.3%	11.6%	2.6%	

Only χ^2 significant at $p \leq 0.05$ are reported.

Table 72. STATEWIDE--What sources do you typically rely upon to get information about ruffed grouse hunting in Minnesota?(Q47)

	Not at all %	Seldom %	Occasionally %	Frequently %	Always %
Newspapers in general	32.6	17.9	34.6	13.0	1.9
Outdoor magazines in general	30.4	20.4	30.7	17.1	1.4
Television in general	44.2	32.2	19.4	3.4	0.8
Outdoor shows on TV	40.7	29.8	22.3	6.0	1.2
Radio in general	50.2	28.7	16.3	4.7	0.1
Outdoor shows on the radio	50.8	27.1	16.6	5.2	0.3
The Web or internet	35.4	21.1	23.2	16.2	4.1
Minneapolis Star-Tribune	52.2	19.3	18.1	8.7	1.8
St. Paul Pioneer Press	66.0	21.4	9.8	2.1	0.7
Newspapers outside the Twin Cities	52.4	21.2	19.3	6.9	0.3
Minnesota DNR website	33.0	19.3	26.0	17.7	4.1
Outdoor sporting groups	54.3	22.8	16.6	5.9	0.4
The Outdoor News	32.7	16.2	23.6	19.4	8.1
DNR Hunter Handbook	28.6	17.6	26.7	17.8	9.4
MnDNR Conservation Volunteer	47.5	22.7	16.7	10.1	3.0

G. Perceptions of grouse limits and DNR grouse Management

About 3 out of 4 respondents thought the daily limit was about right, with only 1% believing the limit was too low (Table 73). About 1 in 4 believed the possession limit was too high, while less than 10% believed it to be too low (Table 74). More than half thought the possession limit was about right. Less than 15% in either stratum agreed that the possession limit should be increased (Table 75).

More than half of the respondents believed the DNR is doing a good job of managing grouse and that the managers and biologists are well-trained (Table 75). A slight majority also believed that the DNR was trustworthy, fair and would make good decisions. A slightly smaller percentage thought the DNR would listen to grouse hunters' concerns. Overall, slightly more than half viewed the DNR favorably, about one-third (30-40%) were undecided about how they perceived the DNR, while 10-15% viewed the DNR less favorably (Table 75).

Table 73. Which one statement best describes how you feel about the daily grouse bag limit of 5 grouse in Minnesota?(Q19)

	Twin Cities Metro	Greater Minnesota	Statewide
The daily limit is too low	1.2%	1.4%	1.5%
The daily limit is about right	72.6%	76.1%	73.2%
The daily limit is too high	15.6%	16.2%	16.4%
No opinion	10.6%	6.3%	9.0%

No items significantly different at $p < 0.05$

Table 74. Which one statement best describes how you feel about the grouse possession limit of 10 grouse in Minnesota?(Q20)

	Twin Cities Metro	Greater Minnesota	Statewide
The possession limit is too low	8.3%	7.4%	8.1%
The possession limit is about right	53.4%	63.6%	59.2%
The possession limit is too high	26.5%	24.0%	25.1%
No opinion	11.8%	4.9%	7.4%

$\chi^2 = 11.68, p = 0.009$

Table 75. Please let us know how you feel about the Minnesota Department of Natural Resources' management of ruffed grouse. (Q48)

		Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	χ^2
The MnDNR does a good job of managing ruffed grouse in Minnesota.	Twin Cities Metro	1.5%	4.7%	34.6%	54.1%	5.2%	13.28 P = 0.01
	Greater Minnesota	5.2%	8.0%	34.7%	47.0%	5.2%	
When deciding about ruffed grouse management in Minnesota, the MnDNR will be open and honest in the thing they do and say	Twin Cities Metro	2.2%	6.2%	36.7%	49.1%	5.5%	
	Greater Minnesota	5.2%	5.5%	36.9%	47.0%	5.5%	
The MnDNR can be trusted to make decisions about ruffed grouse management that are good for the resource.	Twin Cities Metro	2.0%	8.2%	27.2%	54.5%	8.2%	
	Greater Minnesota	4.6%	9.2%	30.4%	50.4%	5.4%	
The MnDNR will make decisions about ruffed grouse management in a way that is fair.	Twin Cities Metro	2.2%	5.7%	30.8%	55.1%	6.2%	
	Greater Minnesota	4.6%	6.0%	30.9%	51.3%	7.2%	
The MnDNR has ruffed grouse managers and biologists who are well-trained for their jobs.	Twin Cities Metro	1.0%	3.2%	38.3%	48.8%	8.7%	
	Greater Minnesota	2.9%	5.5%	39.9%	41.7%	10.1%	
The MnDNR listens to ruffed grouse hunters' concerns.	Twin Cities Metro	2.0%	7.4%	46.9%	39.7%	4.0%	10.70 P = 0.030
	Greater Minnesota	5.5%	9.5%	46.3%	33.0%	5.7%	
The MnDNR should increase the possession limit of 10 ruffed grouse.	Twin Cities Metro	25.4%	38.5%	26.7%	4.9%	4.4%	10.90 P = 0.028
	Greater Minnesota	27.9%	41.0%	17.7%	8.3%	5.1%	

Only χ^2 significant at $p \leq 0.05$ are reported.

Table 76. STATEWIDE--Please let us know how you feel about the Minnesota Department of Natural Resources' management of ruffed grouse. (Q48)

	Strongly Disagree %	Disagree %	Neither %	Agree %	Strongly Agree %
The MnDNR does a good job of managing ruffed grouse in Minnesota.	3.8	6.8	34.7	49.6	5.1
When deciding about ruffed grouse management in Minnesota, the MnDNR will be open and honest in the thing they do and say	4.1	5.7	36.8	47.7	5.5
The MnDNR can be trusted to make decisions about ruffed grouse management that are good for the resource.	3.7	8.9	29.2	51.7	6.4
The MnDNR will make decisions about ruffed grouse management in a way that is fair.	3.8	5.9	30.9	52.5	6.8
The MnDNR has ruffed grouse managers and biologists who are well-trained for their jobs.	2.2	4.6	39.4	44.2	9.6
The MnDNR listens to ruffed grouse hunters' concerns.	4.3	8.8	46.5	35.3	5.1
The MnDNR should increase the possession limit of 10 ruffed grouse.	27.1	40.2	20.8	7.0	4.9

H. Concerns and Experience with Lyme Disease

About 40% of respondents worry about contracting Lyme disease while ruffed grouse hunting or exposing their dog to Lyme disease. However, less than 1 in 10 reported hunting less or changing where they hunt due to worry about Lyme disease (Table 77). About 10% of respondents reported contracting Lyme disease in the past 10 years, while 15% of dog-owning respondents reported that their dog had contracted Lyme disease (Table 79 and Table 81). Most dog-owners reported that they do vaccinate their dogs for Lyme disease (Table 80).

Table 77. Lyme disease has been a concern for several years in Minnesota, and we would like to know what you think about the issue in the context of ruffed grouse hunting. (Q49)

		Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
I worry about contracting Lyme disease when hunting for ruffed grouse in Minnesota.	Twin Cities Metro	13.0%	31.9%	13.5%	33.6%	8.1%
	Greater Minnesota	17.8%	24.6%	15.5%	32.7%	9.5%
I worry about exposing my dog to Lyme disease when hunting grouse. (Leave blank if you do not own a dog).*	Twin Cities Metro	11.4%	23.1%	21.1%	27.8%	16.7%
	Greater Minnesota	18.8%	17.2%	21.5%	30.5%	12.1%
I do not hunt ruffed grouse as much because of my worry about Lyme disease.	Twin Cities Metro	44.7%	42.0%	9.6%	2.9%	.7%
	Greater Minnesota	42.7%	37.3%	14.8%	2.8%	2.3%
I have changed where I hunt ruffed grouse because of my worry about Lyme disease.	Twin Cities Metro	45.1%	41.1%	9.6%	3.4%	.7%
	Greater Minnesota	42.9%	36.6%	14.2%	4.5%	1.7%
Lyme disease is a minor concern to me.	Twin Cities Metro	10.8%	23.5%	13.0%	40.0%	12.7%
	Greater Minnesota	14.1%	25.9%	13.8%	33.4%	12.7%

* Only χ^2 significant at $p \leq 0.05$ are reported, $\chi^2 = 9.80$, $p = 0.044$

Table 78. Lyme disease has been a concern for several years in Minnesota, and we would like to know what you think about the issue in the context of ruffed grouse hunting. (Q49)

	Strongly Disagree %	Disagree %	Neither %	Agree %	Strongly Agree %
I worry about contracting Lyme disease when hunting for ruffed grouse in Minnesota.	16.0	27.2	14.8	33.0	9.0
I worry about exposing my dog to Lyme disease when hunting grouse. (Leave blank if you do not own a dog).	16.1	19.3	21.3	29.4	13.8
I do not hunt ruffed grouse as much because of my worry about Lyme disease.	43.5	38.9	13.0	2.8	1.7
I have changed where I hunt ruffed grouse because of my worry about Lyme disease.	43.8	38.3	12.5	4.1	1.3
Lyme disease is a minor concern to me.	12.9	25.0	13.6	35.8	12.8

Table 79. Did you personally contract Lyme disease in the past 10 years?(Q50)

	Twin Cities Metro	Greater Minnesota	Statewide
No	92.1%	89.9%	90.8%
Yes	7.9%	10.1%	9.2%
χ^2 n.s.			

Table 80. Do you vaccinate your dog(s) for Lyme disease?(Q52)

	Twin Cities Metro	Greater Minnesota	Statewide
No	18.5%	31.8%	25.3%
Yes	81.5%	68.2%	74.7%
$\chi^2 = 7.56$, $p = 0.006$			

Table 81. During the past 10 years did your dog(s) contract Lyme disease?(Q53)

	Twin Cities Metro	Greater Minnesota	Statewide
No	79.9%	86.4%	84.1%
Yes	20.1%	13.6%	15.9%
χ^2 n.s.			

Appendix
Summary of Open-ended Comments

Respondent ID	Comments
1	When I was a young boy, the woods were full of berry patches. These patches held many grouse. When the berries disappeared, so did the grouse.
2	Would like to see adult training classes for upland bird hunting. If you've never hunted how are you going to learn, short of just going into the woods and shooting?
5	Thank you for taking time and devoting resources to learning about the hunting patterns and interests of MN grouse hunters. I believe after careful analysis of these surveys you will be better able to manage the MN grouse season and grouse population.
16	Love hunting in general, but due to arthritis my length of hunting time and walking trips have been reduced the last ten years.
17	I like the picture on the front!
21	We need stronger laws against people who trespass on private property.
22	Please do not up the possession limit.
30	Call me if you need me. Did you know they eat mushrooms in early season (September 15-30 th only!)
53	Just like the opportunity to hunt with my son on the abandoned family farm!
59	The MN DNR does a great job with youth hunts for deer, turkey, pheasants, and waterfowl. This (grouse) might be an area untapped for youth hunts.
61	Main concerns—1) No land—It is hard to find land that isn't posted; areas that are open are busy. 2) Season too short—I don't count overlap with deer season because it is not safe to grouse hunt during deer season.
67	Would love to see more young people in the woods!!
70	I would like to start using DNR maps. HWT—where do I get this information?
75	Please do everything you can to improve habitat and game numbers. Thanks.
86	It sounds that finding public land is hard to find. The southwest counties do a good job of promoting hunting. Some of the counties won't help a hunter find public land.
87	Being unemployed has kept me from going hunting (any kind) as much as I'm accustomed to.
90	In my opinion, the MN DNR is loaded with over staffed Dead wood. (Get rid of them.) All they care about is trails, trails, and more trails. The hunting and fishing regulations, game laws are complex. The DNR tries to ever manage. Kids are not interested. There is little public land that is worth hunting. Overcrowded. It is much better now to make two or three good trips to other states to hunt. Most experienced hunters are very dissatisfied with the MN DNR. Just keep raising those license fees and other fees and keep adding more regulations each year. There will not be much interest in hunting in MN. It used to be much better years back.
91	We managed our land for grouse and deer. We need to start making more clear cuts. When I and my children were younger we hunted grouse almost every weekend all over south and central MN.
101	It sounds as if you are concerned about the grouse population in Minnesota. I know that some of the areas I hunt are showing signs of depletion. The area I mostly hunt seems to be increasing greatly compared to the past ten years.
107	Clear-cutting in certain forest areas has ruined some areas for hunting though I know it needs to be done. Is it possible to stock wooded areas with grouse, similar to stocking a lake with walleye?
110	I would like to see the possession limit lowered from ten birds. I also feel you should keep the season as is in up years of the cycle but shorten it a little in the down years,
125	I own property in Sawyer county Wisconsin since 1991 that I manage for deer and grouse. Over time I have devoted an increasing percentage of my total grouse hunting time and effort on my property and surrounding public land in Wisconsin.

Respondent ID	Comments
126	To better preserve the ruffed grouse hunting experience for future generations, more quality habitat needs to be established, along with lower the limits as today's lifestyle and less reliability of needing "game" food to survive lower limit would ensure better hunting for all. Also need to limit ATV use for grouse hunting to designated lands or areas!!
127	This was a good study for grouse!! Thanks.
128	Outlaw grouse hunt with ATVs unless handicapped.
129	I typically don't make special trips for the purpose of grouse hunting. I usually hunt grouse while scouting for deer hunting and during the deer hunting season. I'll hunt grouse during the slower parts of the day or I'll hunt grouse with the dual intention of pushing deer for other people in my party if nothing is moving.
137	Sorry about not getting this back right away, I was out of town.
141	As a hunter, I want to thank you for collecting data and hearing our voice.
154	Stop restricting ATV use. You are trying to make us criminals to even own one.
156	I look forward to grouse hunting every year. It is one of the only reasons I still live in this state.
159	I saw a lot more birds in 2009!
164	The last two years I have had a few run-ins with wolves while grouse hunting...while I accept that they are a part of nature, it has affected how often and also when and where I go now...I definitely want wolves delisted and at least should be able to defend myself and my dog if need be... there are more wolves in MN than what is reported...it is a problem.
165	The dramatic increase in timber wolves has decreased my grouse hunting satisfaction. Twenty years ago I rarely even saw wolf signs while hunting; now I fear for my dog as I have encountered wolves on trails and heard them frequently. This has been my experience in both Cook and Aitkin Counties, but also further south.
166	I am not much of a grouse hunter actually. I mostly hunt on my own property in Cass County, however I also hunt on fall fishing trips in St. Louis Co.
172	A typical grouse hunt is in between other activities such as duck hunting and getting ready for deer hunting near our cabin in Cass County.
180	The season last year was a lot like a season I had experienced in 1988-1989 and 1990. Incredible. Always running into birds whenever I was out. Walking or hunting. I do not take limits mainly because I do not want to have to clean and transport them. Just a few to have as a plus to our main meal is enough for me. I like to see the birds around and let the younger hunter experience what I already have.
185	I just love to go grouse hunting, up years or down, it's great to be in the woods.
189	I hunt at my cabin, so I don't take day trips to specifically hunt grouse. The cabin is in Itasca County. I don't mind smaller bag limits because I would rather keep the populations high.
191	The only year I didn't hunt was when my daughter was born we saved our money and got her permanent licenses for her third birthday. I feel, as does my wife, that it was money well spent. I have since gotten my permanent ones too. I also learned about geo-caching from folks in the woods. Now my whole family does it! It is great. We do it a lot at state parks. Great fun.
196	I have a son who is totally dependent for his needs. I like to take him grouse hunting and he enjoys going. He is non-verbal and in a wheelchair. We road hunt. I do not like the law which changed which says you must be 20 yards away from your vehicle with vehicle turned off when hunting.
200	Appreciate your efforts on the survey; it's good to know that the U of M is concerned about pleasing us, the grouse hunters. I am a youth hunter (15) and would really like to continue good grouse hunting in the future for MN, I think with a survey like this it shows appreciation for the future of grouse hunting in MN.

Respondent ID	Comments
203	<p>There are some areas I no longer hunt for the first half of more of the season because of the large amounts of deer ticks.</p> <p>I am very frustrated with the DNR's acceptance of ATV use in public owned forests. I live in Minneapolis and enjoy getting away from the noise and the traffic. It has become very common when using the trail systems in areas I hunt to walk for two or three hours to get back to one of my favorite spots only to have them ruined just before I reach them by large groups of ATV riders traveling fast, looking for mud puddles or anything else they can destroy. I understand that some of these machines are made in this state and this has helped ATV interest groups preserve the distinction of our forests by their machines. I just wish the DNR would be more stringent with their protection of our once quiet forests.</p>
211	To me, the largest issues of concern that impact the amount of time I grouse hunt are two-fold: 1) overcrowding of public hunting lands and 2) overuse and misuse of ATVs for hunting (which I see as an enforcement issue as well, given that restrictions are often ignored). I feel that hunting areas should either be open to all vehicles (ATVs and cars/SUVs) or no vehicles—too many trails essentially become ATV only.
215	If you want to improve the hunting experience you must change the way hunters use ATVs to hunt grouse. It is really simple if our politicians will listen to the hunters.
216	The hardest issue is returning to previous good hunting areas to find it is all clear cut...no grouse there.
217	Get the loggers logging, we need more fresh habitat! I think you are doing a good job. May your weekends be dry and get out when you can.
221	I think we still need to clear-cut some areas up north.
222	In reference to question #42: Prior to owning my own land, I hunted state and county land. I witnessed ATVs driving around gates where motorized vehicles are not allowed. I also saw people shooting birds from ATVs. I believe hunting from, or with, an ATV should be reserved for disabled people only.
227	I don't mind ATV users for hunting grouse but the trail riders for fun are getting to be more and more. Need to find different areas/trails for them to spread out. Thanks.
232	Land management considerations: 1) managing habitat—ie: more logging allows for fresh forest habitat 2) Restrict ATV usage.
233	More clover planted on hiking trails or adjacent areas, and proper aspen, pine mix.
239	I hope this will lead to higher grouse numbers. I enjoy watching my dog work and point birds. It's more about the dogs work than the shooting for me.
245	A great percentage of people pursuing ruffed grouse now use ATVs. I do not see many walking hunters outside of our group. The ATV users I see don't have concern for walking ruffed grouse hunters. Most ATVs often drive past us when walking a trail with no regard. Also I see ATV users damaging the forest and grasslands. In my opinion ATV users are not really grouse hunting; they're just out there grouse shooting.
253	Keep ATVs off trails.
254	As a novice grouse hunter much of this survey is irrelevant. Could be condensed and seems redundant. This may deter novices from participating.
264	When the numbers improve in the NE part of Minnesota I will take an entire week off of work to hunt grouse (also fish, set-up stands). This would push me to 12-16 days a year from 5-8 days now. I dream of the late 80's boom!!!
270	Have hunted Blandins land south of Grand Rapids MN and hope they continue to let people hunt on their land.
272	I would like more hiking/walking only areas and areas with small patches of tree harvests.
277	ATV's, skunks, and raccoons have done most of the damage to grouse in the areas I hunt.
278	My answers to question #48 are hard to define. Can the DNR manage the cycle of the grouse population, is it something that can be controlled?

Respondent ID	Comments
288	Hopefully the DNR will take the information gathered and make the right decisions for grouse management. Thank you for taking the time to do this.
290	My concern is why is the grouse population so low in the area I hunt in northern MN (Togo, MN). In the 70's there were more birds. Is it wolves, fox, or what? Habitat is good...many new stands of poplar.
293	I used to grouse hunt much more in the 90's. The grouse hunting wasn't great in the late 90's and 2000's so we started pheasant hunting in North Dakota more often instead of going grouse hunting. We still grouse hunt frequently but more so just casually. Good luck with the survey.
306	There seems to be a big influx of spruces in the last five years. Why?
312	I have three sons age 28, 25, 23 who hunt with me every year.
316	They (children) have hunted with me in previous years. High school football and hockey take up a lot of their and my time.
320	I would hunt a lot more if I had more free-time. Usually I tack grouse hunting onto activities that I would be in the area for anyway—not dedicated grouse hunting trips per se.
324	I hunt mostly for the challenge, fresh air, sport etc.
326	I own 160 acres in Aitkin County and love to go up there. It is my father's homestead. We have a hunting "abode" to stay in. I hunt with my two sons and relatives/friends. I may not be the best respondent for a survey like this since I just like to go north to my property. The fact that I can hunt there is a bonus! Thanks.
328	I hunt for pure pleasure—enjoying quiet walks in the fall woods. We enjoy eating the few grouse bagged. ATV users are not popular with me. They tear up the forest vegetation and disrupt the quietness.
331	To me an exceptional grouse hunting experience is when I hear or see several grouse flush during a day's hunt. Not as important if I bag one/many but simply knowing they are out there is what I thrive off of. Thanks for performing the study!!
332	The MN DNR listens to no one. They have the meetings to only confirm their ideas. The DNR has far too many C.O's that act like gods, to them everyone is guilty of something, and they must find it.
335	Thanks.
339	1) Review questions for errors. 2) Scale of 1 to 10 might give a better statistical data "It appears this conclusions."
343	Overall, I enjoy the hunting experience. I accept the cycle of the grouse populations from year to year. The cost of fuel is a concern, probably limiting the number of trips in the future.
352	It would be nice to see the MN DNR dramatically increase fines for poaching, illegal ATV use, etc. This would help to deter (hopefully) irresponsible, destructive behaviors that reduce the quality and experience for us law-abiding hunters. It would also help to generate more revenue for this under-funded state entity.
362	My goal as a father of four kids is to teach them to enjoy the outdoors in MN in a responsible and memorable manner. We very much enjoy our time in the woods as a family.
368	I hunt grouse because I enjoy the outdoors. I am not very concerned about how many birds I take; I enjoy the challenge and follow the regulations. When I see other hunters leaving the trail I am about to walk I may be a little bummed out but I also enjoy the encounter and soon realize that it doesn't seem to affect the amount of birds I see. ATV riders can frustrate me a little, but again seems to have little affect on my hunt. I think we all have the right to be there as long as we respect each other and the habitat of our beloved grouse.
369	Go to college in Iowa...can only go hunting over break...would like season to be extended towards mid-January.

Respondent ID	Comments
372	I have noticed severe soil erosion in the state forest last season. I believe due to ATV or trail bikes. The grouse I bagged in the last few years seem smaller in size.
379	While I dislike ATVs in the grouse woods I understand they are another recreational user of the outdoors. A lot of politics around this one and I don't claim to have the answer but would love to see options discussed and tested.
383	I believe that army worms are a factor in the ruffed grouse cycle. When the trees are stripped of leaves two years in a row, the tree buds become toxic and kill the birds when they feed on them.
388	I go camping where I deer hunt. While scouting for deer I carry a shotgun and enjoy flushing grouse. Fifty percent of my "walking in the woods" is grouse hunting. I love it but don't go to specifically hunt grouse.
390	I really enjoy my grouse hunting and while there are some ATV users that are responsible and courteous there are many that aren't. When they see a car at the start of a trail and decide to race down it anyway, it is very frustrating. Thanks.
393	I believe it is important to have state land not accessible to ATVs. Also, there needs to be greater enforcement of ATV infractions.
397	Put more time and money in grouse and a lot less into waterfowl. We have a million geese now and hardly anyone wants to eat one! (Here they are called "flying carp!")
406	<u>None</u> hunters riding ATVs on trails where I am trying to hunt. They have no regard for hunters if they do not hunt.
409	Mature forests provide little in food and shelter for grouse. These are dead areas. Logging needs to be done in Kittson County desperately. Small unconnected pieces of hunting land discourage grouse populations, that's also a problem. The best hunting is on my own land because I do it without thought of cost, etc. I have the best hunting land in Kittson County. In Percy Township. Predators are the biggest problem. Goshawks #1, owls #2. The hawks eat just the head and leave the rest as waste. Predators steal game from private landowners. I shot them on site... my land, my game. Period.
414	The wife did this survey; otherwise he would not have done it. This is way too long of a survey.
426	If the state does not do something about the coyote population we will not have anything to hunt...deer, turkey, or grouse. Wake-up or lose all of us.
427	Nothing has lowered the number of days I go grouse hunting more than the number of deer ticks.
432	Have been unhappy about logging practices on bided Cass County tracts. Need to leave more strips for seeding and diversity. Cuts should be long and narrow not huge barren areas. 5 year old trees should not just be flattened. Too much poplar regrowth—a disease will denude the forest.
453	I think you need to move the grouse starting date to the first Saturday in October. Way too many conflicts with bear hunters.
456	Have heard a lot of drumming during my outdoor excursions in the last two weeks.
462	There seems to be less good habitat, also some walking trails have been opened for four-wheels and vehicles. Forests need to be managed for grouse, deer, and woodcock—not just clear cut.
473	Last year (2010) was the first time in over thirty years that I went grouse hunting. Some of my responses are because of that, other responses are because I won 140 acres that I hunted and I enjoy just walking in my woods. I am more concerned with other hunters trespassing than I am concerned with how many grouse I flush or shoot.
476	I used to hunt grouse in SE MN but the numbers are so low that I haven't hunted them here in over fifteen years. Now I only hunt them in the Chippewa National Forest.

Respondent ID	Comments
480	Get rid of turkeys north of Highway 10.
483	Will "Ruffed Grouse Society" and "Woodcock Minnesota" have access to the results of this study? Good study—Thank you.
485	I believe it doesn't matter how many that is left after the winter, it's when the eggs hatch. If the chicks survive the first week the numbers are up in the fall. I live in northern MN and make my living as a fulltime fishing guide and trapper. I am outdoors 365 days a year and my good friend is a grouse guide.
486	The daily bag limit is too high. I have spoken to people that have cabins in good grouse areas that shoot 50-60 grouse out of one are and wonder why the following year there are so few flushes. I believe the DNR underestimates the effect of hunter harvest on the overall grouse population. Like the deer population, the DNR can do a much better job at maintaining good, stable population levels.
488	The biggest event in the last 10 years affecting my grouse hunting was the leasing/sale of Potlatch forest lands. I lost 60-70% of areas close to my house that I used for hunting and dog training.
498	Grouse hunting is a great sport. I like the rush when they startle the crap out of you when they take off by your feet.
499	DNR has trained biologists who are capable; however, DNR is too political, bureaucratic, and limited on funds to be of help in helping the grouse population. I have worked with the DNR before on a project (marine) which required community involvement. Their own people are negative, hard to work with, and running scared. They do not make good decisions because they are handcuffed.
500	Grouse hunting has become an oddity and not a normal thing. People are changing, there needs to be more laws enacted to open the road right-of-ways, money for land owners to open lands, and users like mining, paper companies etc. received land for pennies on the dollar should be held to keeping some lands open to the public. I have never seen a grouse on a ruffed grouse management trail, and usually when the DNR says numbers are up they are down, and when they say they are down you are in for the best hunting you have ever had.
501	In northern Minnesota, DNR should have smaller cuts (logging) to promote more ages of timber/grouse habitat. DNR has done a good job working with commercial industrial forest companies to keep their land open to public hunting. This must continue!!
503	Thanks.
507	Strong concerns when afield: 1) Hunters with dogs overstepping bounds when others are present, 2) ATV users not staying on trails, and 3). I have witnessed shooting at everything, such as common birds. A very bad practice.
508	1) Dog did not contract Lyme disease but did get anaplasmosis. 2) Not against ATVs for hunting but the overuse of ATVs for hunting.
510	Woods are being actively managed for (mostly pine) logging, with less of an emphasis on openings and aspen stands—to the detriment of the grouse population. I would like to see more focused management for grouse on state and county land.
512	I don't think the DNR as a whole listens to hunters until it's too late, especially the deer.
515	Grouse hunting is a lot of fun with a good dog (Pointer).
518	The majority of my hunting experience for grouse has been on private land in Central MN.
519	We need more forest management and logging to provide more habitat. The MN legislature needs to stop cowering to environmental extremists (Sierra Club, etc.) as well as anti-hunting groups (PETA, Humane Society)
521	This seemed to be a bit on the general information side, but am glad to give you my information.

Respondent	Comments
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ID	
531	Ruffed grouse are amazing birds and they provide a thrilling experience. I am concerned about the declining number of young people entering the sport. Hard to compete with I-pods and x-boxes.
536	I have two sons left, youngest is deceased, we have all enjoyed the sport of grouse hunting. We hope to continue to enjoy it with our children and grandchildren! Thank you.
537	I got half of the grouse last year with my recurve bow.
543	I think the trend towards “non-motorized” hunting is a good one. The exception would only be for disabled hunters. Many people in this country need “forced” exercise and the many hunter/walking trails are a good way to do it. Keep up the good work!
549	We own a cabin in Hubbard County. Grouse hunting certainly is an activity we enjoy!
551	In regards to ATV/OHV use for grouse hunting, I have no problem with disabled hunters taking advantage of their use. It is great the vehicles are available for hunting situations like this.
557	Please—get rid of four-wheelers—now. Get those lazy bastards to walk. It’s just not right. I walk five miles, they travel forty miles. How fun to ground swat a bird. Ban four-wheelers!!!!
558	Keep in touch!
559	In the 50’s grouse numbers were very high in Pine County. In the years from 1960 to 1980’s I did very little grouse hunting because of work and family. In the late 80’s until now I see a major decline in grouse in Pine County. In counties near Itasca I have seen a noticeable decline from the late 90’s and early 2000’s.
569	In the last fifteen years I’ve hunted grouse in the Superior National Forest and also did well. I also hunt trophy deer with my sons and by hunting them we get to know where a lot of grouse are. We hunt in an area where ATVs are allowed. In my camper, I stay and hunt grouse and deer the whole month of November.
570	I believe that if numbers don’t go up and predators aren’t kept in check then grouse, deer, and whatever will not sell anymore licenses. And then the DNR will really be in trouble!
576	Would very much like to have a web site sent to me to view the results of the survey if they are made public. Thanks.
579	I believe only handicapped people should be able to hunt on ATVs. We own private land that ATV users trespass and hunt. We have always had people trespass to hunt, but at least they took the same walk we do to get birds.
581	We hunt grouse each fall on our land and adjacent county forest land. We hunt as a family with two dogs. We hunt every year regardless of the grouse population. Just a beautiful time of year to be in the woods with the dogs and family—grouse are a plus—great birds.
583	Thanks. Please send results to me of this work.
584	Leave the bag limit for grouse at 5, no more than that! Make road hunting illegal! More two-man walking trials!
585	Q. Would you grouse hunt with a dog if you had one? Yes, if I had a bigger yard outside the city and wanted to pay to feed it all year.
612	The more turkeys I see, the less grouse I see.
618	I need work. I read and thought over each question as accurate as possible. I believe grouse and whitetail deer populations are down considerably since the 1980’s. I don’t believe the MN DNR had done a good job. And how is it they get brand new trucks every year of so?
620	Southeast Minnesota always has some grouse—last very good years in late 80’s, early 90’s...not uncommon for two of us to limit out 2-3x week.
627	My father was an avid grouse hunter. I was five years old when I started going with him. I was ten when I got my first gun and started hunting for real. My father put a boot in my butt for ground pounding a grouse.

Respondent	Comments
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ID	
632	Hunt to keep the sport going [for my] grand kids...seven of them now...one great grand son. Keep up the good work.
634	I can appreciate ATV users for helping provide longer trails which I like to walk. I just wish they were more courteous to those of us who like to walk. There is nothing worse, from a bad behavior standpoint, than being a mile or more back on a trail only to have a slow riding ATV hunter pass me and continue hunting for himself. Why they can't turn around and go elsewhere is beyond me. Maybe some information on common courtesy and good sportsmanship might be beneficial.
648	We could use more hunter walking trails!
683	Grouse hunting is a wonderful tradition. It is important for us to keep this tradition strong as we move into the future. Thank you for the survey!
689	Too many questions!!
697	Very well done survey. I trust the information gathered will be beneficial for maintaining quality grouse hunting in the state for years to come. Thank you.
703	Do not see value in ATVs to grouse hunting. Seems antithetical to the experience.
732	Wolves are getting bad in Beltrami State Forest. Not uncommon to see wolves running across trails. Two packs of wolves howling back and forth during the day. Never used to hear wolves howling in day time. DNR has no control of wolf populations. It is ruining grouse and deer hunting in state forests.
741	Not sure if this is online—but I would take it more regular if it was. MN is where I grew up from age 10 and I hunt there every year. Grouse has declined since I was a boy, much like the fishing but we still go every October no matter.
746	I try to hunt grouse in places where you can't use ATVs. I hunt in the Rice Lake Wildlife Refuge most of the time because you have less hunters there. I don't agree with nontoxic shot for upland game birds because the shot wounds birds without killing them or knocking them down.
758	Get more wardens that don't hate people.
769	We need more public hunting land!
770	--The number of deer ticks seems to have gone up exponentially. For every hour in the woods, I spend two hours de-ticking the dog. This really detracts from the hunt quality. -- Private firms (Potlatch) should not receive any tax breaks if they lease tracks of land to single people. This has cut way into the land available to hunt.
776	The DNR needs hunters that are biologists and care about hunting. If you don't hunt you have no business being in the DNR. We need to get rid of the anti-hunting and fishing people in the DNR. We need to conserve our forests but we also need to be allowed to use them. If OHVs are problem give them more designated trail systems.
778	Like to see results of survey.
785	I would be interested in the results of your survey.
788	The wolf population in northern Minnesota has become too high. It affects many outdoor activities including grouse hunting
798	Fall is my most favorite time of the year followed by winter, but it is also the busiest time of the year for me. Not enough time in the day to do everything.
799	I am very concerned about ATV road hunting—it should be illegal. Most I know violate the law.
810	Grouse hunting is a great compliment to deer hunting.
811	I do not agree with the National Grouse Hunt in Itasca County every year for fifteen years—once you kill a grouse it is dead forever. Too much pressure in Itasca County.
812	I am attending Itasca community college, graduating with an AA. Then transferring in the spring to a four year. I am a naturalist and a conservative. I am pursuing an environmental science degree post graduation in January. I enjoy being out in the nature (“woods”) more than I focus on my grouse hunting.

Respondent	Comments
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ID	
819	The reason I like to hunt grouse is because they are secretive and unpredictable. Cycles exist, but differ in timing from one township to the next. I have flushed more birds during the “low cycle” than during some “high cycles.”
822	Good job.
827	The false DNR!! Info given to hunters about turkey introduction to grouse coexisting!! I have watched turkeys kill ruffed grouse!! And move them out of areas high in grouse numbers!! Lies of turkeys not effecting grouse from DNR!!
828	I own land and a cabin in Northern Itasca County. My grouse hunting is limited to a 25 mile radius of the cabin. Too many grouse are shot off of 4x4s ATV.
837	I agree that we need the DNR but would like to see the state gov’t decrease in size. Laws when my dad and grandpa were young were less and more birds. My big issue is with that for duck hunting, we need to leave a head or wing on for transporting. When do you buy a chicken in the store with a head on? Laws make this a need so that ducks can be identified. Wish we could get back to “shoot it, eat it”! Thanks!
850	I am fortunate to have private land but want MN DNR to provide ample opportunity for access to public lands for hunting trails and habitat.
852	Send one of these for deer hunting if you want some bad comments from me for the MN DNR.
874	The DNR has yet to achieve equity in management statewide. The DNR also assumes everyone is on the internet when statistically only 51% of U.S. households are. Case in point, procuring burning permits!
878	I wish they would have better programs for habitat in Southeast MN.
882	I have three children over 19 that hunt grouse.
895	My biggest concern is there is getting to be too many horse trails in Cass County (foothills and state forests). Shooting, have to worry about scaring the horses and the riders are just rude!
900	My 24 year-old son hunts with me and does a lot more—young legs. I don’t mind ATV hunters, just please keep them off walking trails!
904	Since Potlatch Paper started leasing land there are a lot less places to hunt.
912	The grouse season should be extended by three weeks because of rifle season for deer hunting. I won’t grouse hunt during deer season. More areas for walking only should be developed. Too many areas have a significant number of ATV/SUV users.
920	I walk private land every day, the grouse are there. Sometimes I see them, sometimes I shoot, and sometimes I get one. It makes no difference. It’s just a pleasure to see the wildlife and what the DNR has helped to save because without management we’d have nothing. Thank you,
927	Thanks for the buck...

Appendix B
Postcard Screening Reply

Please indicate if you hunted for ruffed grouse or woodcock in Minnesota during 2010 (Place an "X" in the appropriate box):

Ruffed Grouse

Woodcock

- YES
- NO

- YES
- NO

Would you be willing to participate in a study about ruffed grouse hunting in Minnesota?

- YES
- NO

ID #:<Inserted field>

Appendix C
Mail Survey Questionnaire

**Ruffed Grouse Hunting in Minnesota
2010**



A cooperative study conducted by the University of Minnesota

For the Minnesota Department of Natural Resources

Your help on this study is greatly appreciated!

Please return your completed questionnaire in the enclosed envelope. The envelope is self-addressed and no postage is required. Thanks!

First, we would like to know about your background and experience as a ruffed grouse hunter.

Q1. In what year did you first hunt ruffed grouse, not necessarily in Minnesota? *If uncertain please estimate.*

_____ YEAR

Q2. In what year did you first hunt ruffed grouse, in Minnesota? *If uncertain please estimate.*

_____ YEAR

Q3. Since the first time you hunted ruffed grouse in Minnesota, how many total years have you gone grouse hunting at least once in Minnesota? *If uncertain please estimate.*

_____ YEARS

Q4. Did you hunt for ruffed grouse in Minnesota during the 2010-2011 season? The 2010-2011 ruffed grouse season in Minnesota was September 18, 2010 through January 2, 2011.

YES

NO

Q5. Think back over the season to the times you went hunting for ruffed grouse and report how many days you hunted ruffed grouse during each month. Please try to report the number of days as accurately as possible without rounding.

September	October	November	December	January
_____ DAYS	_____ DAYS	_____ DAYS	_____ DAYS	_____ DAYS

Q6. In the table below, please list up to 5 counties in Minnesota in which you most often hunted ruffed grouse. To the extent that you can, please report how many days each month you hunted ruffed grouse in each of the counties you list. Write in "0" if you didn't hunt in that county that month. If you hunted more than one county in a single day count that day for each county. If you know the counties but can't estimate days write in "?" for the days. If you "Don't Know" the counties you hunted please check the box provided.

County	Number of Days in September	Number of Days in October	Number of Days in November	Number of Days in December
1) _____	_____ DAYS	_____ DAYS	_____ DAYS	_____ DAYS
2) _____	_____ DAYS	_____ DAYS	_____ DAYS	_____ DAYS
3) _____	_____ DAYS	_____ DAYS	_____ DAYS	_____ DAYS
4) _____	_____ DAYS	_____ DAYS	_____ DAYS	_____ DAYS
5) _____	_____ DAYS	_____ DAYS	_____ DAYS	_____ DAYS

I DO NOT KNOW WHICH COUNTIES I HUNTED

Q7. On a typical day trip hunting grouse in Minnesota in 2010, how far did you travel one-way from home to hunt?

_____ MILES ONEWAY

Q8. What is the maximum distance you would be willing to travel in a day to hunt grouse in Minnesota?

_____ MILES ONEWAY

Q9. Did you take any overnight or multiple day trips to hunt grouse in Minnesota?

NO

YES → How many? _____

Q10. In total about how much did you spend on grouse hunting in Minnesota in 2010? Please try to include all the money you spent for licenses, equipment and supplies, food, travel (including fuel and lodging), and other expenses including shotguns you might have purchased in 2010. (Do not include general expenses for the care and feeding of any dog(s) used for hunting).

\$ _____

Q11. When you hunted ruffed grouse in Minnesota in 2010 how much of your time did you spend hunting in the following areas? (Circle one % for each area).

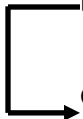
	Percent (%) of Time Spent Grouse Hunting on...										
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
County Owned Land	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
State Wildlife Management Area (WMAs)	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
National Forest	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
National Wildlife Refuge	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
State Forest Lands	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Private Land I Own	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Private Land I Do Not Own	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Commercial/Industrial forest	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Other											
_____	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

Q12. What type of area do you most prefer to hunt for ruffed grouse in Minnesota? (Check only one, please)

- COUNTY OWNED LAND
- STATE WILDLIFE MANAGEMENT AREAS (WMAs)
- NATIONAL WILDLIFE REFUGE
- STATE FOREST LANDS
- NATIONAL FOREST
- PRIVATE LAND I OWN
- PRIVATE LAND I DO NOT OWN
- COMMERCIAL/INDUSTRIAL FOREST
- OTHER → PLEASE DESCRIBE

Q13. Did you hunt for ruffed grouse in a state or province other than Minnesota in 2010? (Check one.)

- NO → skip to Q14 BELOW
- YES (Please answer question Q13A)



Q13A. If yes, list locations and number of days you hunted grouse:

STATE OR PROVINCE	NUMBER OF DAYS HUNTED
_____	_____ days
_____	_____ days
_____	_____ days

Q14. As you probably know, ruffed grouse numbers naturally increase and decrease over about a 10-12 year period. Over the grouse cycle the number of small game licenses sold in Minnesota also increases and decreases. We are interested in knowing why small game license sales vary and what decisions you make about ruffed grouse hunting in Minnesota.

Since 1998, indicate which years you hunted ruffed grouse in Minnesota? (Check all that apply.)

- | | | |
|-------------------------------|-------------------------------|-------------------------------|
| <input type="checkbox"/> 2009 | <input type="checkbox"/> 2005 | <input type="checkbox"/> 2001 |
| <input type="checkbox"/> 2008 | <input type="checkbox"/> 2004 | <input type="checkbox"/> 2000 |
| <input type="checkbox"/> 2007 | <input type="checkbox"/> 2003 | <input type="checkbox"/> 1999 |
| <input type="checkbox"/> 2006 | <input type="checkbox"/> 2002 | <input type="checkbox"/> 1998 |

Q15. We are interested in knowing if changes in ruffed grouse numbers influenced whether or how you hunted for ruffed grouse in Minnesota over the past 10 years. For each statement, please below circle one response.

During the past 10 years...	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
I chose not to hunt ruffed grouse at all during some years with low grouse numbers.	1	2	3	4	5
Unless something else prevented me, I hunted ruffed grouse in Minnesota every year.	1	2	3	4	5
I hunted <u>fewer times</u> during seasons when the grouse numbers were low.	1	2	3	4	5
I did not really change how often I went hunting during the season.	1	2	3	4	5
I hunted <u>more often</u> when grouse numbers were low.	1	2	3	4	5
I focused more on woodcock when grouse numbers were low.	1	2	3	4	5
I changed how I hunted when grouse numbers were low.	1	2	3	4	5
I changed where I hunted in Minnesota when numbers were low.	1	2	3	4	5
I hunted ruffed grouse even when populations were low because of my dog (s).	1	2	3	4	5
I hunted ruffed grouse as often, but did not stay out as long.	1	2	3	4	5
I do NOT track grouse numbers.	1	2	3	4	5

Q16. When ruffed grouse numbers were lower in Minnesota during the past 10 years, did you do another activity in place of ruffed grouse hunting?

- NO → → SKIP TO Q17
- YES



If YES, please list up to 3 activities you did as substitutes for ruffed grouse hunting?

- 1) _____
- 2) _____
- 3) _____

Q17. How likely are you to hunt for ruffed grouse in Minnesota next Fall 2011? (Please check one.)

- DEFINITELY WILL NOT GO
- PROBABLY WILL NOT GO
- UNCERTAIN
- PROBABLY WILL GO
- DEFINITELY WILL GO

Q18. If you do NOT go ruffed grouse hunting in 2011, what are your top 2 reasons for not going?

- 1) _____
- 2) _____

Q19. Which one statement best describes how you feel about the daily grouse bag limit of 5 grouse in Minnesota? (Please check one response).

- The daily limit is too low.
- The daily limit is about right.
- The daily limit is too high.
- No opinion.

Q20. Which one statement best describes how you feel about the grouse possession limit of 10 grouse in Minnesota? (Please check one response).

- The possession limit is too low.
- The possession limit is about right.
- The possession limit is too high.
- No opinion.

Q21. How important is ruffed grouse hunting to you? (Please check one response).

- It is my most important recreational activity
- It is one of my most important recreational activities
- It is no more important than my other recreational activities
- It is less important than my other recreational activities
- It is one of my least important recreational activities

Q22. How would you describe your identification with ruffed grouse hunting? (Please check one response).

- I go grouse hunting, but I do not really consider myself a grouse hunter
- I am in the process of becoming a grouse hunter
- I consider myself a grouse hunter
- I used to be a grouse hunter, but no longer consider myself to be

Q23. How would you describe your skills as a ruffed grouse hunter? (Please check one response).

- Novice
- Intermediate
- Advanced
- Expert

Q24. Please indicate how IMPORTANT you feel each of the following is to satisfaction with your ruffed grouse hunting experience in Minnesota. Please circle one response for each.

	Not at all important	Slightly important	Somewhat important	Very important	Extremely important
A large daily grouse bag limit	1	2	3	4	5
Access to a lot of different hunting areas	1	2	3	4	5
Bagging grouse	1	2	3	4	5
Being on my own	1	2	3	4	5
Hunting with friends	1	2	3	4	5
Developing my skills and abilities	1	2	3	4	5
Hunting with family	1	2	3	4	5
Enjoying nature and the outdoors	1	2	3	4	5
Getting away from crowds of people	1	2	3	4	5
Getting food for me or my family	1	2	3	4	5
Getting information about grouse hunting seasons and conditions from the DNR	1	2	3	4	5
Getting my limit	1	2	3	4	5
Good behavior among other grouse hunters	1	2	3	4	5
Having a long grouse season	1	2	3	4	5
Hunting areas open to the public	1	2	3	4	5
Hunting with a dog	1	2	3	4	5
Reducing tension and stress	1	2	3	4	5
Flushing a lot of grouse	1	2	3	4	5
Sharing my hunting skills and knowledge	1	2	3	4	5
Thinking about personal values	1	2	3	4	5
Using my shotgun	1	2	3	4	5
Training and working with my dog to hunt grouse	1	2	3	4	5
Enjoying strenuous physical exercise	1	2	3	4	5
Testing my endurance	1	2	3	4	5

Q25. During the 2010-11 Minnesota grouse hunting season, how satisfied or dissatisfied were you with the following? (Please circle one response for each.)

	Very dissatisfied	Moderately dissatisfied	Slightly dissatisfied	Neither	Slightly satisfied	Moderately satisfied	Very satisfied
General grouse hunting experience	1	2	3	4	5	6	7
Number of grouse you flushed	1	2	3	4	5	6	7
Quality of the grouse habitat	1	2	3	4	5	6	7
Access to public areas to hunt	1	2	3	4	5	6	7
Bag limit (5) for ruffed grouse	1	2	3	4	5	6	7
Possession limit (10) for ruffed grouse	1	2	3	4	5	6	7
Length of the grouse season	1	2	3	4	5	6	7
Number of other people you saw.	1	2	3	4	5	6	7

Q26. Think about changes related to your grouse hunting over the last 5 years in Minnesota, how much better or worse do you think the following have become?

	Much worse	Somewhat worse	Neither better nor worse	Somewhat better	Much better	Don't know
General grouse hunting experience	1	2	3	4	5	9
Number of grouse you flushed	1	2	3	4	5	9
Quality of the grouse habitat	1	2	3	4	5	9
Access to areas to hunt	1	2	3	4	5	9
Crowding in the areas you hunt	1	2	3	4	5	9

Q27. Think about changes related to your grouse hunting over the last 10 years in Minnesota, how much better or worse do you think the following have become?

	Much worse	Somewhat worse	Neither better nor worse	Somewhat better	Much better	Don't know
General grouse hunting experience	1	2	3	4	5	9
Number of grouse you flushed	1	2	3	4	5	9
Quality of the grouse habitat	1	2	3	4	5	9
Access to areas to hunt	1	2	3	4	5	9
Crowding in the areas you hunt	1	2	3	4	5	9

Q28. In total how many ruffed grouse did you personally bag last year?

_____ GROUSE

Q29. On average, what was the typical number of ruffed grouse you flushed per hour while hunting in Minnesota in 2010? (*Please circle one number or check the "I Don't Know" box*).

Less than 0.5 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 5.0 More than 5.0

I DON'T KNOW

Q30. On average, what is the minimum number of ruffed grouse you need to flush per hour before you would consider going grouse hunting? (*Please circle one number below or check one box*).

Less than 0.5 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 5.0 More than 5.0

IT DOES NOT MATTER TO ME

IT MATTERS BUT I CANNOT PROVIDE A NUMBER

Q31. On average, what is the minimum number of ruffed grouse you need to flush per hour before you would rate grouse hunting as good quality? (*Please circle one number below or check one box*).

Less than 0.5 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 5.0 More than 5.0

IT DOES NOT MATTER TO ME

IT MATTERS BUT I CANNOT PROVIDE A NUMBER

Q32. On average, what is the minimum number of ruffed grouse you need to flush per hour before you would rate grouse hunting as excellent quality? (*Please circle one number below or check one box*).

Less than 0.5 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 5.0 More than 5.0

IT DOES NOT MATTER TO ME

IT MATTERS BUT I CANNOT PROVIDE A NUMBER

Q33. Please let us know how you typically hunt for ruffed grouse in Minnesota. (Please circle one response for each statement below).

	Not at all	Seldom	Occasionally	Frequently	Always
Walk without using a dog to hunt	1	2	3	4	5
Walk and use a dog to hunt	1	2	3	4	5
Stay on established trails	1	2	3	4	5
Walk off trail to hunt	1	2	3	4	5
Hunt by driving along roads	1	2	3	4	5
Use a dog to hunt	1	2	3	4	5
Use an ATV or OHV to hunt along trails	1	2	3	4	5
I hunt ruffed grouse on DNR/WMA Hunter Walking Trails (HWTs)	1	2	3	4	5
Other: Please Describe					
_____	1	2	3	4	5

Q34. What percent of your time grouse hunting would you estimate you spend OFF TRAIL walking? (Circle one below)

0% 5% 10% 20% 30% 40% 50% 60% 70% 80% 90% 95% 100%

Q35. Some hunters have expressed personal concerns with crowding and other conflicts when they grouse hunt. We would like to understand your views about potential crowding and conflicts when you hunt ruffed grouse in Minnesota.

Using the scale presented below circle the one number that you feel best describes your perceptions of crowding from other people not hunting with you while you were ruffed grouse hunting in Minnesota during 2010.

1	2	3	4	5	6	7	8	9
Not at all Crowded		Somewhat Crowded			Moderately Crowded			Extremely Crowded

Q36. Did you feel that any other recreational users interfered with your ruffed grouse hunting in Minnesota in 2010?

NO → → SKIP TO Q39 BELOW

YES

Q37. What kind of other recreational users interfered with your grouse hunting in Minnesota in 2010? Please write in up to three (for example, campers, other bird hunters, hikers, etc.). Then circle one number for each to indicate how much they detracted from your grouse hunting experience.

Please describe who interfered with your grouse hunting?

HOW MUCH DID THEY DETRACT?

	Very Little		Moderately		Very Much
1. _____	1	2	3	4	5
2. _____	1	2	3	4	5
3. _____	1	2	3	4	5

Q38. We would like to understand how you dealt with interference from others when you hunted grouse. To what extent did you do the following when someone else detracted from your hunt? (*Please circle one for each item.*)

	Not at all				To a great Extent
Stopped grouse hunting.	1	2	3	4	5
Avoided certain areas when you grouse hunted.	1	2	3	4	5
Changed when you went grouse hunting.	1	2	3	4	5
Expressed frustration with the person(s) who interfered.	1	2	3	4	5
Tried to get others to leave or change their behavior.	1	2	3	4	5
Just avoided any direct confrontation with the other people.	1	2	3	4	5
Refused to get too serious about it.	1	2	3	4	5
Didn't let it get to me.	1	2	3	4	5
Tried just not to think about it.	1	2	3	4	5

Q39. Over the past 5 years, did you feel that any other recreational users interfered with your ruffed grouse hunting in Minnesota?

NO → → SKIP TO Q42 BELOW

YES

Q40. What kind of other recreational users interfered with your grouse hunting in Minnesota over the past 5 years? Please write in up to three (for example, campers, other bird hunters, hikers, etc.). Then circle one number for each to indicate how much they detracted from your grouse hunting experience.

Please describe who interfered with your grouse hunting?

HOW MUCH DID THEY DETRACT?

	Very Little		Moderately		Very Much
1. _____	1	2	3	4	5
2. _____	1	2	3	4	5
3. _____	1	2	3	4	5

Q41. During the past five years, to what extent did you do the following in response to interference from other recreational users while trying to hunt for ruffed grouse?

	Not at all				To a great extent
I have changed the days of the week I grouse hunt.	1	2	3	4	5
I have stopped grouse hunting at some places because of changes in use.	1	2	3	4	5
I am grouse hunting in different places to avoid changes in use.	1	2	3	4	5
I avoid hunting during certain times of the grouse season.	1	2	3	4	5
I go grouse hunting less often than I used to because of changes in use.	1	2	3	4	5
My behavior did not change, but the type of experience I have while grouse hunting has changed because of changes in use.	1	2	3	4	5
My behavior has not changed in recent years, but I am less satisfied with the experience I have while grouse hunting because of changes in use.	1	2	3	4	5

Q42. We are interested in knowing how you feel about ATV or OHV use in the areas you hunt ruffed grouse in Minnesota.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
There are too many ATV users in the areas I hunt ruffed grouse.	1	2	3	4	5
My ruffed grouse hunts are disrupted by ATV users.	1	2	3	4	5
The ATV users in my area do NOT stay on designated trails.	1	2	3	4	5
In general ATV users do not bother me when I am hunting ruffed grouse.	1	2	3	4	5
There really are NOT any problems associated with ATV use in the areas I hunt ruffed grouse.	1	2	3	4	5
Using an ATV is an enjoyable way to hunt ruffed grouse.	1	2	3	4	5

Q43. Do you ever use an ATV for any recreation? →

NOT AT ALL SELDOM OCCASIONALLY FREQUENTLY

Q44. Overall is your attitude towards ATV use during the ruffed grouse season positive or negative? (Circle one response).

NEGATIVE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | POSITIVE
 extremely quite slightly neutral slightly quite extremely

Q45. To what extent do you use the maps listed below when you grouse hunt in Minnesota? (Please circle one response for each statement below).

	Not at all	Seldom	Occasionally	Frequently	Always
County plat maps	1	2	3	4	5
State Forest maps	1	2	3	4	5
National Forest maps	1	2	3	4	5
DNR/WMA Hunter Walking Trail maps (HWT)	1	2	3	4	5
PRIM Maps	1	2	3	4	5
Other: _____	1	2	3	4	5

Q46. We are interested in knowing if you use maps and spring drumming counts when making decisions about grouse hunting. (Please circle one response for each statement below).

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Knowing spring drumming counts is important to me.	1	2	3	4	5
I use spring drumming counts when making a decision about whether to hunt ruffed grouse in the fall.	1	2	3	4	5
I use spring drumming counts to decide what area of the state to hunt in the fall.	1	2	3	4	5
I get spring drumming counts from the Web.	1	2	3	4	5
In the future I am interested in getting spring drumming counts from the Web.	1	2	3	4	5
I know where to find maps for ruffed grouse hunting.	1	2	3	4	5
Maps of areas to hunt ruffed grouse are important to me.	1	2	3	4	5
I believe there are enough sources of maps for ruffed grouse hunting.	1	2	3	4	5
I would use GPS maps if they were available for download.	1	2	3	4	5

Q47. What sources do you typically rely upon to get information about ruffed grouse hunting in Minnesota? (Please circle the number that best represents your answer in each row).

	Not at all	Seldom	Occasionally	Frequently	Always
Newspapers in general	1	2	3	4	5
Outdoor magazines in general	1	2	3	4	5
Television in general	1	2	3	4	5
Outdoor shows on TV	1	2	3	4	5
Radio in general	1	2	3	4	5
Outdoor shows on radio	1	2	3	4	5
The Web or internet	1	2	3	4	5
Minneapolis Star-Tribune	1	2	3	4	5
St. Paul Pioneer Press	1	2	3	4	5
Newspapers outside the Twin Cities	1	2	3	4	5
Minnesota DNR website	1	2	3	4	5
Outdoor sporting groups	1	2	3	4	5
The Outdoor News	1	2	3	4	5
DNR Hunter Handbook (hunting regs)	1	2	3	4	5
MN DNR Conservation Volunteer	1	2	3	4	5

Q48. Please let us know how you feel about the Minnesota Department of Natural Resources' management of ruffed grouse.

(Please circle one response for each of the following statements)

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
The MnDNR does a good job of managing ruffed grouse in Minnesota.	1	2	3	4	5
When deciding about ruffed grouse management in Minnesota, the MnDNR will be open and honest in the things they do and say.	1	2	3	4	5
The MnDNR can be trusted to make decisions about ruffed grouse management that are good for the resource.	1	2	3	4	5
The MnDNR will make decisions about ruffed grouse management in a way that is fair.	1	2	3	4	5
The MnDNR has ruffed grouse managers and biologists who are well-trained for their jobs.	1	2	3	4	5
The MnDNR listens to ruffed grouse hunters' concerns.	1	2	3	4	5
The MnDNR should increase the possession limit of 10 ruffed grouse.	1	2	3	4	5

Q49. Lyme disease has been a concern for several years in Minnesota, and we would like to know what you think about the issue in the context of ruffed grouse hunting.

(Please circle one response for each item below).

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
I worry about contracting Lyme disease when hunting for ruffed grouse in Minnesota.	1	2	3	4	5
I worry about exposing my dog to Lyme disease when hunting grouse. <u>(Leave blank if you do not own a dog).</u>	1	2	3	4	5
I do not hunt ruffed grouse as much because of my worry about Lyme disease.	1	2	3	4	5
I have changed where I hunt ruffed grouse because of my worry about Lyme disease.	1	2	3	4	5
Lyme disease is a minor concern to me.	1	2	3	4	5

Q50. Did you personally contract Lyme disease in the past 10 years?

- NO
- YES → How many times? _____

Q51. Do you own a dog(s) that you use to hunt ruffed grouse?

- NO → SKIP to Q54
- YES → How many? _____

If YES please describe the breed(s): _____

Q52. Do you vaccinate your dog(s) for Lyme disease?

- NO
- YES

Q53. During the past 10 years did your dog(s) contract Lyme disease?

- NO
- YES → How many times? _____

Q54. What is your gender? MALE FEMALE

Q55. What year were you born? _____ YEAR

Q56. How many years have you lived in Minnesota? _____ YEARS

Q57. What is the highest level of education you have completed? (*Check one.*)

- | | |
|---|---|
| <input type="checkbox"/> Grade school | <input type="checkbox"/> Some college |
| <input type="checkbox"/> Some high school | <input type="checkbox"/> Four-year college (bachelor's) |
| <input type="checkbox"/> High school diploma or GED | <input type="checkbox"/> Some graduate school |
| <input type="checkbox"/> Some vocational or technical school | <input type="checkbox"/> Graduate/Professional degree |
| <input type="checkbox"/> Vocational or technical school (associate's) | |

Q58. What was your total (gross) household income before taxes last year?

\$ _____

Q59. Which of the following best describes your current marital status? (*Check one.*)

- Single
- Divorced or widowed
- Living with a partner
- Married

Q60. Do you have children under the age of 19 living at home?

- NO
- YES → Did they hunt grouse with you in 2010? YES NO

Thank you! Please provide any additional comments you might have in the space below: