MINNESOTANS' ATTITUDES TOWARD WOLVES AND WOLF MANAGEMENT

Final Report

A cooperative study conducted by:

Minnesota Cooperative Fish and Wildlife Research Unit
Minnesota Department of Natural Resources

Minnesotans' Attitudes Toward Wolves And Wolf Management

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Acknowledgements

This study was a cooperative effort supported by the Minnesota Department of Natural Resources, Division of Fish and Wildlife (DNR), and the U.S. Geological Survey through the Minnesota Cooperative Fish and Wildlife Research Unit at the University of Minnesota. We appreciate technical assistance provided by David C. Fulton, USGS Minnesota Cooperative Fish and Wildlife Research Unit. We also thank DNR staff for assistance in working with the electronic licensing system. Finally, we thank the Minnesota residents, deer hunters, and livestock producers who took the time to complete the survey.

Suggested Citation

Schroeder, S. A., Landon, A. C., Cornicelli, L., McInenly, L., & Stark, D. (2020). Minnesotans' attitudes toward wolves and wolf management. University of Minnesota, Minnesota Cooperative Fish and Wildlife Research Unit, Department of Fisheries, Wildlife, and Conservation Biology.

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Executive Summary

This study of Minnesota residents, deer hunters, and livestock producers was conducted to assess:

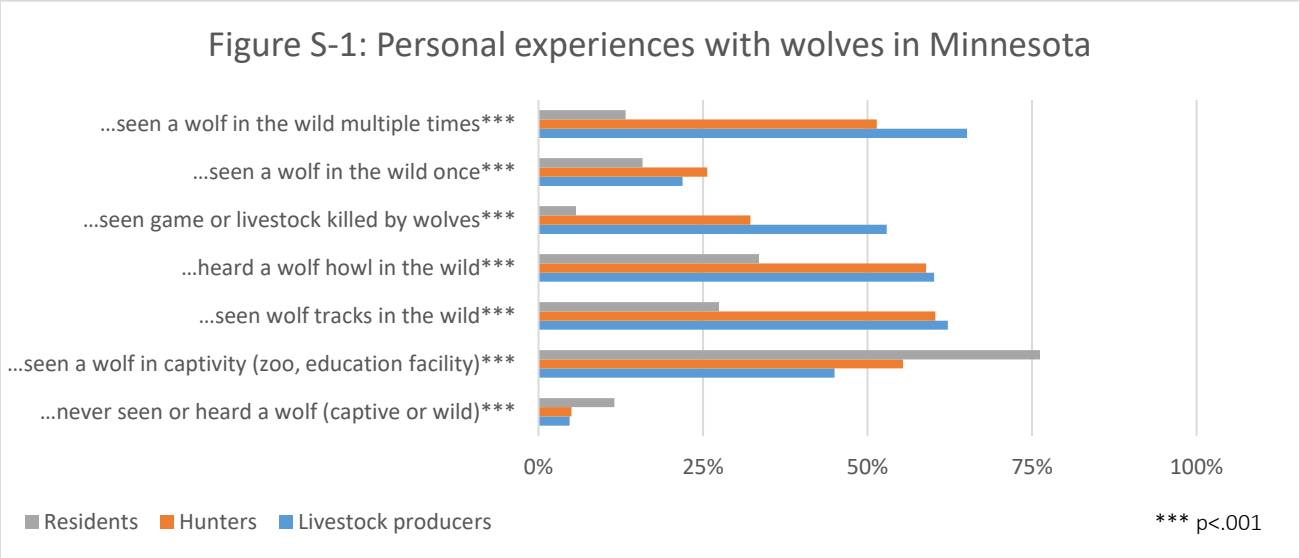
- Attitudes about and experiences with wolves in Minnesota,
- The relative importance of wolves, moose, and deer,
- Preferences for wolf populations,
- Preferences for wolf management,
- Preferences for geographic distribution of wolves in Minnesota,
- Personal identity as wolf advocate, hunter, environmentalist, farmer, etc.,
- Wildlife values,
- Trust in the Minnesota Department of Natural Resources,
- Involvement with wolves, wildlife, and outdoor recreation (resident respondents),
- Deer hunting experience and beliefs about wolves and deer (deer hunters),
- Experience with and opinions about wolf depredation (livestock producers),
- Demographics.

Questionnaires were distributed to 9,750 individuals, including 5,250 residents, 2,000 resident deer hunters, and 2,500 livestock producers. Sample sizes were based on expected response rates for each group and minimum samples needed for statistical generalizability. The number of respondents for the three samples were: 1,466 for the residents sample, 895 for the hunter sample, and 1,139 for the livestock producer sample. After adjusting for undeliverable surveys and invalid respondents, the response rates for the questionnaires were 32.8% for residents, 46.6% for hunters, and 53.4% for livestock producers. Because some segments of the population (males, hunters, older individuals, and residents from certain regions) were overrepresented among resident respondents, weights were calculated and applied to resident responses.

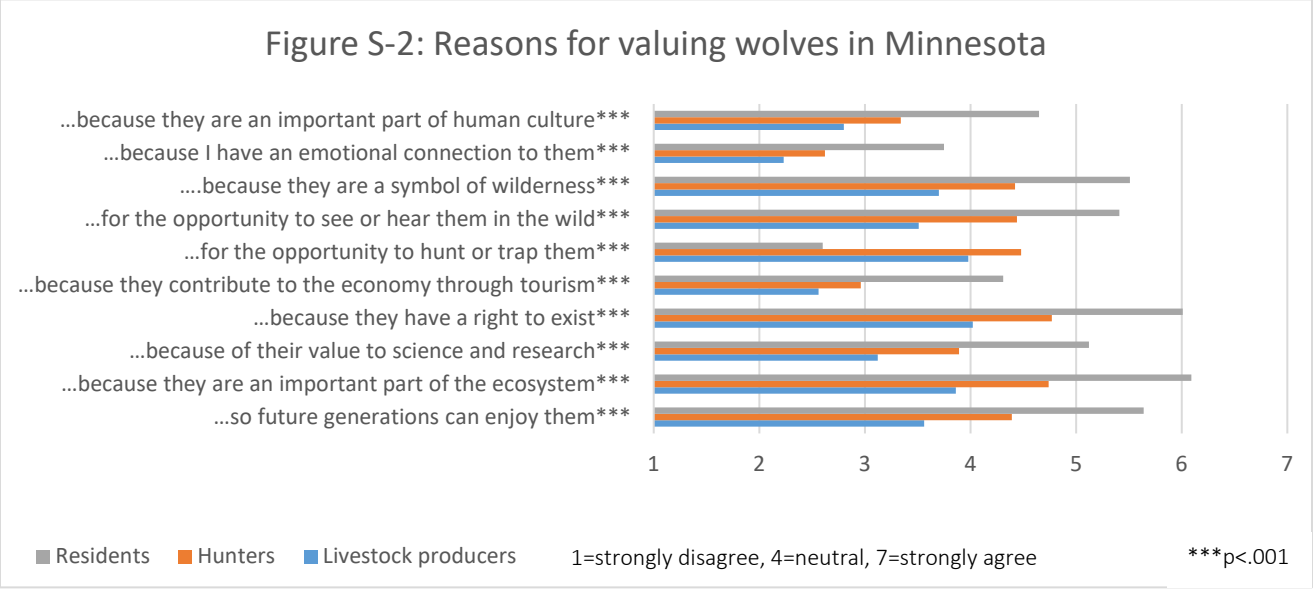
On average, livestock producers were older (60 years) than hunters (53 years) and residents (49 years). Over half (60%) of residents held a 4-year college degree or higher level of education, compared to 27% of hunters and 20% of livestock producers. Respondents were asked to rate their political orientation on the scale 1 (very liberal) to 7 (very conservative), and on average livestock producers (M = 5.1) and hunters (M = 5.0) reported more conservative orientations compared to residents (M = 3.7).

Attitudes about, and Experiences with, Wolves in Minnesota

Residents, hunters, and livestock producers reported substantively different experiences and attitudes associated with wolves in Minnesota. Compared to residents, larger proportions of livestock producers and hunters reported experiences with wild wolves in the state (Figure S-1).

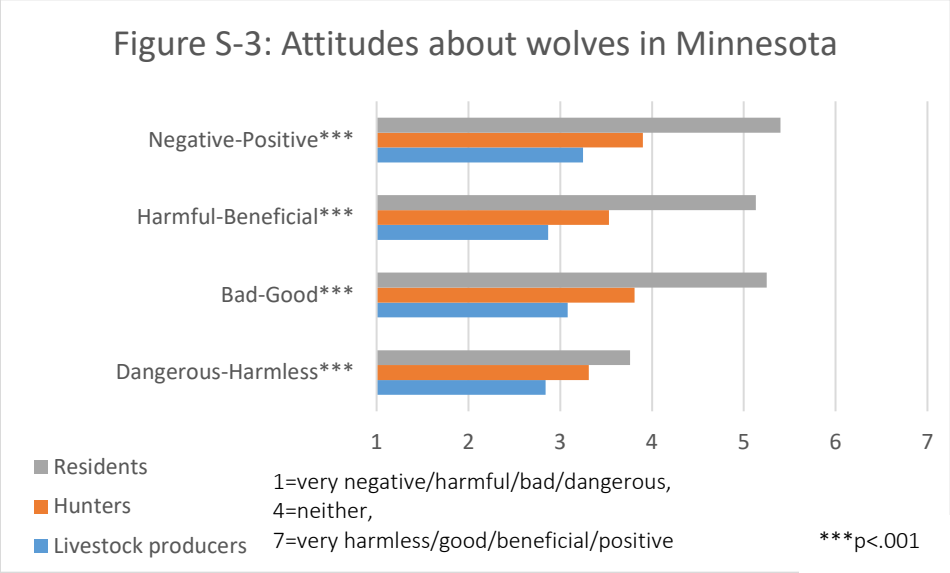


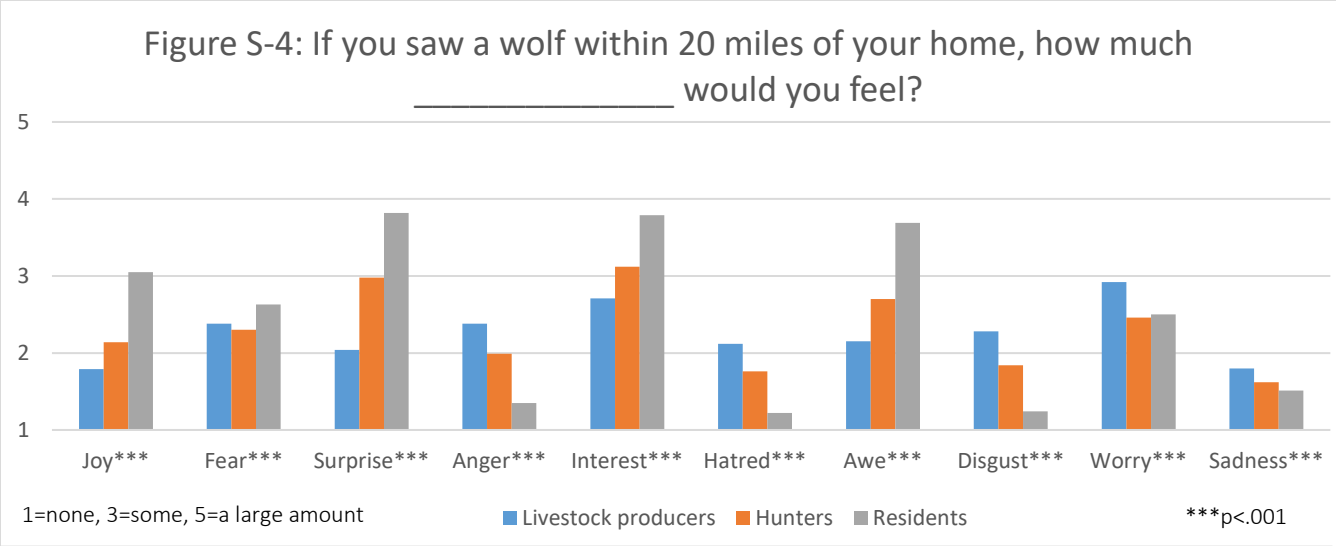
When asked, in general, how important wolves in Minnesota are to them personally, both livestock producers and hunters rated wolves slightly to somewhat important, while residents rated them somewhat to moderately important. Looking at values associated with having wolves in the state, livestock producers generally reported less agreement with reasons for valuing wolves in Minnesota than hunters and residents (Figure S-2). Two exceptions were that hunters rated values associated with wolves for tourism and hunting/trapping higher than the other groups. Livestock producers tended to disagree with the value of having wolves in Minnesota (Figure S-2).

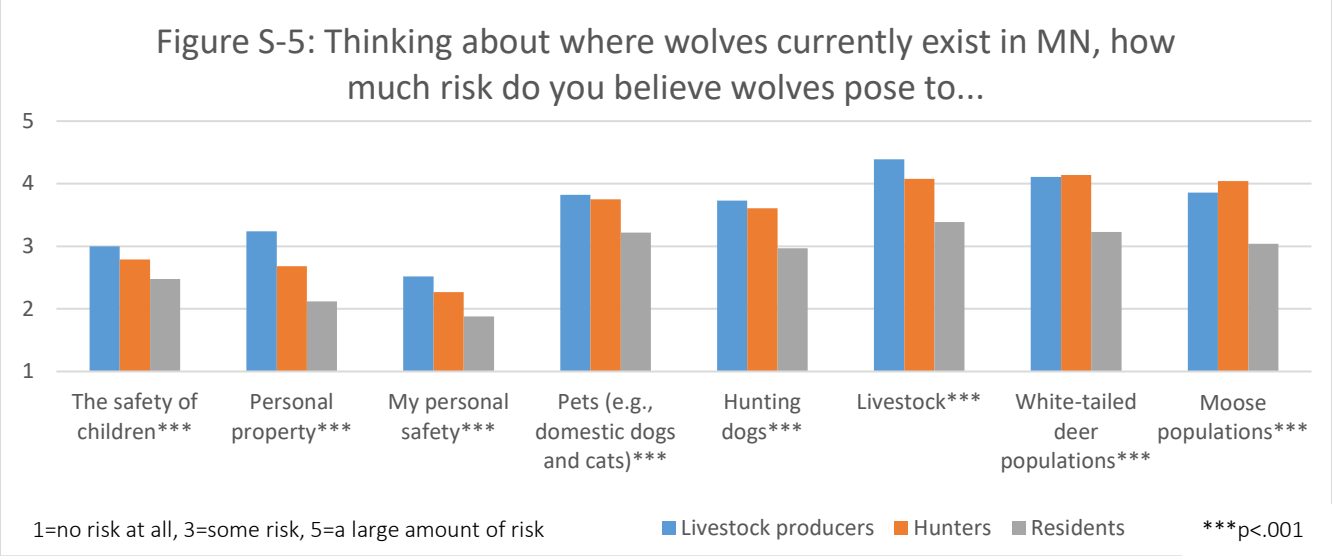


Similar patterns appeared for attitudes toward wolves, with livestock producers holding negative attitudes, residents having positive attitudes, and hunters expressing attitudes closer to neutral (Figure S-3).

Finally, respondents from the different groups felt different emotions about wolves (Figure S-4), and perceived different risks associated with them (Figure S-5).





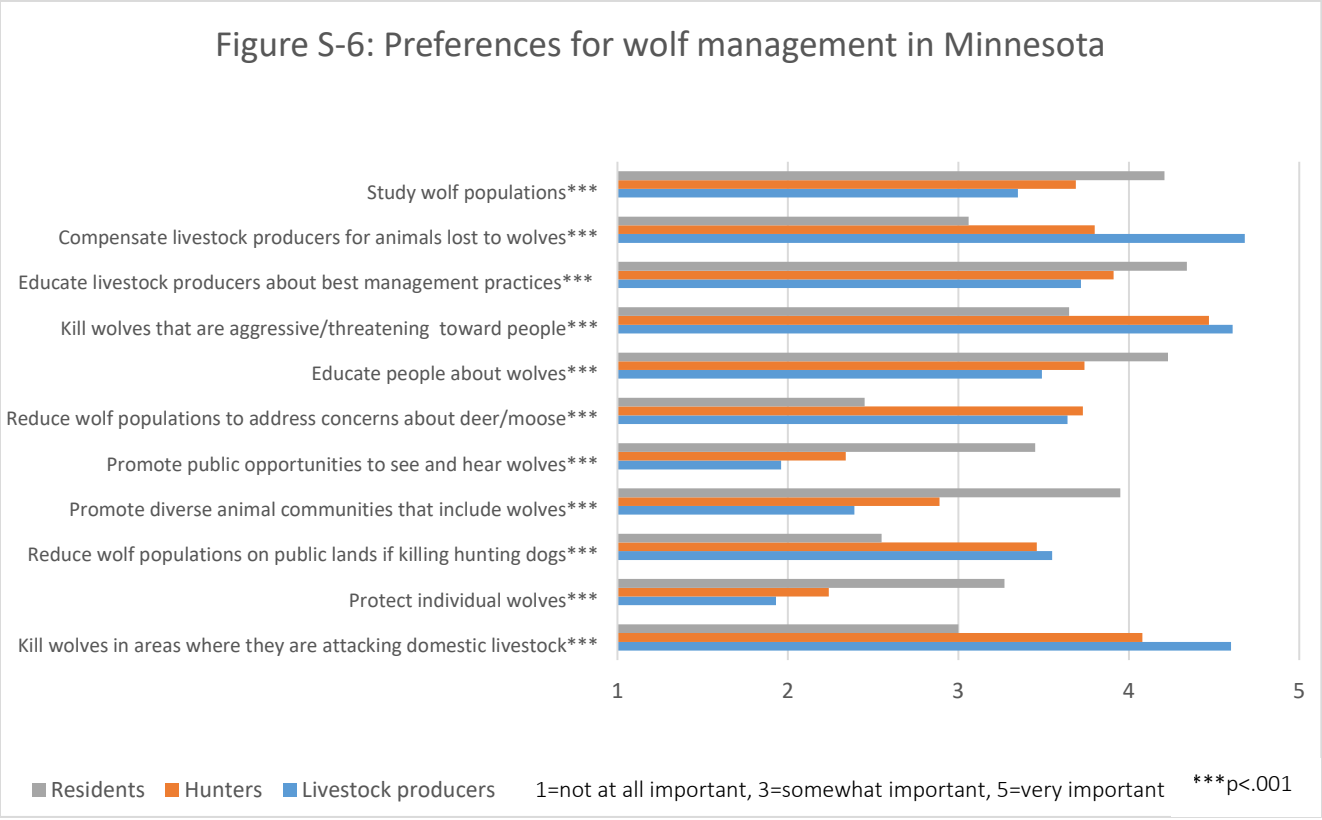


Preferences for Wolf Populations in Minnesota

Respondents were asked to indicate their preferences for wolf populations in Minnesota relative to the estimated 2,655 (range: 1972 - 3387) wolves in Minnesota in winter of 2017-2018. On average, livestock producers preferred to see fewer or many fewer wolves, hunters preferred fewer, and residents preferred to see about the same number of wolves in the future. Similarly, livestock producers and hunters wanted wolves to occupy less territory in the state, and residents wanted them to occupy about the same amount of territory. Nearly 70% of residents moderately or strongly agreed with the importance of maintaining a wolf population, compared to nearly half of hunters and less than a third of livestock producers.

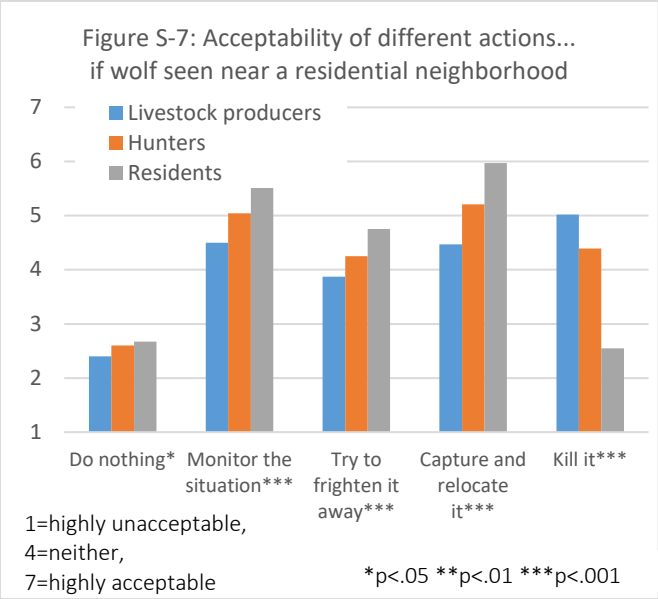
Preferences for Wolf Management

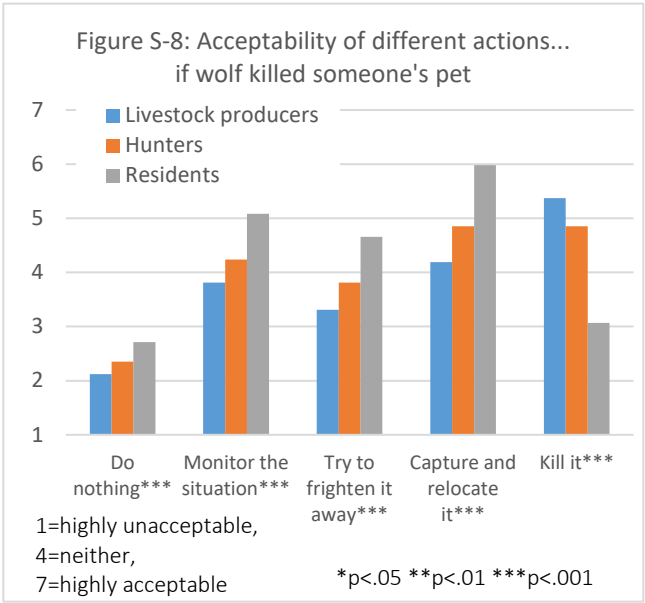
Residents, hunters, and livestock producers had differing preferences for wolf management (Figure S-6). All respondents felt research and education, compensating livestock producers for animals lost to wolves, and killing wolves that threaten people or attack livestock were important management actions. Residents felt that promoting diverse animal communities and public opportunities to see and hear wolves, along with protecting individual wolves were important, while hunters and livestock producers did not. Alternatively, residents did not think it was important to reduce wolf population to protect deer or hunting dogs.

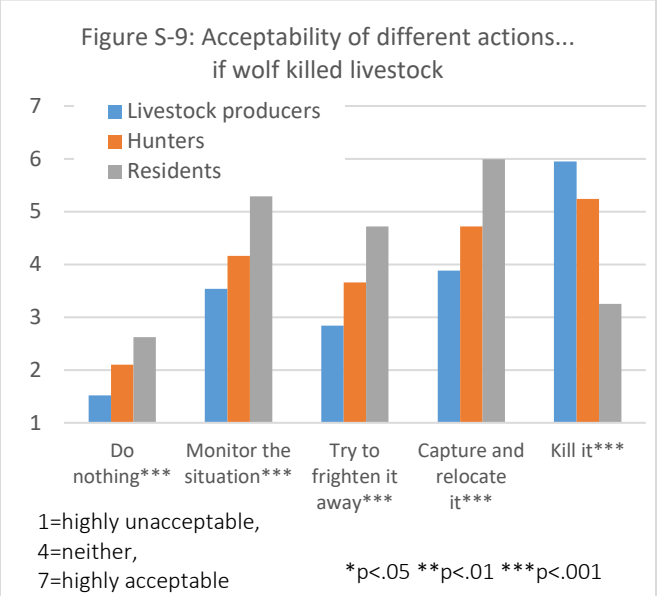


Acceptability of Minnesota Department of Natural Resources' Actions in Different Scenarios

Respondents were asked to rate the acceptability of five possible actions the Minnesota Department of Natural Resource could take in three scenarios involving human-wolf conflict. The three scenarios were: (a) if a wolf was seen near a residential neighborhood, (b) if a wolf killed someone's pet (e.g., domestic dog or cat), and (c) if a wolf killed livestock (e.g., cow, sheep, goat). The five possible actions were: (a) do nothing, (b) monitor the situation, (c) try to frighten the wolf away, (d) capture and relocate the wolf, or (e) kill the wolf (Figures S-7 to S-9). Doing nothing was not acceptable to any of the groups in any of the scenarios. Killing the wolf was acceptable to hunters and livestock producers in all three scenarios, but it was unacceptable to residents in any of the scenarios.

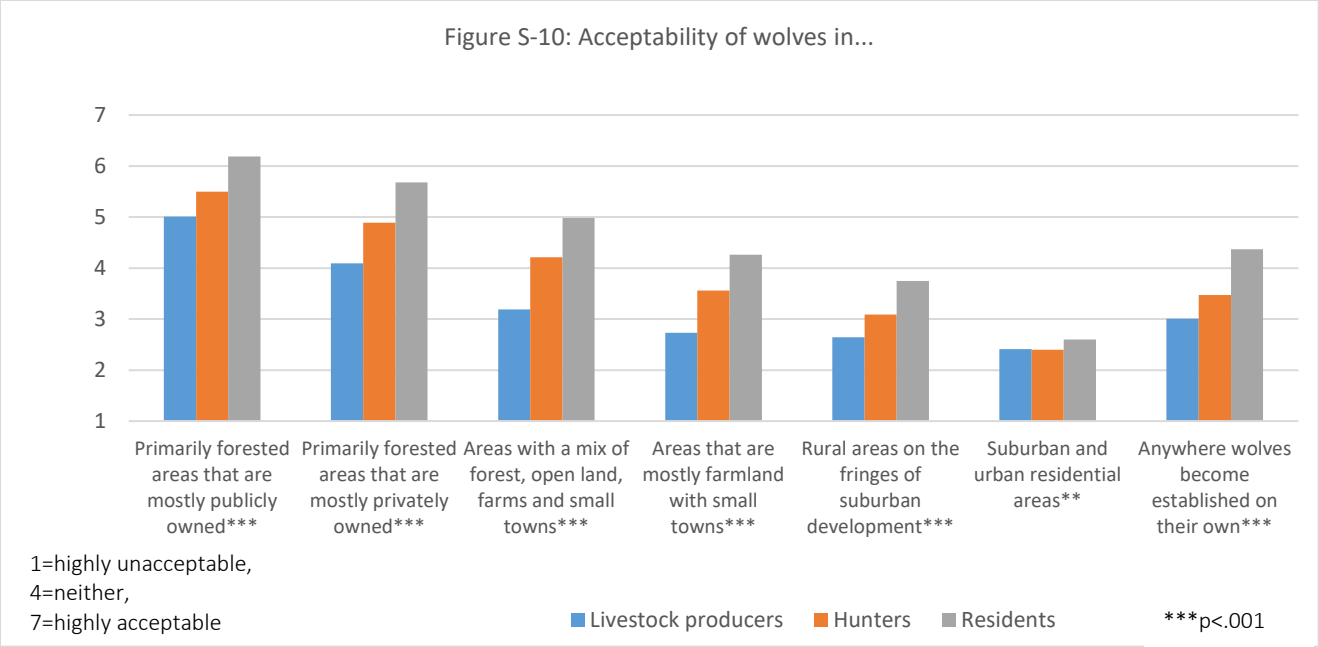






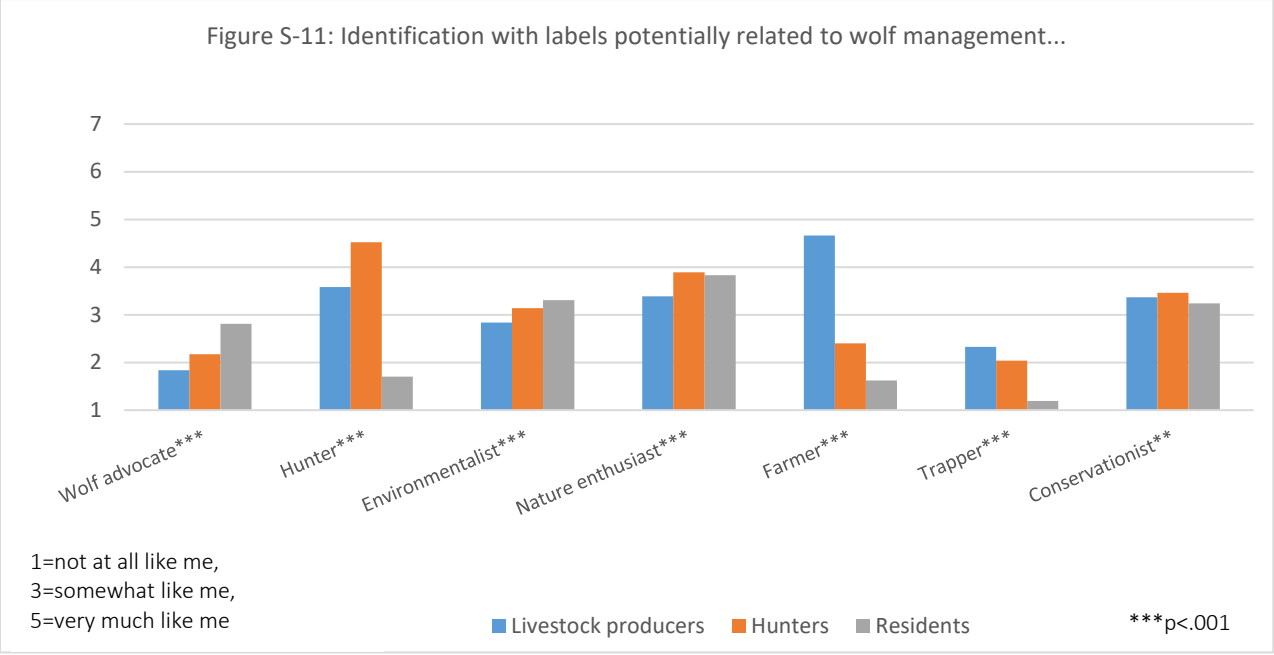
Acceptability of Wolves Living in Different Areas in Minnesota

Respondents were asked to rate the acceptability of wolves living in seven different areas in Minnesota on a 7-point scale ranging from 1 (highly unacceptable) to 7 (highly acceptable). Results are shown in Figure S-10.



Identity with Labels Potentially Related to Wolf Management

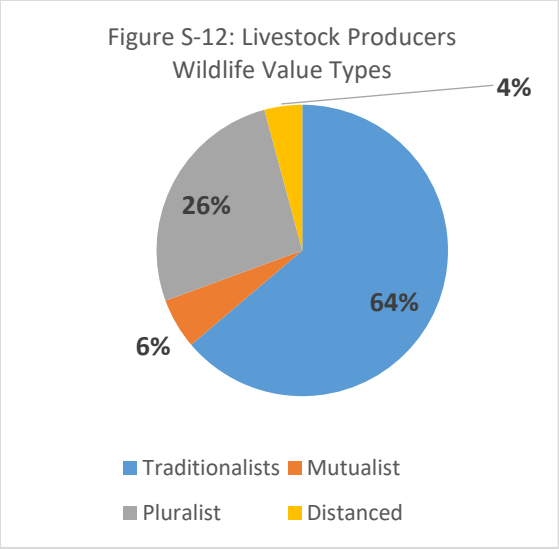
Respondents were asked to rate their level of identification with seven labels potentially associated with wolf management, using the scale: 1 (not at all like me) to 5 (very much like me). Labels included: (a)

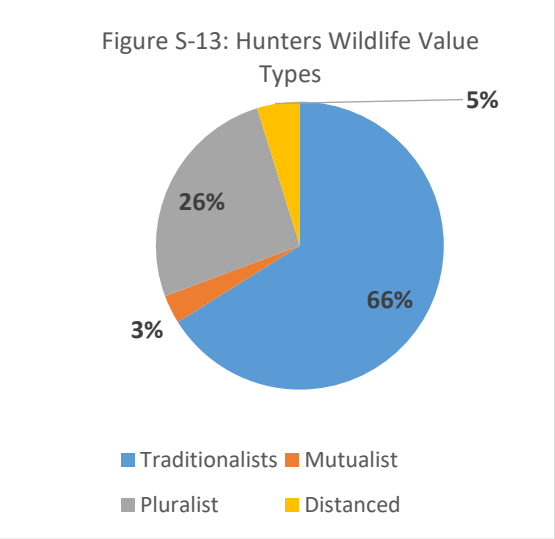


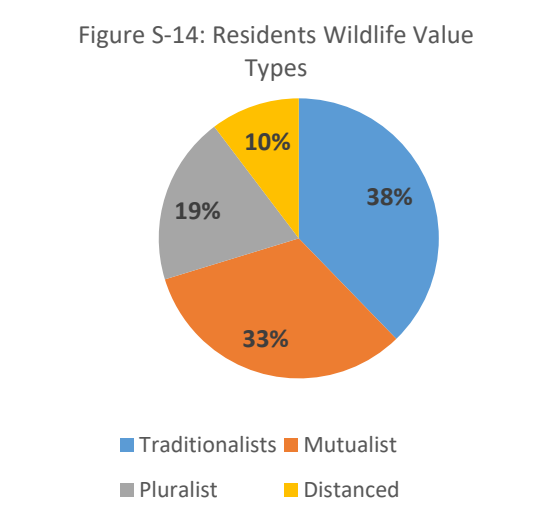
wolf advocate, (b) hunter, (c) environmentalist, (d) nature enthusiast, (e) farmer, (f) trapper, and (g) conservationist. Results are summarized in Figure S-11.

Wildlife Values

Previous research has characterized people's values associated with wildlife along two dimensions referred to as domination and multualism (Fulton, Manfredo, & Lipscomb, 1996; Manfredo, Teel, & Henry, 2009; Teel & Manfredo, 2009). Domination is a belief that wildlife is subordinate and should be used to benefit humans. Mutualism is a belief that wildlife are a part of a person's social network, and that animals are family or companions. Researchers have employed these dimensions to classify individuals into a four-group typology including (a) traditionalists (or utilitarians) who score high (above the midpoint) on the domination scale and low (at or below) the midpoint on the mutualism scale, (b) mutualists who score high on the mutualism scale and low on the domination scale, (c) pluralists who score high on both scales, and (d) distanced who score low on both scales (Teel & Manfredo, 2009). The proportion of individuals in the four groups are shown for livestock producers (Figure S-12), hunters (Figure S-13), and residents (Figure S–14).

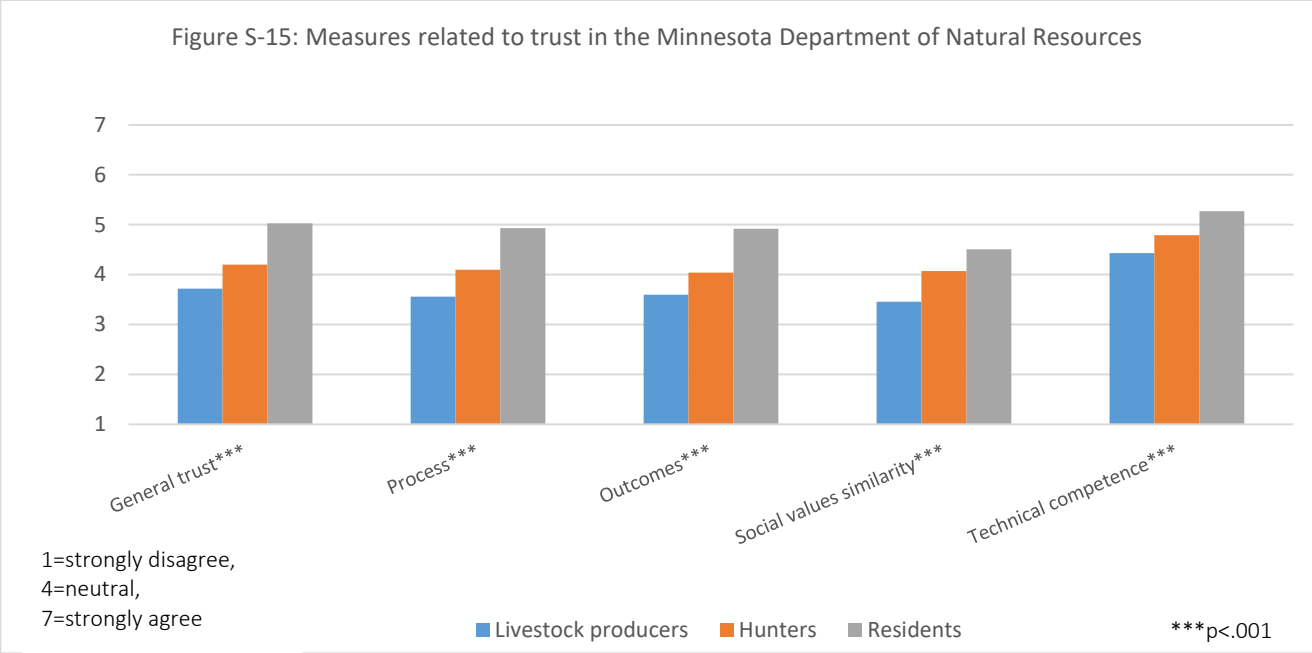






Trust in the Minnesota Department of Natural Resources

Respondents were asked to respond to 17 statements regarding their trust in the Minnesota Department of Natural Resources. Responses were recorded on a scale from 1 (strongly disagree) to 7 (strongly agree). Statements were associated with general trust, process, outcomes, social values similarity, and technical competence. Results are summarized in Figure S-15.



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Introduction

The Minnesota Department of Natural Resources' Division of Fish and Wildlife is engaged in an update to the Minnesota Wolf Management Plan. Understanding the values, beliefs, attitudes, and behaviors of stakeholders can enhance the legitimacy and efficacy of agency decisions with respect to wolf management. This is particularly important in a context like wolf management where diverse publics hold divergent preferences and values. This study was conducted to understand stakeholders' attitudes in order to inform: technical committee review, proposed actions in the social arena, and communication with stakeholders on the topic of wolf management. The collection of statistically representative data of stakeholder preferences can enhance the transparency of decision making and provide a voice for stakeholders, which can foster trust between stakeholders and governing institutions. This study gathers scientifically valid public input through representative surveys to inform development of a wolf management plan.

Study Purpose and Objectives

The purpose of this study to determine residents', deer hunters', and livestock producers' attitudes toward wolves and preferences for managing wolves in Minnesota.

This study included the following topics:

1. Attitudes about and experiences with wolves in Minnesota,
2. Interactions between wolves, moose, and deer,
3. Preferences for wolf populations,
4. Preferences for wolf management,
5. Preferences for geographic distribution of wolves in Minnesota,
6. Individual identity (i.e., wolf advocate, hunter, environmentalist, farmer, etc.),
7. Wildlife values,
8. Trust in the Minnesota Department of Natural Resources,
9. Demographics,
10. Involvement with wolves, wildlife, and outdoor recreation (resident respondents),
11. Deer hunting experience and beliefs about wolves and deer (deer hunters),
12. Experience with and opinions about wolf depredation (livestock producers).

The questions used to address each objective are provided in the survey instruments (Appendices A, B, C) and discussed in more detail in the subsequent sections.

Methods

Sampling

The populations of interest in this study included (a) Minnesota residents, (b) Minnesota resident deer hunters, and (c) livestock producers in the Minnesota wolf range. In each case, samples were drawn of individuals 18 years and older. We purchased the sample of state residents from Marketing Systems Group who derived names and contact information using address-based sampling from the US Postal Service Delivery Sequence File. This method has near complete coverage (>97%) of U.S. households (Link et al., 2008). The sampling frame used to draw the sample of deer hunters was the Minnesota Department of Natural Resources' (DNR) Electronic Licensing System (ELS). We obtained the sample of livestock producers from the Minnesota Board of Animal Health. We distributed questionnaires to 5,250 residents, 2,000 deer hunters, and 2,500 livestock producers. Sample sizes were based on expected response rates for each group in order to obtain response numbers needed to generalize back to the respective populations.

Data Collection

Data were collected using mail-back questionnaires following a process outlined by Dillman (2000) to enhance response rates. We constructed relatively straightforward questionnaires, created personalized cover letters, and made multiple contacts with the targeted respondents. Potential study respondents were contacted four times between September and December 2019. In the initial contact, a cover letter, survey questionnaire, and business-reply envelope were mailed to all potential study participants. The personalized cover letter explained the purpose of the study and made a personal appeal for respondents to complete and return the survey questionnaire. Three additional mailings were sent to all study participants who had not responded to earlier mailings at approximately 3-4 week intervals. For the resident sample, the individual in the household, aged 18 or over with nearest birthdate, was directed to respond.

Survey Instrument

The data collection instruments were 12-page self-administered questionnaires with 11 pages of questions (Appendices A, B, C). Additional information was obtained from the sample databases.

Data Entry and Analysis

Data were keypunched and the data were analyzed on a PC using the Statistical Program for the Social Sciences (SPSS for Windows 25). We computed basic descriptive statistics and frequencies for the three research strata. The three research strata were compared using analysis of variance and cross-tabulations.

Survey Response Rate

Of the 9,750 total questionnaires mailed, 1,059 were undeliverable and an additional 170 were unusable owing to illegible or incomplete responses. Of the remaining 8,521 questionnaires, a total of 3,500 questionnaires were returned for an overall response rate of 41.1%. The effective response rates for the three research strata were: 46.6% for hunters, 32.8% for the residents, and 53.4% for livestock producers. A breakdown of response rates and total responses is presented in table I-1.

Table I-1: Response rates for each study stratum

	Initial sample size	Number invalid	Valid sample size	Surveys returned	Survey response rate %
Residents	5250	783	4467	1466	32.8%
Deer hunters	2000	80	1920	895	46.6%
Livestock producers	2500	366	2134	1139	53.4%

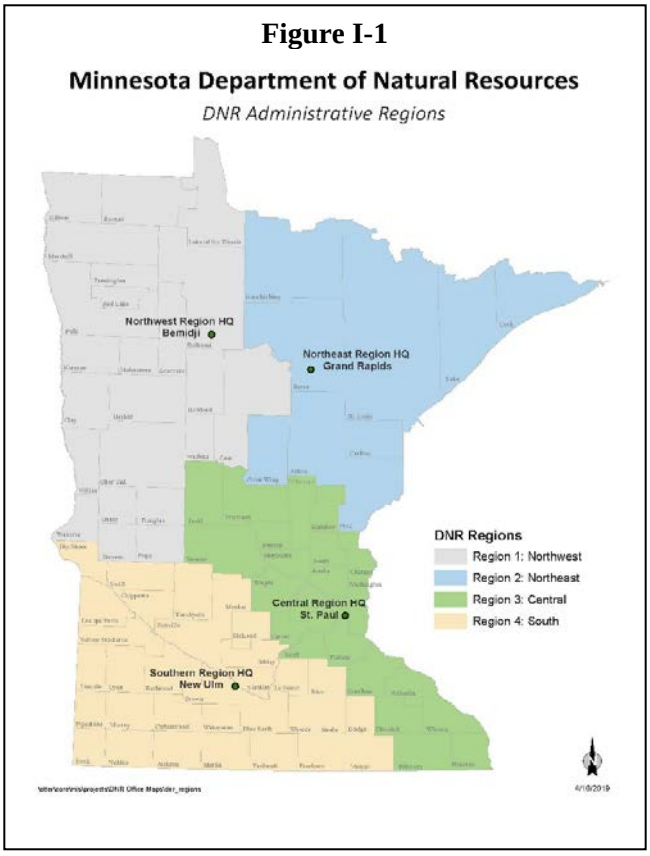
Statewide Population Estimates

In order to provide accurate population estimates for the resident sample, we compared respondents to demographic information available through the U.S. Census Bureau, and the Minnesota Department of Natural Resources Electronic Licensing System.

The resident participation selection was conducted using stratified random sampling within Minnesota Department of Natural Resource management regions. These regions correspond to aggregates of Minnesota counties. Region 1 is comprised of the counties in the Northwest part of the state, region 2 the Northeast, region 4 the Southwest, and region 3 the Southeast plus counties extending generally along the Mississippi river (Figure I-1). Given state demographics, Region 3 was divided into two regions to account for potential oversampling of Hennepin and Ramsey counties, which are located in the Twin Cities metropolitan region. Region 3a was comprised of the central region counties excluding Hennepin and Ramsey counties, and region R3b included Hennepin and Ramsey counties.

Because some segments of the population (males, hunters, older individuals, and residents from certain regions) were overrepresented among resident respondents, weights were calculated and applied to responses from that research stratum. Details on the resident weighting is provided in Appendix D.

Figure I-1



Response Bias

In order to examine nonresponse bias, we tested for differences in (a) the importance of wolves, (b) attitudes about wolves in Minnesota (including importance of wolves relative to deer and moose, desired number of wolves and desired wolf range in Minnesota), along with (c) demographic characteristics between mailing waves. For livestock producers, we found no statistically significant differences between waves in the importance of wolves in Minnesota, attitudes toward wolves, and the importance of maintaining a wolf population in Minnesota. We also did not observe differences in gender, education, political orientation, or income by wave. We did find a significant difference among waves in respondent age, but age did not differ in a predictable fashion (Wave 1 = 60.8 years, Wave 2 = 60.1 years, Wave 3 = 56.5 years, Wave 4 = 59.4 years; $F = 4.301$; $p < .01$), and wave did not exert a meaningful effect.

Likewise for hunters, we found no statistically significant differences among waves in any of the wolf attitude measures, gender, education, political orientation, nor income. Again, we found a significant difference among waves in respondent age (Wave 1 = 54.0 years, Wave 2 = 52.4 years, Wave 3 = 50.4 years, Wave 4 = 49.5 years; $F = 3.159$; $p < .05$). We also found a statistically significant difference by wave in the importance of wolves in Minnesota (Wave 1 = 2.90, Wave 2 = 2.71, Wave 3 = 2.73, Wave 4 = 2.43; $F = 2.910$; $p < .05$). Because of strong response rates and minimal differences between the waves in these strata, data for livestock producers and hunters was not weighted.

For residents, we found no statistically significant differences between waves in age, education, nor income. We did find significant differences between waves in gender and political orientation, but the response did not differ in a predictable fashion for gender (proportion female: Wave 1 = 49.9%, Wave 2 = 54.0%, Wave 3 = 41.8%, Wave 4 = 56.9%; $\chi^2 = 8.799$; $p < .05$), nor political orientation (mean rating on a 7-point scale: Wave 1 = 3.55, Wave 2 = 3.99, Wave 3 = 3.72, Wave 4 = 3.51; $F = 4.598$; $p < .01$). We also found a statistically significant difference by wave in the importance of wolves in Minnesota , but the response did not differ in a predictable fashion (Wave 1 = 3.89, Wave 2 = 3.12, Wave 3 = 3.31, Wave 4 = 3.46; Welch's $F = 32.340$; $p < .001$). Because of the lack of predictable nonresponse biases, the resident sample is not weighted for nonresponse bias. However, this sample is weighted to correct for population estimates as noted earlier.

Section 1: Attitudes about and Experiences with Wolves in Minnesota

Results for Section 1 of the livestock producer, deer hunter, and resident surveys are presented below. We compare these groups on all variables. We found statistically significant differences among these research strata for all items described in this section.

Personal Experiences with Wolves

Respondents were asked to check any of seven personal experiences that they may have had with wolves in Minnesota, and they were instructed to check all that applied (Table 1-1). Over half of livestock producers indicated that they had "seen wolf tracks in the wild," "heard a wolf howl in the wild," "seen game or livestock killed by wolves," and "seen a wolf in the wild multiple times." Over half of deer hunters reported that they had "seen a wolf in captivity," "seen wolf tracks in the wild," "heard a wolf howl in the wild," and "seen a wolf in the wild multiple times." Over three-fourths of residents had "seen a wolf in captivity," with between 25% and 35% having "seen wolf tracks in the wild" or "heard a wolf howl in the wild."

Importance of and Values for Wolves in Minnesota

Respondents were asked to rate the importance of wolves in Minnesota to them, using a 5-point scale ranging from 1 (not at all important) to 5 (very important) (Table 1-2). On average, both livestock producers and hunters rated wolves slightly to somewhat important (M = 2.31 for livestock producers and M = 2.79 for hunters), while residents rated them somewhat to moderately important (M = 3.57).

Respondents were asked to indicate their agreement with 10 statements about values associated with having wolves in Minnesota. Responses were recorded using a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree) (Tables 1-3 through 1-13). Overall, livestock producers disagreed with the values presented. The only value that reached the neutral point among this group was "because they have a right to exist" (M = 4.02). Both hunters and residents indicated higher agreement with the value statements. Hunters most strongly agreed with that they value having wolves in Minnesota "because they have a right to exist" (M = 4.77), while residents agreed most strongly with the statement that wolves "are an important part of the ecosystem" (M = 6.09).

Attitudes and Emotions Related to Wolves

Respondents were asked to rate their attitudes about wolves in Minnesota using 7-point semantic differential scales anchored by the words dangerous-harmless, bad-good, harmful-beneficial, and negative-positive (Tables 1-14 through 1-17). On average, respondents from all groups felt that wolves were slightly to moderately dangerous (Table 1-14). Livestock producers and hunters felt that wolves were slightly bad while residents felt they were slightly good (Table 1-15). On average, livestock producers felt wolves were slightly to moderately harmful, with hunters rating slightly harmful, and residents slightly beneficial (Table 1-16). Likewise, livestock producers and hunters found wolves slightly negative while residents found them slightly to moderately positive (Table 1-17).

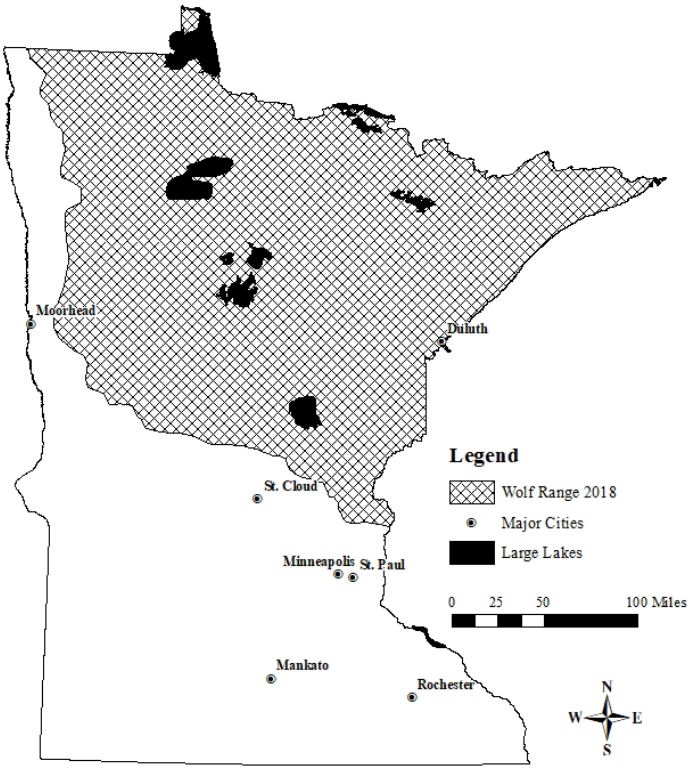
Respondents were asked to rate 10 emotions they might feel if they saw a wolf within 20 miles of their home on a 5-point scale ranging from 1 (none) to 5 (a large amount) (Tables 1-18 through 1-28). Livestock producers indicated that they would be most likely to feel fear (M = 2.38) and anger (M = 2.38). Hunters indicated that they would be most likely to feel surprise (M = 2.98) and worry (M = 2.46).

Residents indicated that they would be most likely to feel surprise (M = 3.82), interest (M = 3.79), and awe (M = 3.69).

Risk Perceived Related to Wolves

Thinking about where wolves currently exist in Minnesota, which was shown on a map on the inside cover of the questionnaire and replicated in Figure 1, respondents were asked to rate how much risk they believe wolves pose to different groups. Responses were recorded on a 5-point scale ranging from 1 (no risk at all) to 5 (a large amount of risk) (Tables 1-29 through 1-37). Livestock producers indicated that wolves presented the most risk to livestock (M = 4.39) and white-tailed deer populations (M = 4.11). Hunters indicated that wolves presented the most risk to white-tailed deer populations (M = 4.14), livestock (M = 4.08), and moose populations (M = 4.04). Residents indicated that wolves presented the most risk to livestock (M = 3.39), white-tailed deer populations (M = 3.23), pets (M = 3.22), and moose populations (M = 3.04). Across all three strata, risk to personal safety was perceived to be the lowest.

Fig. 1 Minnesota Wolf Range 2018



Wolves in Minnesota

Information on this page is provided for your reference, please feel free to refer back to this information while completing the questionnaire.

Current Range: Wolves can be found in most of the northern half of the state of Minnesota. Fig. 1 shows the geographic distribution of wolves. More wolves are found in the northeast part of the state than other areas within the range.

Population: The DNR conducted a survey of wolves in the winter of 2017/18. It was estimated that there were 2,655 (between 1,955 and 3,400) wolves living in the state at the time of the survey. This number goes up and down throughout the year as some animals are born or die.

Section 1: Attitudes about and experiences with wolves in Minnesota

Table 1-1: Personal experiences with wolves in Minnesota.

I have…	% of individuals from study strata			Chi-square
	Livestock producers	Deer hunters	Residents[2]	
…never seen or heard a wolf (captive or wild)	4.7%	5.0%	11.5%	χ^2 = 51.651*** V = .124
…seen a wolf in captivity (zoo, education facility)	45.0%	55.4%	76.2%	χ^2 = 261.273*** V = .279
…seen wolf tracks in the wild	62.2%	60.3%	27.4%	χ^2 = 372.058*** V = .333
…heard a wolf howl in the wild	60.1%	58.9%	33.5%	χ^2 = 218.609*** V = .255
…seen game or livestock killed by wolves	52.9%	32.2%	5.7%	χ^2 = 671.161*** V = .447
…seen a wolf in the wild once	21.9%	25.6%	15.8%	χ^2 = 33.111*** V = .099
…seen a wolf in the wild multiple times	65.1%	51.4%	13.2%	χ^2 = 735.780*** V = .468

[1] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 1-2: In general, how important are wolves <u>in Minnesota</u> to you personally?

Study strata	n	Not at all important	Slightly important	Somewhat important	Moderately important	Very important	Mean[1]
Livestock producers	1005	35.6%	25.8%	19.2%	10.4%	9.0%	2.31
Deer hunters	819	21.1%	23.1%	24.3%	18.2%	13.3%	2.79
Residents[2]	1229	9.1%	12.3%	20.6%	28.6%	29.4%	3.57
							F = 267.735*** ω^2 = .149

[1] Mean based on the following scale: 1 = not at all important, 2 = slightly important, 3 = somewhat important, 4 = moderately important, 5 = very important.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 483.229***, V = .281
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Section 1: Attitudes about and experiences with wolves in Minnesota

Table 1-3: Reasons for valuing wolves in Minnesota.

I value having wolves in Minnesota…	Study strata mean			F
	Livestock producers	Deer hunters	Residents	
…so that future generations can enjoy them.	3.56	4.39	5.64	Welch's F = 429.767*** ω^2 = .206
…because they are an important part of the ecosystem.	3.86	4.74	6.09	Welch's F = 517.371*** ω^2 = .238
…because of their value to science and research.	3.12	3.89	5.12	Welch's F = 412.780*** ω^2 = .200
…because they have a right to exist.	4.02	4.77	6.01	Welch's F = 402.051*** ω^2 = .197
…because they contribute to the economy through tourism.	2.56	2.96	4.31	Welch's F = 369.149*** ω^2 = .183
…for the opportunity to hunt or trap them.	3.98	4.48	2.60	Welch's F = 309.607*** ω^2 = .159
…for the opportunity to see or hear them in the wild.	3.51	4.44	5.41	Welch's F = 338.287*** ω^2 = .170
….because they are a symbol of wilderness.	3.70	4.42	5.51	Welch's F = 334.363*** ω^2 = .169
…because I have an emotional connection to them.	2.23	2.62	3.75	Welch's F = 268.220*** ω^2 = .140
…because they are an important part of human culture.	2.80	3.34	4.65	Welch's F = 369.302*** ω^2 = .182

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001
[W] Welch's F is reported because a significant Levene Statistic indicated a lake of homogeneity of variances.

Table 1-4: Reasons for valuing wolves in Minnesota: I value having wolves in Minnesota so that future generations can enjoy them.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1103	24.8%	12.6%	7.8%	20.4%	14.3%	10.9%	9.2%	3.56
Deer hunters	886	12.8%	9.8%	4.9%	19.1%	21.8%	15.3%	16.4%	4.39
Residents[2]	1317	2.9%	2.1%	2.5%	14.4%	16.8%	21.7%	39.6%	5.64
									Welch's F = 429.767*** ω^2 = .206

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 689.291***, V = .323
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 1-5: Reasons for valuing wolves in Minnesota: I value having wolves in Minnesota because they are an important part of the ecosystem.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1103	21.7%	12.1%	7.0%	15.0%	18.9%	13.6%	11.9%	3.86
Deer hunters	882	10.3%	7.8%	6.3%	13.2%	19.4%	21.0%	22.0%	4.74
Residents[2]	1317	2.3%	1.4%	1.8%	7.8%	9.4%	20.3%	56.9%	6.09
									Welch's F = 517.371*** ω^2 = .238

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 863.766***, V = .362
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 1-6: Reasons for valuing wolves in Minnesota: I value having wolves in Minnesota because of their value to science and research.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1101	30.9%	12.5%	8.5%	25.4%	11.7%	6.6%	4.3%	3.12
Deer hunters	879	14.9%	10.5%	9.0%	29.0%	17.5%	11.5%	7.6%	3.89
Residents[2]	1316	4.8%	4.0%	3.1%	22.9%	17.9%	21.5%	25.7%	5.12
									Welch's F = 412.780*** ω^2 = .200

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 705.442***, V = .327
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 1-7: Reasons for valuing wolves in Minnesota: I value having wolves in Minnesota because they have a right to exist.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1092	18.9%	11.1%	5.9%	20.9%	15.4%	12.5%	15.5%	4.02
Deer hunters	873	8.7%	7.1%	5.7%	20.0%	16.8%	18.8%	22.8%	4.77
Residents[2]	1305	1.8%	2.5%	1.4%	11.2%	10.9%	15.2%	57.1%	6.01
									Welch's F = 402.051*** ω^2 = .197

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 708.014***, V = .329
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 1-8: Reasons for valuing wolves in Minnesota: I value having wolves in Minnesota because they contribute to the economy through tourism.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1096	43.4%	12.7%	8.7%	21.3%	8.8%	3.6%	1.6%	2.56
Deer hunters	881	31.7%	13.8%	11.6%	23.6%	10.9%	5.6%	2.8%	2.96
Residents[2]	1302	7.7%	7.3%	8.1%	33.3%	21.1%	12.2%	10.4%	4.31
									Welch's F = 369.149*** ω^2 = .183

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 612.913***, V = .306
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 1-9: Reasons for valuing wolves in Minnesota: I value having wolves in Minnesota for the opportunity to hunt or trap them.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1095	20.2%	9.3%	4.9%	25.5%	13.6%	11.4%	15.1%	3.98
Deer hunters	873	11.6%	7.8%	5.8%	24.6%	15.7%	15.2%	19.2%	4.48
Residents[2]	1302	43.5%	13.3%	8.4%	19.7%	7.8%	4.1%	3.2%	2.60
									F = 309.607*** ω^2 = .159

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 506.259***, V = .278
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 1-10: Reasons for valuing wolves in Minnesota: I value having wolves in Minnesota for the opportunity to see or hear them in the wild.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1102	29.1%	8.8%	5.6%	20.3%	18.3%	9.8%	8.0%	3.51
Deer hunters	876	15.3%	6.4%	5.6%	17.2%	20.5%	17.4%	17.6%	4.44
Residents[2]	1317	2.9%	3.3%	3.0%	15.9%	21.9%	20.8%	32.0%	5.41
									Welch's F = 338.287*** ω^2 = .170

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 550.526***, V = .289
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Section 1: Attitudes about and experiences with wolves in Minnesota

Table 1-11: Reasons for valuing wolves in Minnesota: I value having wolves in Minnesota because they are a symbol of wilderness.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1098	25.4%	8.7%	6.1%	20.9%	18.2%	10.6%	10.1%	3.70
Deer hunters	880	14.8%	6.6%	5.8%	20.9%	16.7%	16.7%	18.5%	4.42
Residents[2]	1311	2.4%	1.6%	1.5%	19.7%	20.1%	21.4%	33.3%	5.51
									Welch's F = 334.363*** ω^2 = .169

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 536.760***, V = .286
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 1-12: Reasons for valuing wolves in Minnesota: I value having wolves in Minnesota because I have an emotional connection to them.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1100	55.5%	9.6%	5.9%	20.2%	4.5%	2.4%	1.8%	2.23
Deer hunters	880	42.3%	11.7%	6.4%	28.4%	6.0%	2.7%	2.5%	2.62
Residents[2]	1315	16.4%	9.4%	6.9%	39.9%	11.4%	9.1%	6.9%	3.75
									Welch's F = 268.220*** ω^2 = .140

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 499.034***, V = .275
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 1-13: Reasons for valuing wolves in Minnesota: I value having wolves in Minnesota because they are an important part of human culture.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1104	40.1%	12.5%	6.6%	22.5%	8.5%	5.9%	3.9%	2.80
Deer hunters	883	26.6%	11.9%	7.0%	28.9%	12.2%	7.7%	5.7%	3.34
Residents[2]	1318	5.6%	5.2%	6.7%	32.2%	17.4%	17.8%	15.1%	4.65
									Welch's F = 369.302*** ω^2 = .182

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 611.119***, V = .304
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

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Table 1-14: In general, do you think wolves in Minnesota are: Dangerous-harmless?

Study strata	n	Very dangerous	Moderately dangerous	Slightly dangerous	Neither	Slightly harmless	Moderately harmless	Very harmless	Mean[1]
Livestock producers	1041	21.5%	25.8%	25.6%	11.5%	7.7%	5.0%	2.8%	2.84
Deer hunters	833	10.6%	20.3%	31.1%	16.8%	10.4%	8.3%	2.5%	3.31
Residents[2]	1252	5.5%	16.2%	28.8%	20.8%	9.7%	13.0%	6.0%	3.76
									Welch's F = 96.830*** ω^2 = .058

[1] Mean based on the following scale: 1 = very dangerous, 2 = moderately dangerous, 3 = slightly dangerous, 4 = neither, 5 = slightly harmless, 6 = moderately harmless, 7 = very harmless.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 248.420***, V = .199
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 1-15: In general, do you think wolves in Minnesota are: Bad-good?

Study strata	n	Very bad	Moderately bad	Slightly bad	Neither	Slightly good	Moderately good	Very good	Mean[1]
Livestock producers	1041	22.0%	21.7%	14.2%	25.5%	6.3%	6.0%	4.3%	3.08
Deer hunters	833	10.2%	13.4%	13.1%	36.7%	8.4%	10.8%	7.3%	3.81
Residents[2]	1268	2.1%	3.1%	4.0%	29.6%	9.1%	23.0%	29.1%	5.25
									Welch's F = 546.668*** ω^2 = .258

[1] Mean based on the following scale: 1 = very bad, 2 = moderately bad, 3 = slightly bad, 4 = neither, 5 = slightly good, 6 = moderately good, 7 = very good.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 876.625***, V = .374
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 1-16: In general, do you think wolves in Minnesota are: Harmful-beneficial?

Study strata	n	Very harmful	Moderately harmful	Slightly harmful	Neither	Slightly beneficial	Moderately beneficial	Very beneficial	Mean[1]
Livestock producers	1036	28.9%	22.9%	15.1%	13.9%	7.6%	7.9%	3.8%	2.87
Deer hunters	836	14.2%	19.9%	16.6%	21.5%	10.6%	10.3%	6.8%	3.53
Residents[2]	1262	2.8%	6.0%	11.0%	17.1%	10.0%	24.7%	28.4%	5.13
									F = 507.121*** ω^2 = .244

[1] Mean based on the following scale: 1 = very harmful, 2 = moderately harmful, 3 = slightly harmful, 4 = neither, 5 = slightly beneficial, 6 = moderately beneficial, 7 = very beneficial.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 831.083***, V = .364
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

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Table 1-17: In general, do you think wolves in Minnesota are: Negative-positive?

Study strata	n	Very negative	Moderately negative	Slightly negative	Neither	Slightly positive	Moderately positive	Very positive	Mean[1]
Livestock producers	1035	21.1%	17.2%	12.6%	30.2%	7.8%	6.1%	5.0%	3.25
Deer hunters	828	9.8%	11.6%	13.2%	35.7%	11.1%	10.9%	7.7%	3.90
Residents[2]	1273	2.0%	3.1%	3.1%	26.5%	9.9%	20.6%	34.8%	5.40
									Welch's F = 534.990*** ω^2 = .254

[1] Mean based on the following scale: 1 = very negative, 2 = moderately negative, 3 = slightly negative, 4 = neither, 5 = slightly positive, 6 = moderately positive, 7 = very positive.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 860.390***, V = .370
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 1-18: If you saw a wolf within 20 miles of your home, how much of the following would you feel?

	Study strata mean			F
	Livestock producers	Deer hunters	Residents[2]	
Joy	1.79	2.14	3.05	Welch's F = 326.658*** ω^2 = .169
Fear	2.38	2.30	2.63	Welch's F = 25.669*** ω^2 = .015
Surprise	2.04	2.98	3.82	Welch's F = 642.617*** ω^2 = .287
Anger	2.38	1.99	1.35	Welch's F = 264.731*** ω^2 = .142
Interest	2.71	3.12	3.79	Welch's F = 231.866*** ω^2 = .127
Hatred	2.12	1.76	1.22	Welch's F = 234.627*** ω^2 = .129
Awe	2.15	2.70	3.69	Welch's F = 446.378*** ω^2 = .222
Disgust	2.28	1.84	1.24	Welch's F = 281.078*** ω^2 = .149
Worry	2.92	2.46	2.50	Welch's F = 36.764*** ω^2 = .022
Sadness	1.80	1.62	1.51	Welch's F = 21.007*** ω^2 = .012

[1] Mean based on the following scale: 1 = none, 2 = very little, 3 = some, 4 = a moderate amount, 5 = a large amount.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 1-19: If you saw a wolf within 20 miles of your home, how much joy would you feel?

Study strata	n	None	Very little	Some	A moderate amount	A large amount	Mean[1]
Livestock producers	1065	55.2%	22.5%	13.0%	6.6%	2.7%	1.79
Deer hunters	863	42.6%	21.6%	19.7%	11.5%	4.6%	2.14
Residents[2]	1285	17.9%	16.2%	27.3%	20.0%	18.6%	3.05
							Welch's F = 326.658*** ω^2 = .169

[1] Mean based on the following scale: 1 = none, 2 = very little, 3 = some, 4 = a moderate amount, 5 = a large amount.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 568.244***, V = .297
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

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Table 1-20: If you saw a wolf within 20 miles of your home, how much fear would you feel?

Study strata	n	None	Very little	Some	A moderate amount	A large amount	Mean[1]
Livestock producers	1069	33.7%	23.4%	23.6%	10.4%	9.0%	2.38
Deer hunters	862	31.3%	29.4%	22.5%	11.7%	5.1%	2.30
Residents[2]	1286	17.3%	29.4%	32.2%	14.9%	6.1%	2.63
							Welch's F = 25.669*** ω^2 = .015

[1] Mean based on the following scale: 1 = none, 2 = very little, 3 = some, 4 = a moderate amount, 5 = a large amount.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 125.436***, V = .140
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 1-21: If you saw a wolf within 20 miles of your home, how much surprise would you feel?

Study strata	n	None	Very little	Some	A moderate amount	A large amount	Mean[1]
Livestock producers	1060	47.4%	21.3%	16.3%	9.9%	5.1%	2.04
Deer hunters	858	23.5%	16.4%	20.0%	18.8%	21.2%	2.98
Residents[2]	1274	5.9%	6.5%	23.4%	28.2%	36.0%	3.82
							Welch's F = 642.617*** ω^2 = .287

[1] Mean based on the following scale: 1 = none, 2 = very little, 3 = some, 4 = a moderate amount, 5 = a large amount.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 871.443***,V = .369
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 1-22: If you saw a wolf within 20 miles of your home, how much anger would you feel?

Study strata	n	None	Very little	Some	A moderate amount	A large amount	Mean[1]
Livestock producers	1069	40.9%	16.3%	19.6%	11.0%	12.3%	2.38
Deer hunters	861	52.7%	18.1%	13.8%	8.2%	7.1%	1.99
Residents[2]	1267	77.6%	14.7%	3.9%	2.8%	1.0%	1.35
							Welch's F = 264.731*** ω^2 = .142

[1] Mean based on the following scale: 1 = none, 2 = very little, 3 = some, 4 = a moderate amount, 5 = a large amount.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 443.203***, V = .263
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

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Table 1-23: If you saw a wolf within 20 miles of your home, how much interest would you feel?

Study strata	n	None	Very little	Some	A moderate amount	A large amount	Mean[1]
Livestock producers	1063	26.2%	16.2%	29.0%	17.6%	11.1%	2.71
Deer hunters	858	15.3%	14.8%	29.5%	23.5%	16.9%	3.12
Residents[2]	1267	5.4%	6.4%	25.5%	28.5%	34.2%	3.79
							Welch's F = 231.866*** ω^2 = .127

[1] Mean based on the following scale: 1 = none, 2 = very little, 3 = some, 4 = a moderate amount, 5 = a large amount.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 407.072***, V = .253
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 1-24: If you saw a wolf within 20 miles of your home, how much hatred would you feel?

Study strata	n	None	Very little	Some	A moderate amount	A large amount	Mean[1]
Livestock producers	1039	48.6%	17.3%	16.9%	7.6%	9.5%	2.12
Deer hunters	855	62.1%	16.0%	11.3%	4.8%	5.7%	1.76
Residents[2]	1253	86.8%	7.4%	3.4%	1.8%	0.7%	1.22
							Welch's F = 234.627*** ω^2 = .129

[1] Mean based on the following scale: 1 = none, 2 = very little, 3 = some, 4 = a moderate amount, 5 = a large amount.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 418.127***, V = .258
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 1-25: If you saw a wolf within 20 miles of your home, how much awe would you feel?

Study strata	n	None	Very little	Some	A moderate amount	A large amount	Mean[1]
Livestock producers	1033	43.8%	18.9%	21.7%	9.7%	6.0%	2.15
Deer hunters	846	27.9%	14.8%	28.3%	17.3%	11.8%	2.70
Residents[2]	1245	7.4%	10.4%	21.4%	27.0%	33.7%	3.69
							Welch's F = 446.378*** ω^2 = .222

[1] Mean based on the following scale: 1 = none, 2 = very little, 3 = some, 4 = a moderate amount, 5 = a large amount.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 696.781***, V = .334
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 1-26: If you saw a wolf within 20 miles of your home, how much disgust would you feel?

Study strata	n	None	Very little	Some	A moderate amount	A large amount	Mean[1]
Livestock producers	1064	44.5%	15.4%	19.3%	8.8%	11.9%	2.28
Deer hunters	861	61.2%	14.2%	11.4%	5.9%	7.3%	1.84
Residents[2]	1277	87.2%	6.4%	3.4%	1.6%	1.4%	1.24
							Welch's F = 281.078*** ω^2 = .149

[1] Mean based on the following scale: 1 = none, 2 = very little, 3 = some, 4 = a moderate amount, 5 = a large amount.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 507.388***, V = .281
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 1-27: If you saw a wolf within 20 miles of your home, how much worry would you feel?

Study strata	n	None	Very little	Some	A moderate amount	A large amount	Mean[1]
Livestock producers	1068	23.8%	15.0%	25.1%	18.0%	18.2%	2.92
Deer hunters	863	31.7%	22.7%	22.4%	14.3%	8.9%	2.46
Residents[2]	1283	26.0%	25.2%	28.0%	14.6%	6.1%	2.50
							Welch's F = 36.764*** ω^2 = .022

[1] Mean based on the following scale: 1 = none, 2 = very little, 3 = some, 4 = a moderate amount, 5 = a large amount.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 136.948***, V = .146
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 1-28: If you saw a wolf within 20 miles of your home, how much sadness would you feel?

Study strata	n	None	Very little	Some	A moderate amount	A large amount	Mean[1]
Livestock producers	1065	60.5%	15.6%	12.6%	5.9%	5.4%	1.80
Deer hunters	861	67.9%	14.6%	8.8%	4.5%	4.1%	1.62
Residents[2]	1288	71.3%	13.2%	10.6%	2.9%	2.0%	1.51
							Welch's F = 21.007*** ω^2 = .012

[1] Mean based on the following scale: 1 = none, 2 = very little, 3 = some, 4 = a moderate amount, 5 = a large amount.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 50.561***, V = .089
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 1-29: Thinking about where wolves currently exist in Minnesota, indicate how much risk you believe wolves pose to…

	Study strata mean			F
	Livestock producers	Deer hunters	Residents[2]	
The safety of children	3.00	2.79	2.48	Welch's F = 67.255*** ω^2 = .039
Personal property	3.24	2.68	2.12	Welch's F = 278.282 *** ω^2 = .146
My personal safety	2.52	2.27	1.88	Welch's F = 105.970 *** ω^2 = .061
Pets (e.g., domestic dogs and cats)	3.82	3.75	3.22	Welch's F = 119.914 *** ω^2 = .068
Hunting dogs	3.73	3.61	2.97	Welch's F = 171.556 *** ω^2 = .095
Livestock	4.39	4.08	3.39	Welch's F = 352.726 *** ω^2 = .178
White-tailed deer populations	4.11	4.14	3.23	Welch's F = 228.778 *** ω^2 = .123
Moose populations	3.86	4.04	3.04	Welch's F = 232.885 *** ω^2 = .125

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 1-30: How much risk you believe wolves pose to: The safety of children

Study strata	n	No risk at all	Very little risk	Some risk	A moderate amount of risk	A large amount of risk	Mean[1]
Livestock producers	1093	9.0%	28.4%	29.6%	19.7%	13.4%	3.00
Deer hunters	870	10.0%	35.9%	29.2%	15.4%	9.5%	2.79
Residents[2]	1296	14.4%	43.7%	26.0%	11.0%	4.9%	2.48
							Welch's F = 67.255*** ω^2 = .039

[1] Mean based on the following scale: 1 = no risk at all, 2 = very little risk, 3 = some risk, 4 = a moderate amount of risk, 5 = a large amount of risk.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 136.985***, V = .145
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 1-31: How much risk you believe wolves pose to: Personal property

Study strata	n	No risk at all	Very little risk	Some risk	A moderate amount of risk	A large amount of risk	Mean[1]
Livestock producers	1088	12.5%	20.9%	20.6%	22.1%	24.0%	3.24
Deer hunters	865	20.3%	28.0%	25.3%	16.1%	10.3%	2.68
Residents[2]	1290	26.5%	45.2%	20.8%	5.4%	2.2%	2.12
							Welch's F = 278.282*** ω^2 = .146

[1] Mean based on the following scale: 1 = no risk at all, 2 = very little risk, 3 = some risk, 4 = a moderate amount of risk, 5 = a large amount of risk.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 541.760***, V = .289
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 1-32: How much risk you believe wolves pose to: My personal safety

Study strata	n	No risk at all	Very little risk	Some risk	A moderate amount of risk	A large amount of risk	Mean[1]
Livestock producers	1083	21.9%	34.5%	22.2%	12.4%	9.0%	2.52
Deer hunters	862	27.3%	39.0%	18.9%	9.3%	5.6%	2.27
Residents[2]	1270	42.2%	36.0%	15.2%	5.0%	1.7%	1.88
							Welch's F = 105.970*** ω^2 = .061

[1] Mean based on the following scale: 1 = no risk at all, 2 = very little risk, 3 = some risk, 4 = a moderate amount of risk, 5 = a large amount of risk.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 199.332***, V = .176
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 1-33: How much risk you believe wolves pose to: Pets (e.g., domestic dogs and cats)

Study strata	n	No risk at all	Very little risk	Some risk	A moderate amount of risk	A large amount of risk	Mean[1]
Livestock producers	1093	2.0%	10.0%	25.5%	28.5%	33.9%	3.82
Deer hunters	867	2.7%	10.0%	28.3%	27.9%	31.1%	3.75
Residents[2]	1290	3.8%	19.9%	38.6%	26.1%	11.6%	3.22
							F = 119.914*** ω^2 = .068

[1] Mean based on the following scale: 1 = no risk at all, 2 = very little risk, 3 = some risk, 4 = a moderate amount of risk, 5 = a large amount of risk.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 243.865***, V = .194
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 1-34: How much risk you believe wolves pose to: Hunting dogs

Study strata	n	No risk at all	Very little risk	Some risk	A moderate amount of risk	A large amount of risk	Mean[1]
Livestock producers	1085	3.4%	11.4%	25.8%	27.5%	31.9%	3.73
Deer hunters	871	4.0%	12.9%	28.2%	27.7%	27.2%	3.61
Residents[2]	1290	7.7%	24.7%	39.0%	20.5%	8.1%	2.97
							Welch's F = 171.556*** ω^2 = .095

[1] Mean based on the following scale: 1 = no risk at all, 2 = very little risk, 3 = some risk, 4 = a moderate amount of risk, 5 = a large amount of risk.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 326.713***, V = .224
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 1-35: How much risk you believe wolves pose to: Livestock

Study strata	n	No risk at all	Very little risk	Some risk	A moderate amount of risk	A large amount of risk	Mean[1]
Livestock producers	1093	0.1%	3.5%	12.1%	26.3%	58.1%	4.39
Deer hunters	868	1.6%	5.0%	17.9%	34.8%	40.8%	4.08
Residents[2]	1289	4.1%	13.3%	36.4%	32.2%	14.1%	3.39
							Welch's F = 352.726*** ω^2 = .178

[1] Mean based on the following scale: 1 = no risk at all, 2 = very little risk, 3 = some risk, 4 = a moderate amount of risk, 5 = a large amount of risk.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 634.593***, V = .312
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 1-36: How much risk you believe wolves pose to: White-tailed deer populations

Study strata	n	No risk at all	Very little risk	Some risk	A moderate amount of risk	A large amount of risk	Mean[1]
Livestock producers	1092	2.7%	5.7%	17.2%	26.7%	47.7%	4.11
Deer hunters	871	2.5%	5.4%	16.2%	26.9%	49.0%	4.14
Residents[2]	1289	11.1%	17.1%	26.1%	28.7%	17.0%	3.23
							Welch's F = 228.778*** ω^2 = .123

[1] Mean based on the following scale: 1 = no risk at all, 2 = very little risk, 3 = some risk, 4 = a moderate amount of risk, 5 = a large amount of risk.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 443.174***, V = .261
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 1-37: How much risk you believe wolves pose to: Moose populations

Study strata	n	No risk at all	Very little risk	Some risk	A moderate amount of risk	A large amount of risk	Mean[1]
Livestock producers	1084	5.6%	9.0%	20.5%	23.7%	41.1%	3.86
Deer hunters	869	3.3%	7.4%	18.9%	23.1%	47.3%	4.04
Residents[2]	1290	12.4%	18.8%	33.5%	22.9%	12.4%	3.04
							Welch's F = 232.885*** ω^2 = .125

[1] Mean based on the following scale: 1 = no risk at all, 2 = very little risk, 3 = some risk, 4 = a moderate amount of risk, 5 = a large amount of risk.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 443.833***, V = .262
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Section 2: Interactions between Wolves, Moose, and Deer, and Preferences for Wolf Populations

Results for Sections 2 and 3 of the livestock producer, deer hunter, and resident surveys are presented below. We compare these groups on all variables. We found statistically significant differences among these research strata for all items described in this section.

Interactions between Wolves, Moose, and Deer

Respondents were asked to rate their perspectives on the relative importance of wolves, deer, and moose using 7-point semantic differential scales anchored by the species pairs: wolves-moose, deer-wolves, and moose-deer (Tables 2-1 through 2-3). For all three comparisons, residents were on average very close to the neutral point. On average, respondents from all groups felt that moose were more important relative to wolves (Table 2-1). Livestock producers and hunters felt that moose were slightly to moderately more important while residents felt they were equally to slightly more important. In the comparison between deer and wolves, livestock producers and hunters rated deer slightly to moderately more important and residents rated wolves slightly more important (Table 2-2). In the comparison between moose and deer, livestock producers and hunters rated deer slightly to equally more important and residents rated moose slightly to equally more important (Table 2-3).

Preferences for Wolf Populations

Respondents were asked to indicate their preferences for wolf populations in Minnesota relative to the point estimate of 2,655 wolves in Minnesota in winter of 2017-2018. Response was on a 6-point scale of 1 (zero) to 6 (many more). On average, livestock producers wanted fewer to many fewer wolves (M = 2.77), hunters wanted fewer (M = 3.16), and residents wanted about the same number (M = 4.29) (Table 2-4). Respondents were also asked their preferences for wolf territory in the state, with responses ranging from 1 (no territory) to 6 (much more territory). Responses were similar to those for the populations with livestock producers (M = 2.94) and hunters (M = 3.34) wanting wolves to occupy less territory, and residents (M = 4.22) wanting them to occupy about the same amount of territory. Finally, respondents were asked if they agreed or disagreed that it is important to maintain a wolf population in Minnesota, with response ranging from 1 (strongly disagree) to 7 (strongly agree). On average, hunters (M = 4.83) and residents (M = 6.00) agreed that it was important to maintain a population, while livestock producers (M = 3.93) were very slightly on the disagree side (Table 2-6). Over 75% of residents moderately or strongly agreed with the importance of maintaining a wolf population, compared to nearly half of hunters and less than a third of livestock producers.

Section 2: Interactions between Wolves, Moose, and Deer, and Preferences for Wolf Populations

Table 2-1: Tradeoffs among wolves, moose and deer. In general, how important are each of the following species to you in comparison to one another? Wolves-Moose.

Study strata	n	Wolves much more important	Wolves moderately more important	Wolves slightly more important	Equally important	Moose slightly more important	Moose moderately more important	Moose much more important	Mean[1]
Livestock producers	1007	0.8%	1.1%	3.6%	33.3%	10.7%	16.3%	34.3%	5.38
Deer hunters	808	0.7%	0.9%	3.2%	33.0%	8.5%	16.2%	37.4%	5.46
Residents[2]	1260	2.5%	3.2%	6.7%	61.2%	10.7%	7.5%	8.3%	4.30
									Welch's F = 266.964*** ω^2 = .147

[1] Mean based on the following scale: 1 = wolves slightly more important, 2 = wolves moderately more important, 3 = wolves much more important 4 = equally important, 5 = moose slightly important, 6 = moose moderately more important, 7 = moose much more important.

[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.

[3] χ^2 = 457.212***, V = .273

[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 2-2: Tradeoffs among wolves, moose and deer. In general, how important are each of the following species to you in comparison to one another? Deer-Wolves.

Study strata	n	Deer much more important	Deer moderately more important	Deer slightly more important	Equally important	Wolves slightly more important	Wolves moderately more important	Wolves much more important	Mean[1]
Livestock producers	1014	40.9%	14.3%	7.4%	25.2%	4.2%	3.9%	3.9%	2.65
Deer hunters	816	45.6%	12.4%	7.0%	25.5%	4.0%	2.7%	2.8%	2.49
Residents[2]	1266	8.5%	7.0%	5.0%	43.6%	14.1%	12.5%	9.4%	4.23
									Welch's F = 379.053*** ω^2 = .196

[1] Mean based on the following scale: 1 = deer slightly more important, 2 = deer moderately more important, 3 = deer much more important 4 = equally important, 5 = wolves slightly important, 6 = wolves moderately more important, 7 = wolves much more important.

[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.

[3] χ^2 = 647.569***, V = .323

[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Section 2: Interactions between Wolves, Moose, and Deer, and Preferences for Wolf Populations

Table 2-3: Tradeoffs among wolves, moose and deer. In general, how important are each of the following species to you in comparison to one another? Moose-Deer.

Study strata	n	Moose much more important	Moose moderately more important	Moose slightly more important	Equally important	Deer slightly more important	Deer moderately more important	Deer much more important	Mean[1]
Livestock producers	994	11.0%	6.8%	5.9%	45.3%	6.8%	11.0%	13.2%	4.16
Deer hunters	808	8.5%	5.6%	5.4%	47.3%	7.3%	13.0%	12.9%	4.30
Residents[2]	1258	13.3%	11.0%	11.1%	51.1%	5.6%	4.4%	3.5%	3.52
									Welch's F = 78.731*** ω^2 = .048

[1] Mean based on the following scale: 1 = moose much more important, 2 = moose moderately more important, 3 = moose slightly more important, 4 = equally important, 5 = deer slightly more important, 6 = deer moderately more important, 7 = deer much more important.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 187.714***, V = .175
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 2-4: Preferences for wolf populations. There were an estimated 2,655 wolves in Minnesota in winter 2017/18. I would like to have ____ wolves in Minnesota.

Study strata	n	Zero	Many fewer	Fewer	About the same number	More	Many more	Mean[1]
Livestock producers	1084	11.2%	32.5%	29.0%	23.7%	3.1%	0.6%	2.77
Deer hunters	859	5.2%	25.7%	28.9%	30.3%	7.9%	2.0%	3.16
Residents[2]	1270	1.8%	4.6%	7.6%	43.8%	33.1%	9.1%	4.29
								Welch's F = 680.989*** ω^2 = .297

[1] Mean based on the following scale: 1 = zero, 2 = many fewer, 3 = fewer, 4 = about the same, 5 = more, 6 = many more.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 1072.078***, V = .408
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Section 2: Interactions between Wolves, Moose, and Deer, and Preferences for Wolf Populations

Table 2-5: Preferences for wolf populations. Compared to today, I would like to see wolves occupy ____ territory in Minnesota.

Study strata	n	No	Much less	Less	About the same amount of	More	Much more	Mean[1]
Livestock producers	1085	9.1%	28.7%	27.8%	28.8%	4.3%	1.2%	2.94
Deer hunters	863	5.0%	19.5%	23.8%	41.6%	8.8%	1.4%	3.34
Residents[2]	1275	1.3%	3.0%	6.7%	55.7%	27.7%	5.6%	4.22
								Welch's F = 530.563*** ω^2 = .247

[1] Mean based on the following scale: 1 = no, 2 = much less, 3 = less, 4 = about the same, 5 = more, 6 = much more.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 873.617***, V = .368
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 2-6: Preferences for wolf populations. How much do you agree or disagree with the statement: It is important to maintain a wolf population in Minnesota.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1092	21.4%	13.5%	7.6%	10.3%	18.7%	12.6%	15.9%	3.93
Deer hunters	873	10.8%	8.7%	6.3%	7.4%	20.5%	20.5%	25.8%	4.83
Residents[2]	1285	2.3%	2.2%	1.9%	6.5%	10.9%	25.7%	50.4%	6.00
									Welch's F = 403.841*** ω^2 = .199

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 667.686***, V = .320
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Section 3: Preferences for Wolf Management

Results for Sections 4 and 5 of the livestock producer, deer hunter, and resident surveys are presented below. We compare these groups on all variables. We found statistically significant differences among these research strata for all items described in this section.

Importance of Minnesota Department of Natural Resources' Wolf Management Actions

Respondents were asked to rate the importance of 11 possible objectives for wolf management in Minnesota, using the scale: 1 (not at all important) to 5 (very important). Results are summarized in Table 3-1. The most important objectives for livestock producers were to: (a) compensate livestock producers for animals lost to wolves (M = 4.68), (b) kill wolves that show aggression or threatening behavior toward people (M = 4.61), and (c) kill wolves in areas where they are attacking domestic livestock (M = 4.60). Similarly, for hunters, the most important objectives were to: (a) kill wolves that show aggression or threatening behavior toward people (M = 4.47), (b) kill wolves in areas where they are attacking domestic livestock (M = 4.08), and (c) educate livestock producers about best management practices to prevent conflict (M = 3.91). For residents, the most important objectives were to: (a) educate livestock producers about best management practices to prevent conflict (M = 4.34), (b) study wolf populations (M = 4.21), and (c) educate people about wolves (M = 4.23). The least important objectives for both livestock producers and hunters were to: (a) protect individual wolves (M =1.93 livestock producers, M = 2.24 hunters) and (b) promote public opportunities to see and hear wolves (M = 1.96 livestock producers, M = 2.34 hunters). The least important objectives for residents were to: (a) reduce wolf populations on public lands if they are killing hunting dogs (M = 2.55), and (b) reduce wolf populations to address concerns about deer and moose populations (M = 2.45). Frequencies for all possible management objectives are shown in Tables 3-2 through 3-12.

Acceptability of Minnesota Department of Natural Resources' Actions in Different Scenarios

Respondents were asked to consider three wolf scenarios and rate the acceptability of five possible options for the Minnesota Department of Natural Resources. The five possible actions were: (a) do nothing, (b) monitor the situation, (c) try to frighten the wolf away, (d) capture and relocate the wolf, or (e) kill the wolf. The acceptability of these actions were rated on a 7-point scale ranging from 1 (highly unacceptable) to 7 (highly acceptable).

The first scenario was "if a wolf were seen near a residential neighborhood," and results for this scenario are presented in Tables 3-13 through 3-18. For this scenario, respondents from all three groups found "doing nothing" unacceptable (Table 3-14). On average, "monitoring the situation" was seen as between neither acceptable nor unacceptable and slightly acceptable (M = 4.50) among livestock producers, slightly acceptable (M = 5.04) among hunters, and slightly to moderately acceptable (M = 5.72) among residents (Table 3-15). All three groups were relatively neutral about the acceptability of "trying to frighten a wolf away" (M = 3.87 livestock producers, M = 4.25 hunters, M = 4.75 residents) (Table 3-16). All three groups were on the acceptable side of neutral for the option of "capturing and relocating" in this scenario" (M = 4.47 livestock producers, M = 5.21 hunters, M = 5.97 residents) (Table 3-17). Residents found the option of killing a wolf in this scenario unacceptable (M = 2.55), while livestock producers found it slightly acceptable (M = 5.02) and hunters neutral to slightly acceptable (M = 4.39) (Table 3-18).

The second scenario was "if a wolf killed someone's pet (e.g., domestic dog or cat)," and results for this scenario are presented in Tables 3-19 through 3-24. For this scenario, respondents from all three groups found "doing nothing" unacceptable (Table 3-20). On average, "monitoring the situation" was seen as between slightly unacceptable and neither acceptable nor unacceptable (M = 3.81) among livestock

producers, between neither acceptable nor unacceptable and slightly acceptable for hunters (M = 4.24), and slightly acceptable for residents (M = 5.08) (Table 3-21). Livestock producers and hunters both rated the option "try to frighten the wolf away" between slightly unacceptable and neutral, while residents rated it slightly acceptable (Table 3-22). Livestock producers and hunters both rated the option of "capturing and relocating a wolf" between neutral and slightly acceptable, while residents rated it moderately acceptable (Table 3-23). Residents found the option of killing a wolf in this scenario slightly unacceptable (M = 3.07), while livestock producers and hunters found it slightly acceptable (M = 5.37 for livestock producers, M = 4.85 for hunters) (Table 3-24).

The third scenario was "if a wolf killed livestock," and results for this scenario are presented in Tables 3-25 through 3-30. For this scenario, the only action that was on the acceptable side of neutral for livestock producers was killing the wolf (Tables 3-25 and 3-30). Residents found monitoring the situation (Table 3-27), trying to frighten the wolf away (Table 3-28), and capturing and relocating the wolf (Table 3-29) acceptable. Hunters found doing nothing unacceptable (Table 3-26), killing the wolf acceptable (Table 3-30), and other options fairly close to neutral (Tables 3-27, 3-28, and 3-29).

Support for Hunting and Trapping of Wolves in Minnesota

Respondents were asked to rate their support or opposition to regulated hunting and trapping seasons in Minnesota. Response was on a 7-point scale ranging from 1 (strongly oppose) to 7 (strongly support). Results are shown in Tables 3-31 to 3-32. On average, livestock producers and hunters reported moderate support for a hunting season, while residents reported very slight opposition (Table 3-31). Likewise, livestock producers and hunters reported moderate support for a trapping season, while residents reported slight opposition (Table 3-32).

Preferences for Geographic Distribution of Wolves in Minnesota

Respondents were asked to rate the acceptability of wolves living in seven different areas on a 7-point scale ranging from 1 (highly unacceptable) to 7 (highly acceptable). Results are shown in Tables 3-33 to 3-40. Among livestock producers and hunters, only two areas were rated on the acceptable side: (a) primarily forested areas that are mostly publicly owned (M = 5.01 livestock producers, M = 5.50 hunters, Table 3-34), and (b) primarily forested areas that are mostly privately owned (M = 4.09 livestock producers, M = 4.89 hunters, Table 3-35). Residents rated five of the seven areas on the acceptable side with only two areas seen as unacceptable for wolves: (a) rural areas on the fringes of suburban development (M = 3.75, Table 3-38), and (b) suburban and urban residential areas (M = 2.60, Table 3-39).

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Table 3-1: Importance of MNDNR management actions.

How important to…	Study strata mean			F
	Livestock producers	Deer hunters	Residents[2]	
Kill wolves in areas where they are attacking domestic livestock	4.60	4.08	3.00	Welch's F = 733.357***
Protect individual wolves	1.93	2.24	3.27	Welch's F = 418.778***
Reduce wolf populations on public lands if they are killing hunting dogs	3.55	3.46	2.55	Welch's F = 202.286***
Promote diverse animal communities that include wolves	2.39	2.89	3.95	Welch's F = 475.342***
Promote public opportunities to see and hear wolves	1.96	2.34	3.45	Welch's F = 441.825***
Reduce wolf populations to address concerns about deer and moose populations	3.64	3.73	2.45	Welch's F = 372.328***
Educate people about wolves	3.49	3.74	4.23	Welch's F = 119.090***
Kill wolves that show aggression or threatening behavior toward people	4.61	4.47	3.65	Welch's F = 234.609***
Educate livestock producers about best management practices to prevent conflict	3.72	3.91	4.34	Welch's F = 93.216***
Compensate livestock producers for animals lost to wolves	4.68	3.80	3.06	Welch's F = 691.152***
Study wolf populations	3.35	3.69	4.21	Welch's F = 138.606***

[1] Mean based on the following scale: 1 = not at all important, 2 = slightly important, 3 = somewhat important, 4 = moderately important, 5 = very important.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 3-2: How important for the Minnesota DNR to: Kill wolves in areas where they are attacking domestic livestock

Study strata	n	Not at all important	Slightly important	Somewhat important	Moderately important	Very important	Mean[1]
Livestock producers	1096	0.5%	3.6%	6.9%	13.1%	75.9%	4.60
Deer hunters	873	2.9%	7.3%	17.4%	23.5%	48.9%	4.08
Residents[2]	1288	11.3%	25.0%	30.8%	17.6%	15.2%	3.00
							Welch's F = 733.357*** ω^2 = .310

[1] Mean based on the following scale: 1 = not at all important, 2 = slightly important, 3 = somewhat important, 4 = moderately important, 5 = very important.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 1082.991***, V = .408
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

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Table 3-3: How important for the Minnesota DNR to: Protect individual wolves

Study strata	n	Not at all important	Slightly important	Somewhat important	Moderately important	Very important	Mean[1]
Livestock producers	1074	48.6%	23.7%	16.9%	7.3%	3.4%	1.93
Deer hunters	860	34.8%	27.4%	22.8%	9.4%	5.6%	2.24
Residents[2]	1284	7.9%	20.6%	27.6%	24.7%	19.2%	3.27
							Welch's F = 418.778*** ω^2 = .206

[1] Mean based on the following scale: 1 = not at all important, 2 = slightly important, 3 = somewhat important, 4 = moderately important, 5 = very important.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 703.408***, V = .331
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 3-4: How important for the Minnesota DNR to: Reduce wolf populations on public lands if they are killing hunting dogs

Study strata	n	Not at all important	Slightly important	Somewhat important	Moderately important	Very important	Mean[1]
Livestock producers	1082	11.1%	14.8%	19.2%	17.5%	37.4%	3.55
Deer hunters	869	12.7%	15.8%	16.9%	22.0%	32.7%	3.46
Residents[2]	1290	28.7%	21.4%	25.6%	15.0%	9.3%	2.55
							F = 202.286*** ω^2 = .110

[1] Mean based on the following scale: 1 = not at all important, 2 = slightly important, 3 = somewhat important, 4 = moderately important, 5 = very important.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 387.642***, V = .245
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 3-5: How important for the Minnesota DNR to: Promote diverse animal communities that include wolves

Study strata	n	Not at all important	Slightly important	Somewhat important	Moderately important	Very important	Mean[1]
Livestock producers	1075	33.8%	24.2%	21.9%	9.3%	10.9%	2.39
Deer hunters	868	19.7%	22.4%	23.4%	18.1%	16.5%	2.89
Residents[2]	1287	5.4%	8.2%	16.3%	26.6%	43.5%	3.95
							F = 475.342*** ω^2 = .227

[1] Mean based on the following scale: 1 = not at all important, 2 = slightly important, 3 = somewhat important, 4 = moderately important, 5 = very important.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 750.115***, V = .341
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 3-6: How important for the Minnesota DNR to: Promote public opportunities to see and hear wolves

Study strata	n	Not at all important	Slightly important	Somewhat important	Moderately important	Very important	Mean[1]
Livestock producers	1089	49.2%	25.1%	12.7%	6.8%	6.2%	1.96
Deer hunters	868	37.2%	20.9%	20.6%	12.9%	8.4%	2.34
Residents[2]	1287	10.7%	14.0%	21.9%	26.9%	26.6%	3.45
							Welch's F = 441.825*** ω^2 = .214

[1] Mean based on the following scale: 1 = not at all important, 2 = slightly important, 3 = somewhat important, 4 = moderately important, 5 = very important.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 720.042***, V = .333
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 3-7: How important for the Minnesota DNR to: Reduce wolf populations to address concerns about deer and moose populations

Study strata	n	Not at all important	Slightly important	Somewhat important	Moderately important	Very important	Mean[1]
Livestock producers	1086	9.9%	13.7%	18.0%	19.0%	39.4%	3.64
Deer hunters	870	7.2%	15.9%	16.3%	17.4%	43.2%	3.73
Residents[2]	1289	23.4%	34.7%	23.6%	10.0%	8.3%	2.45
							Welch's F = 372.328*** ω^2 = .186

[1] Mean based on the following scale: 1 = not at all important, 2 = slightly important, 3 = somewhat important, 4 = moderately important, 5 = very important.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 608.787***, V = .306
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 3-8: How important for the Minnesota DNR to: Educate people about wolves

Study strata	n	Not at all important	Slightly important	Somewhat important	Moderately important	Very important	Mean[1]
Livestock producers	1082	12.3%	13.0%	23.9%	15.1%	35.7%	3.49
Deer hunters	870	7.8%	10.5%	22.1%	19.5%	40.1%	3.74
Residents[2]	1274	2.2%	5.7%	13.1%	24.8%	54.2%	4.23
							Welch's F = 119.090*** ω^2 = .068

[1] Mean based on the following scale: 1 = not at all important, 2 = slightly important, 3 = somewhat important, 4 = moderately important, 5 = very important.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 239.012***, V = .192
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

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Table 3-9: How important for the Minnesota DNR to: Kill wolves that show aggression or threatening behavior toward people

Study strata	n	Not at all important	Slightly important	Somewhat important	Moderately important	Very important	Mean[1]
Livestock producers	1094	2.1%	3.0%	5.6%	10.3%	79.0%	4.61
Deer hunters	871	2.3%	3.8%	7.2%	18.0%	68.7%	4.47
Residents[2]	1290	8.9%	13.6%	16.7%	25.0%	35.7%	3.65
							Welch's F = 234.609*** ω^2 = .126

[1] Mean based on the following scale: 1 = not at all important, 2 = slightly important, 3 = somewhat important, 4 = moderately important, 5 = very important.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 541.761***, V = .288
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 3-10: How important for the Minnesota DNR to: Educate livestock producers about best management practices to prevent conflict

Study strata	n	Not at all important	Slightly important	Somewhat important	Moderately important	Very important	Mean[1]
Livestock producers	1081	10.9%	9.2%	18.5%	20.2%	41.3%	3.72
Deer hunters	867	6.9%	7.8%	17.1%	23.3%	44.9%	3.91
Residents[2]	1291	2.0%	3.4%	11.4%	25.0%	58.2%	4.34
							Welch's F = 93.216*** ω^2 = .054

[1] Mean based on the following scale: 1 = not at all important, 2 = slightly important, 3 = somewhat important, 4 = moderately important, 5 = very important.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 174.329***, V = .164
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 3-11: How important for the Minnesota DNR to: Compensate livestock producers for animals lost to wolves

Study strata	n	Not at all important	Slightly important	Somewhat important	Moderately important	Very important	Mean[1]
Livestock producers	1096	0.9%	2.8%	5.0%	10.2%	81.0%	4.68
Deer hunters	868	10.9%	9.8%	14.4%	18.4%	46.4%	3.80
Residents[2]	1292	16.4%	20.3%	24.0%	19.2%	20.1%	3.06
							Welch's F = 691.152*** ω^2 = .298

[1] Mean based on the following scale: 1 = not at all important, 2 = slightly important, 3 = somewhat important, 4 = moderately important, 5 = very important.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 945.570***, V = .381
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

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Table 3-12: How important for the Minnesota DNR to: Study wolf populations

Study strata	n	Not at all important	Slightly important	Somewhat important	Moderately important	Very important	Mean[1]
Livestock producers	1090	15.7%	14.5%	21.7%	15.0%	33.0%	3.35
Deer hunters	867	8.7%	12.6%	19.3%	19.8%	39.7%	3.69
Residents[2]	1288	2.4%	6.8%	15.1%	19.0%	56.7%	4.21
							Welch's F = 138.606*** ω^2 = .078

[1] Mean based on the following scale: 1 = not at all important, 2 = slightly important, 3 = somewhat important, 4 = moderately important, 5 = very important.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 259.102***, V = .200
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 3-13: Acceptability of Minnesota DNR actions. If a wolf were <u>seen near a residential neighborhood</u>.

	Study strata mean			F
	Livestock producers	Deer hunters	Residents[2]	
Do nothing	2.40	2.60	2.67	Welch's F = 6.160**
Monitor the situation	4.50	5.04	5.72	Welch's F = 104.217***
Try to frighten it away	3.87	4.25	4.75	Welch's F = 54.536***
Capture and relocate it	4.47	5.21	5.97	Welch's F = 177.871***
Kill it	5.02	4.39	2.55	Welch's F = 465.189***

[1] Mean based on the following scale: 1 = highly unacceptable, 2 = moderately unacceptable, 3 = slightly unacceptable, 4 = neither, 5 = slightly acceptable, 6 = moderately acceptable, 7 = highly acceptable.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

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Table 3-14: Acceptability of Minnesota DNR actions. If a wolf were seen near a residential neighborhood: Do nothing

Study strata	n	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately Acceptable	Highly acceptable	Mean[1]
Livestock producers	1058	54.1%	12.8%	7.8%	8.8%	4.8%	5.2%	6.6%	2.40
Deer hunters	864	47.5%	14.8%	8.7%	8.4%	6.3%	8.4%	5.9%	2.60
Residents[2]	1299	37.9%	20.2%	14.0%	10.6%	5.2%	7.1%	5.1%	2.67
									Welch's F = 6.160** ω^2 = .003

[1] Mean based on the following scale: 1 = highly unacceptable, 2 = moderately unacceptable, 3 = slightly unacceptable, 4 = neither, 5 = slightly acceptable, 6 = moderately acceptable, 7 = highly acceptable.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 96.099***, V = .122
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 3-15: Acceptability of Minnesota DNR actions. If a wolf were seen near a residential neighborhood: Monitor the situation

Study strata	n	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately Acceptable	Highly acceptable	Mean[1]
Livestock producers	1055	20.6%	8.2%	5.9%	6.9%	12.3%	16.6%	29.5%	4.50
Deer hunters	859	11.2%	8.5%	5.2%	5.2%	13.2%	23.4%	33.3%	5.04
Residents[2]	1299	5.3%	5.8%	2.6%	4.3%	11.4%	20.8%	49.8%	5.72
									Welch's F = 104.217*** ω^2 = .060

[1] Mean based on the following scale: 1 = highly unacceptable, 2 = moderately unacceptable, 3 = slightly unacceptable, 4 = neither, 5 = slightly acceptable, 6 = moderately acceptable, 7 = highly acceptable.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 228.828***, V = .189
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

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Table 3-16: Acceptability of Minnesota DNR actions. If a wolf were seen near a residential neighborhood: Try to frighten it away

Study strata	n	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately Acceptable	Highly acceptable	Mean[1]
Livestock producers	1053	27.2%	7.7%	5.9%	15.9%	13.7%	13.1%	16.6%	3.87
Deer hunters	856	18.8%	9.0%	6.9%	13.4%	15.3%	18.2%	18.3%	4.25
Residents[2]	1294	9.8%	5.9%	8.6%	13.0%	20.3%	21.9%	20.4%	4.75
									Welch's F = 54.536*** ω^2 = .032

[1] Mean based on the following scale: 1 = highly unacceptable, 2 = moderately unacceptable, 3 = slightly unacceptable, 4 = neither, 5 = slightly acceptable, 6 = moderately acceptable, 7 = highly acceptable.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 161.352***, V = .159
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 3-17: Acceptability of Minnesota DNR actions. If a wolf were seen near a residential neighborhood: Capture and relocate it

Study strata	n	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately Acceptable	Highly acceptable	Mean[1]
Livestock producers	1064	23.5%	5.1%	3.9%	10.2%	13.2%	14.6%	29.6%	4.47
Deer hunters	862	11.0%	4.6%	4.2%	8.0%	14.2%	20.6%	37.4%	5.21
Residents[2]	1302	2.9%	2.1%	3.3%	3.6%	13.4%	24.5%	50.2%	5.97
									Welch's F = 177.871*** ω^2 = .099

[1] Mean based on the following scale: 1 = highly unacceptable, 2 = moderately unacceptable, 3 = slightly unacceptable, 4 = neither, 5 = slightly acceptable, 6 = moderately acceptable, 7 = highly acceptable.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 259.141***, V = .236
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

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Table 3-18: Acceptability of Minnesota DNR actions. If a wolf were seen near a residential neighborhood: Kill it

Study strata	n	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately Acceptable	Highly acceptable	Mean[1]
Livestock producers	1068	13.0%	7.5%	4.5%	9.5%	13.3%	9.8%	42.4%	5.02
Deer hunters	866	17.8%	11.1%	7.0%	10.5%	13.3%	12.7%	27.6%	4.39
Residents[2]	1293	45.0%	19.5%	8.6%	7.7%	7.3%	5.8%	6.2%	2.55
									Welch's F = 465.189*** ω^2 = .223

[1] Mean based on the following scale: 1 = highly unacceptable, 2 = moderately unacceptable, 3 = slightly unacceptable, 4 = neither, 5 = slightly acceptable, 6 = moderately acceptable, 7 = highly acceptable.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 727.234***, V = .336
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 3-19: Acceptability of Minnesota DNR actions. If a wolf killed someone's pet (e.g., domestic dog or cat).

	Study strata mean			F
	Livestock producers	Deer hunters	Residents[2]	
Do nothing	2.12	2.35	2.71	Welch's F = 31.037***
Monitor the situation	3.81	4.24	5.08	Welch's F = 102.857***
Try to frighten it away	3.31	3.81	4.66	Welch's F = 117.440***
Capture and relocate it	4.19	4.85	5.98	Welch's F = 244.024***
Kill it	5.37	4.85	3.07	Welch's F = 380.636***

[1] Mean based on the following scale: 1 = highly unacceptable, 2 = moderately unacceptable, 3 = slightly unacceptable, 4 = neither, 5 = slightly acceptable, 6 = moderately acceptable, 7 = highly acceptable.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

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Table 3-20: Acceptability of Minnesota DNR actions. If a wolf killed someone's pet (e.g., domestic dog or cat): Do nothing

Study strata	n	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately Acceptable	Highly acceptable	Mean[1]
Livestock producers	1068	59.2%	13.6%	7.4%	7.1%	5.1%	3.7%	3.8%	2.12
Deer hunters	859	51.1%	14.1%	11.5%	8.7%	5.5%	5.0%	4.1%	2.35
Residents[2]	1308	41.0%	16.2%	13.2%	9.9%	6.7%	5.7%	7.2%	2.71
									Welch's F = 31.037*** ω^2 = .018

[1] Mean based on the following scale: 1 = highly unacceptable, 2 = moderately unacceptable, 3 = slightly unacceptable, 4 = neither, 5 = slightly acceptable, 6 = moderately acceptable, 7 = highly acceptable.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 90.051***, V = .118
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 3-21: Acceptability of Minnesota DNR actions. If a wolf killed someone's pet (e.g., domestic dog or cat): Monitor the situation

Study strata	n	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately Acceptable	Highly acceptable	Mean[1]
Livestock producers	1058	30.3%	9.9%	6.1%	7.8%	13.5%	12.7%	19.6%	3.81
Deer hunters	861	21.3%	10.0%	7.9%	7.2%	14.6%	15.9%	23.1%	4.24
Residents[2]	1302	10.0%	7.7%	7.1%	4.7%	15.2%	20.8%	34.4%	5.08
									Welch's F = 102.857*** ω^2 = .059

[1] Mean based on the following scale: 1 = highly unacceptable, 2 = moderately unacceptable, 3 = slightly unacceptable, 4 = neither, 5 = slightly acceptable, 6 = moderately acceptable, 7 = highly acceptable.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 219.654***, V = .185
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

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Table 3-22: Acceptability of Minnesota DNR actions. If a wolf killed someone's pet (e.g., domestic dog or cat): Try to frighten it away

Study strata	n	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately Acceptable	Highly acceptable	Mean[1]
Livestock producers	1057	37.7%	9.7%	7.0%	10.6%	11.7%	10.8%	12.5%	3.31
Deer hunters	856	27.9%	10.4%	5.8%	11.1%	13.6%	15.5%	15.7%	3.81
Residents[2]	1300	12.2%	9.9%	6.5%	11.6%	14.5%	22.0%	23.3%	4.66
									Welch's F = 117.440*** ω^2 = .068

[1] Mean based on the following scale: 1 = highly unacceptable, 2 = moderately unacceptable, 3 = slightly unacceptable, 4 = neither, 5 = slightly acceptable, 6 = moderately acceptable, 7 = highly acceptable.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 248.245***, V = .197
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 3-23: Acceptability of Minnesota DNR actions. If a wolf killed someone's pet (e.g., domestic dog or cat): Capture and relocate it

Study strata	n	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately Acceptable	Highly acceptable	Mean[1]
Livestock producers	1061	28.1%	6.8%	4.3%	7.6%	11.9%	14.6%	26.7%	4.19
Deer hunters	858	17.2%	6.2%	3.7%	6.4%	13.5%	19.0%	33.9%	4.85
Residents[2]	1292	4.7%	2.6%	1.7%	3.1%	10.8%	22.9%	54.3%	5.98
									Welch's F = 244.024*** ω^2 = .131

[1] Mean based on the following scale: 1 = highly unacceptable, 2 = moderately unacceptable, 3 = slightly unacceptable, 4 = neither, 5 = slightly acceptable, 6 = moderately acceptable, 7 = highly acceptable.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 411.943***, V = .253
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

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Table 3-24: Acceptability of Minnesota DNR actions. If a wolf killed someone's pet (e.g., domestic dog or cat): Kill it

Study strata	n	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately Acceptable	Highly acceptable	Mean[1]
Livestock producers	1081	10.8%	6.5%	3.8%	6.8%	9.5%	11.3%	51.2%	5.37
Deer hunters	864	15.3%	8.1%	5.7%	7.6%	12.0%	13.4%	37.8%	4.85
Residents[2]	1295	35.8%	17.2%	8.8%	8.3%	12.7%	6.9%	10.3%	3.07
									Welch's F = 380.636*** ω^2 = .190

[1] Mean based on the following scale: 1 = highly unacceptable, 2 = moderately unacceptable, 3 = slightly unacceptable, 4 = neither, 5 = slightly acceptable, 6 = moderately acceptable, 7 = highly acceptable.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 649.688***, V = .317
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 3-25: Acceptability of Minnesota DNR actions. If a wolf killed livestock (e.g., cow, sheep, goat).

	Study strata mean			F
	Livestock producers	Deer hunters	Residents[2]	
Do nothing	1.52	2.10	2.62	Welch's F = 147.877***
Monitor the situation	3.54	4.16	5.29	Welch's F = 186.823***
Try to frighten it away	2.84	3.66	4.72	Welch's F = 220.947***
Capture and relocate it	3.88	4.72	5.99	Welch's F = 310.131***
Kill it	5.95	5.24	3.25	Welch's F = 539.114***

[1] Mean based on the following scale: 1 = highly unacceptable, 2 = moderately unacceptable, 3 = slightly unacceptable, 4 = neither, 5 = slightly acceptable, 6 = moderately acceptable, 7 = highly acceptable.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

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Table 3-26: Acceptability of Minnesota DNR actions. If a wolf killed livestock (e.g., cow, sheep, goat): Do nothing

Study strata	n	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately Acceptable	Highly acceptable	Mean[1]
Livestock producers	1064	78.3%	9.6%	4.0%	2.8%	1.7%	2.0%	1.6%	1.52
Deer hunters	859	59.0%	15.1%	7.3%	5.7%	5.2%	3.4%	4.2%	2.10
Residents[2]	1305	43.8%	13.3%	14.9%	10.1%	5.6%	7.5%	4.8%	2.62
									Welch's F = 147.877*** ω^2 = .083

[1] Mean based on the following scale: 1 = highly unacceptable, 2 = moderately unacceptable, 3 = slightly unacceptable, 4 = neither, 5 = slightly acceptable, 6 = moderately acceptable, 7 = highly acceptable.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 342.490***, V = .230
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 3-27: Acceptability of Minnesota DNR actions. If a wolf killed livestock (e.g., cow, sheep, goat): Monitor the situation

Study strata	n	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately Acceptable	Highly acceptable	Mean[1]
Livestock producers	1064	38.3%	11.0%	5.0%	4.5%	8.8%	10.2%	22.2%	3.54
Deer hunters	855	24.4%	10.4%	6.1%	6.0%	14.5%	14.4%	24.2%	4.16
Residents[2]	1295	8.4%	7.4%	5.9%	3.9%	14.8%	18.5%	41.1%	5.29
									Welch's F = 186.823*** ω^2 = .104

[1] Mean based on the following scale: 1 = highly unacceptable, 2 = moderately unacceptable, 3 = slightly unacceptable, 4 = neither, 5 = slightly acceptable, 6 = moderately acceptable, 7 = highly acceptable.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 377.153***, V = .242
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

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Table 3-28: Acceptability of Minnesota DNR actions. If a wolf killed livestock (e.g., cow, sheep, goat): Try to frighten it away

Study strata	n	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately Acceptable	Highly acceptable	Mean[1]
Livestock producers	1056	49.9%	11.1%	5.3%	6.2%	7.2%	7.0%	13.4%	2.84
Deer hunters	859	32.1%	10.1%	7.2%	8.0%	12.2%	13.3%	17.0%	3.66
Residents[2]	1304	12.2%	9.1%	5.9%	11.4%	15.6%	20.3%	25.5%	4.72
									Welch's F = 220.947*** ω^2 = .120

[1] Mean based on the following scale: 1 = highly unacceptable, 2 = moderately unacceptable, 3 = slightly unacceptable, 4 = neither, 5 = slightly acceptable, 6 = moderately acceptable, 7 = highly acceptable.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 459.455***, V = .267
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 3-29: Acceptability of Minnesota DNR actions. If a wolf killed livestock (e.g., cow, sheep, goat): Capture and relocate it

Study strata	n	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately Acceptable	Highly acceptable	Mean[1]
Livestock producers	1060	37.7%	6.1%	3.3%	4.3%	7.8%	13.0%	27.6%	3.88
Deer hunters	862	20.5%	6.7%	3.0%	4.9%	12.1%	20.0%	32.8%	4.72
Residents[2]	1299	4.2%	2.5%	1.6%	3.6%	11.4%	22.8%	53.8%	5.99
									Welch's F = 310.131*** ω^2 = .161

[1] Mean based on the following scale: 1 = highly unacceptable, 2 = moderately unacceptable, 3 = slightly unacceptable, 4 = neither, 5 = slightly acceptable, 6 = moderately acceptable, 7 = highly acceptable.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 523.690***, V = .285
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

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Table 3-30: Acceptability of Minnesota DNR actions. If a wolf killed livestock (e.g., cow, sheep, goat): Kill it

Study strata	n	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately Acceptable	Highly acceptable	Mean[1]
Livestock producers	1087	8.2%	3.7%	1.7%	3.4%	5.5%	8.9%	68.5%	5.95
Deer hunters	867	11.6%	7.0%	4.6%	5.4%	11.1%	13.6%	46.6%	5.24
Residents[2]	1308	34.1%	15.7%	9.1%	8.0%	11.5%	8.7%	12.8%	3.25
									Welch's F = 539.114*** ω^2 = .248

[1] Mean based on the following scale: 1 = highly unacceptable, 2 = moderately unacceptable, 3 = slightly unacceptable, 4 = neither, 5 = slightly acceptable, 6 = moderately acceptable, 7 = highly acceptable.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 930.478***, V = .378
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 3-31: If wolves are removed from the endangered species list and management authority moves to the state of Minnesota, how much do you support or oppose: Establishing a regulated wolf hunting season

Study strata	n	Strongly oppose	Moderately oppose	Slightly oppose	Neither	Slightly support	Moderately support	Strongly support	Mean[1]
Livestock producers	1079	3.5%	1.4%	2.0%	5.3%	7.5%	13.5%	66.7%	6.19
Deer hunters	867	3.3%	2.2%	1.8%	4.6%	8.8%	16.0%	63.2%	6.14
Residents[2]	1304	28.1%	12.0%	8.7%	10.5%	13.5%	12.9%	14.2%	3.65
									Welch's F = 650.900*** ω^2 = .286

[1] Mean based on the following scale: 1 = strongly oppose, 2 = moderately oppose, 3 = slightly oppose, 4 = neither, 5 = slightly support, 6 = moderately support, 7 = strongly support.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 1090.588***, V = .410
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 3-32: If wolves are removed from the endangered species list and management authority moves to the state of Minnesota, how much do you support or oppose: Establishing a regulated wolf trapping season

Study strata	n	Strongly oppose	Moderately oppose	Slightly oppose	Neither	Slightly support	Moderately support	Strongly support	Mean[1]
Livestock producers	1085	6.7%	2.0%	2.0%	5.3%	7.4%	12.7%	63.8%	5.98
Deer hunters	867	8.0%	3.9%	2.8%	5.8%	10.5%	14.9%	54.2%	5.68
Residents[2]	1312	42.7%	7.8%	7.7%	11.9%	9.5%	9.7%	10.8%	3.10
									Welch's F = 706.566*** ω^2 = .302

[1] Mean based on the following scale: 1 = strongly oppose, 2 = moderately oppose, 3 = slightly oppose, 4 = neither, 5 = slightly support, 6 = moderately support, 7 = strongly support.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 1084.730***, V = .408
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 3-33: Acceptability of wolves living in different areas in Minnesota.

	Study strata mean			F
	Livestock producers	Deer hunters	Residents[2]	
Primarily forested areas that are mostly publicly owned	5.01	5.50	6.19	Welch's F = 141.436***
Primarily forested areas that are mostly privately owned	4.09	4.89	5.68	Welch's F = 223.473***
Areas with a mix of forest, open land, farms and small towns	3.19	4.21	4.98	Welch's F = 262.898***
Areas that are mostly farmland with small towns	2.73	3.56	4.26	Welch's F = 199.039***
Rural areas on the fringes of suburban development	2.64	3.09	3.75	F = 4.728***
Suburban and urban residential areas	2.41	2.40	2.60	Welch's F = 5.086**
Anywhere wolves become established on their own	3.01	3.47	4.37	Welch's F = 154.267***

[1] Mean based on the following scale: 1 = highly unacceptable, 2 = moderately unacceptable, 3 = slightly unacceptable, 4 = neither, 5 = slightly acceptable, 6 = moderately acceptable, 7 = highly acceptable.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

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Table 3-34: Acceptability of wolves living in different areas in Minnesota: Primarily forested areas that are mostly publicly owned

Study strata	n	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately acceptable	Highly acceptable	Mean[1]
Livestock producers	1076	11.8%	5.9%	5.2%	8.8%	15.7%	20.4%	32.2%	5.01
Deer hunters	866	6.7%	4.7%	3.9%	6.7%	13.9%	23.0%	41.1%	5.50
Residents[2]	1310	2.2%	2.7%	1.1%	5.5%	8.2%	16.9%	63.4%	6.19
									Welch's F = 141.436*** ω^2 = .080

[1] Mean based on the following scale: 1 = highly unacceptable, 2 = moderately unacceptable, 3 = slightly unacceptable, 4 = neither, 5 = slightly acceptable, 6 = moderately acceptable, 7 = highly acceptable.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 310.272***, V = .218
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 3-35: Acceptability of wolves living in different areas in Minnesota: Primarily forested areas that are mostly privately owned

Study strata	n	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately acceptable	Highly acceptable	Mean[1]
Livestock producers	1077	19.4%	10.5%	6.9%	12.3%	19.4%	18.6%	12.9%	4.09
Deer hunters	864	10.4%	8.0%	6.3%	9.5%	16.9%	21.5%	27.4%	4.89
Residents[2]	1310	3.1%	3.6%	3.1%	8.2%	15.2%	27.4%	39.4%	5.68
									Welch's F = 223.473*** ω^2 = .120

[1] Mean based on the following scale: 1 = highly unacceptable, 2 = moderately unacceptable, 3 = slightly unacceptable, 4 = neither, 5 = slightly acceptable, 6 = moderately acceptable, 7 = highly acceptable.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 399.231***, V = .248
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 3-36: Acceptability of wolves living in different areas in Minnesota: Areas with a mix of forest, open land, farms and small towns

Study strata	n	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately acceptable	Highly acceptable	Mean[1]
Livestock producers	1074	33.8%	12.9%	10.2%	9.9%	16.1%	11.1%	6.0%	3.19
Deer hunters	863	16.3%	10.9%	10.4%	9.0%	18.5%	20.3%	14.5%	4.21
Residents[2]	1306	7.0%	4.1%	8.1%	10.6%	25.1%	26.0%	19.2%	4.98
									Welch's F = 262.898*** ω^2 = .139

[1] Mean based on the following scale: 1 = highly unacceptable, 2 = moderately unacceptable, 3 = slightly unacceptable, 4 = neither, 5 = slightly acceptable, 6 = moderately acceptable, 7 = highly acceptable.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 467.280***, V = .268
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 3-37: Acceptability of wolves living in different areas in Minnesota: Areas that are mostly farmland with small towns

Study strata	n	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately acceptable	Highly acceptable	Mean[1]
Livestock producers	1075	41.6%	15.3%	11.0%	8.1%	12.4%	7.6%	4.0%	2.73
Deer hunters	862	22.9%	15.5%	13.6%	10.8%	15.4%	12.1%	9.7%	3.56
Residents[2]	1308	10.2%	10.6%	12.5%	12.5%	28.2%	15.5%	10.4%	4.26
									Welch's F = 199.039*** ω^2 = .109

[1] Mean based on the following scale: 1 = highly unacceptable, 2 = moderately unacceptable, 3 = slightly unacceptable, 4 = neither, 5 = slightly acceptable, 6 = moderately acceptable, 7 = highly acceptable.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 419.701***, V = .254
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 3-38: Acceptability of wolves living in different areas in Minnesota: Rural areas on the fringes of suburban development

Study strata	n	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately acceptable	Highly acceptable	Mean[1]
Livestock producers	1068	41.6%	16.9%	13.0%	9.1%	9.2%	5.0%	5.3%	2.64
Deer hunters	858	28.4%	18.3%	16.2%	10.8%	12.0%	7.7%	6.5%	3.09
Residents[2]	1306	14.0%	14.5%	17.9%	14.5%	21.6%	10.4%	7.1%	3.75
									F = 108.199*** ω^2 = .062

[1] Mean based on the following scale: 1 = highly unacceptable, 2 = moderately unacceptable, 3 = slightly unacceptable, 4 = neither, 5 = slightly acceptable, 6 = moderately acceptable, 7 = highly acceptable.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 288.425***, V = .211
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 3-39: Acceptability of wolves living in different areas in Minnesota: Suburban and urban residential areas

Study strata	n	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately acceptable	Highly acceptable	Mean[1]
Livestock producers	1074	51.3%	16.0%	8.8%	7.2%	6.1%	2.2%	8.4%	2.41
Deer hunters	864	45.4%	18.9%	11.9%	9.7%	7.1%	2.5%	4.5%	2.40
Residents[2]	1302	35.0%	17.8%	20.7%	12.5%	9.5%	2.9%	1.7%	2.60
									Welch's F = 5.086** ω^2 .= .003

[1] Mean based on the following scale: 1 = highly unacceptable, 2 = moderately unacceptable, 3 = slightly unacceptable, 4 = neither, 5 = slightly acceptable, 6 = moderately acceptable, 7 = highly acceptable.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 186.238***, V = .170
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 3-40: Acceptability of wolves living in different areas in Minnesota: Anywhere wolves become established on their own

Study strata	n	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately acceptable	Highly acceptable	Mean[1]
Livestock producers	1071	35.9%	13.7%	10.2%	14.8%	11.5%	7.2%	6.7%	3.01
Deer hunters	860	25.1%	14.0%	10.7%	18.0%	13.8%	8.5%	9.9%	3.47
Residents[2]	1302	11.2%	7.8%	10.1%	22.6%	16.8%	15.4%	16.1%	4.37
									Welch's F = 154.267*** ω^2 = .087

[1] Mean based on the following scale: 1 = highly unacceptable, 2 = moderately unacceptable, 3 = slightly unacceptable, 4 = neither, 5 = slightly acceptable, 6 = moderately acceptable, 7 = highly acceptable.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 304.674***, V = .217
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Section 4: Identity and Wildlife Values

Results for Sections 6 and 7 of the livestock producer, deer hunter, and resident surveys are presented below. We compare these groups on all variables. We found statistically significant differences among these research strata for all items described in this section.

Identification with Labels Potentially Related to Wolf Management

Respondents were asked to rate their level of identification with seven labels potentially associated with wolf management, using the scale: 1 (not at all like me) to 5 (very much like me). Labels included: (a) wolf advocate, (b) hunter, (c) environmentalist, (d) nature enthusiast, (e) farmer, (f) trapper, and (g) conservationist. Results are summarized in Table 4-1. Livestock producers identified most strongly with the label "farmer" (M = 4.66), hunters identified most strongly with the label "hunter" (M = 4.52), and residents identified most strongly with the label "nature enthusiast" (M = 3.88). Beyond identifying as farmers, livestock producers also identified with the labels (a) hunter (M = 3.58), (b) nature enthusiast (M = 3.39) and (c) conservationist (M = 3.37). Beyond the label "hunter," hunters identified with the labels: (a) nature enthusiast (M = 3.89), (b) conservationist (M = 3.46), and (c) environmentalist (M = 3.14). Beyond identifying as nature enthusiasts, residents identified with the labels: (a) conservationist (M = 3.24) and (b) environmentalist (M = 3.31). None of the groups identified strongly as wolf advocates or trappers. Frequencies for all labels are shown in Tables 4-2 through 4-8.

Wildlife Values

Respondents were asked to rate their agreement with 22 statements used to gauge values associated with wildlife using the scale 1 (strongly disagree) to 7 (strongly agree). Results are presented in Tables 4-9 through 4-31. Substantive differences were observed among research strata for all items. However, respondents all agreed most strongly with the statement "It is acceptable for people to kill wildlife if they think it poses a threat to their life" (M =6.51 livestock producers, M = 6.46 hunters, M = 5.94 residents; Welch's $F = 73.864$, $p < .001$). Hunters and livestock producers disagreed most strongly that "Hunting is cruel and inhumane to the animals" (M =1.93 livestock producers, M = 1.48 hunters, M = 3.07 residents; Welch's $F = 312.292$, $p < .001$). Residents disagreed most strongly that "Fish and wildlife are on earth primarily for people to use" (M = 3.01).

Based on previous research, we calculated scales for domination and mutualism along with belief dimensions indicative of these value orientations. Domination orientation was indicated by beliefs representing dimensions of hunting and use of wildlife, whereas a mutualism orientation was indicated by belief dimensions of caring and social affiliation. (Manfredo, Teel, Sullivan, & Dietsch, 2017). Hunters (M = 3.79) and livestock producers (M = 3.85) reported lower mutualism value orientations compared to residents (M = 4.53) (Welch's $F = 115.783$, $p < .001$), and greater domination value orientations (M = 5.71 hunters, M = 5.65 livestock producers, M = 4.64 residents; Welch's $F = 455.320$, $p < .001$). Looking at specific belief dimensions, residents rated all mutualism belief dimensions higher than hunters and livestock producers did: (a) social affiliation (M = 3.53 hunters, M = 3.45 livestock producers, M = 4.55 residents; $F = 205.051$, $p < .001$), (b) caring (M = 4.01 hunters, M = 4.18 livestock producers, M = 4.52 residents; Welch's $F = 40.673$, $p < .001$), and (c) anthropomorphism (M = 4.32 hunters, M = 4.43 livestock producers, M = 5.05 residents; Welch's $F = 95.609$, $p < .001$). Livestock producers (M = 5.39) rated the domination use belief dimension greater than hunters (M = 5.18) and residents (M = 4.33) rated it (Welch's $F = 286.496$, $p < .001$). Hunters (M = 6.37) rated the domination hunting belief dimension greater than livestock producers (M = 5.96) and residents (M = 5.03) rated it (Welch's $F = 478.312$, $p < .001$).

Table 4-1: Identity

To what extent do you identify with each of the following labels:	Study strata mean			F
	Livestock producers	Deer hunters	Residents[2]	
Wolf advocate	1.84	2.17	2.81	Welch's F = 184.434***
Hunter	3.58	4.52	1.70	Welch's F = 1947.016***
Environmentalist	2.84	3.14	3.31	F = 39.457***
Nature enthusiast	3.39	3.89	3.83	Welch's F = 46.395***
Farmer	4.66	2.40	1.62	Welch's F = 3011.638***
Trapper	2.33	2.04	1.19	Welch's F = 385.275***
Conservationist	3.37	3.46	3.24	F = 7.541**

[1] Mean based on the following scale: 1 = not at all like me, 2 = very little like me, 3 = somewhat like me, 4 = moderately like me, 5 = very much like me.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 4-2: Identity: Wolf advocate.

Study strata	n	Not at all like me	Very little like me	Somewhat like me	Moderately like me	Very much like me	Mean[1]
Livestock producers	1067	52.1%	23.8%	15.4%	5.6%	3.1%	1.84
Deer hunters	858	38.8%	25.6%	19.7%	11.2%	4.7%	2.17
Residents[2]	1306	24.0%	20.3%	23.1%	16.1%	16.6%	2.81
							Welch's F = 184.434*** ω^2 = .102

[1] Mean based on the following scale: 1 = not at all like me, 2 = very little like me, 3 = somewhat like me, 4 = moderately like me, 5 = very much like me.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 349.943***, V = .233
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 4-3: Identity: Hunter.

Study strata	n	Not at all like me	Very little like me	Somewhat like me	Moderately like me	Very much like me	Mean[1]
Livestock producers	1073	18.0%	7.5%	14.3%	18.8%	41.5%	3.58
Deer hunters	864	2.8%	1.7%	6.8%	18.1%	70.6%	4.52
Residents[2]	1314	68.3%	11.0%	9.6%	4.4%	6.6%	1.70
							Welch's F = 1947.016*** ω^2 = .545

[1] Mean based on the following scale: 1 = not at all like me, 2 = very little like me, 3 = somewhat like me, 4 = moderately like me, 5 = very much like me.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 1612.500***, V = .498
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 4-4: Identity: Environmentalist.

Study strata	n	Not at all like me	Very little like me	Somewhat like me	Moderately like me	Very much like me	Mean[1]
Livestock producers	1065	23.0%	15.5%	30.6%	16.7%	14.2%	2.84
Deer hunters	857	15.4%	13.2%	30.8%	23.1%	17.5%	3.14
Residents[2]	1307	11.7%	14.7%	26.5%	24.8%	22.3%	3.31
							F = 39.457*** ω^2 = .023

[1] Mean based on the following scale: 1 = not at all like me, 2 = very little like me, 3 = somewhat like me, 4 = moderately like me, 5 = very much like me.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 92.867***, V = .120
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 4-5: Identity: Nature enthusiast.

Study strata	n	Not at all like me	Very little like me	Somewhat like me	Moderately like me	Very much like me	Mean[1]
Livestock producers	1058	14.0%	9.6%	26.4%	23.2%	26.8%	3.39
Deer hunters	860	6.3%	6.4%	20.8%	25.2%	41.3%	3.89
Residents[2]	1304	4.9%	6.4%	24.0%	29.5%	35.1%	3.83
							Welch's F = 46.395*** ω^2 = .027

[1] Mean based on the following scale: 1 = not at all like me, 2 = very little like me, 3 = somewhat like me, 4 = moderately like me, 5 = very much like me.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 119.089***, V = .136
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 4-6: Identity: Farmer.

Study strata	n	Not at all like me	Very little like me	Somewhat like me	Moderately like me	Very much like me	Mean[1]
Livestock producers	1080	2.3%	1.4%	5.6%	9.4%	81.3%	4.66
Deer hunters	859	43.3%	14.4%	17.0%	9.8%	15.5%	2.40
Residents[2]	1299	70.3%	12.9%	7.0%	4.2%	5.5%	1.62
							Welch's F = 3011.638*** ω^2 = .650

[1] Mean based on the following scale: 1 = not at all like me, 2 = very little like me, 3 = somewhat like me, 4 = moderately like me, 5 = very much like me.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 2025.541***, V = .559
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 4-7: Identity: Trapper.

Study strata	n	Not at all like me	Very little like me	Somewhat like me	Moderately like me	Very much like me	Mean[1]
Livestock producers	1071	44.0%	18.0%	14.8%	7.8%	15.4%	2.33
Deer hunters	862	53.6%	15.5%	14.2%	6.3%	10.4%	2.04
Residents[2]	1308	89.1%	6.5%	2.3%	1.2%	0.9%	1.19
							Welch's F = 385.275*** ω^2 = .192

[1] Mean based on the following scale: 1 = not at all like me, 2 = very little like me, 3 = somewhat like me, 4 = moderately like me, 5 = very much like me.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 614.113***, V = .308
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 4-8: Identity: Conservationist.

Study strata	n	Not at all like me	Very little like me	Somewhat like me	Moderately like me	Very much like me	Mean[1]
Livestock producers	1067	13.6%	9.5%	29.6%	21.5%	25.9%	3.37
Deer hunters	866	10.9%	11.4%	26.6%	23.1%	28.1%	3.46
Residents[2]	1308	13.0%	14.6%	27.8%	24.5%	20.2%	3.24
							F = 7.541** ω^2 = .004

[1] Mean based on the following scale: 1 = not at all like me, 2 = very little like me, 3 = somewhat like me, 4 = moderately like me, 5 = very much like me.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 35.578***, V = .074
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 4-9: Wildlife values.

	Study strata mean			F
	Livestock producers	Deer hunters	Residents[2]	
Humans should manage fish and wildlife so that humans benefit.	5.13	5.31	4.49	Welch's F = 66.671***
Animals should have rights similar to the rights of humans.	2.49	2.77	3.90	Welch's F = 182.068***
We should strive for a world where there's an abundance of fish and wildlife for hunting and fishing.	5.58	6.14	5.35	Welch's F = 96.479***
I view all living things as part of one big family.	3.84	4.01	5.07	Welch's F = 152.901***
Hunting does not respect the lives of animals.	1.99	1.64	3.23	Welch's F = 304.937***
I feel a strong emotional bond with animals.	4.27	4.07	4.84	Welch's F = 53.793***
The needs of humans should take priority over fish and wildlife protection.	4.62	4.24	3.87	Welch's F = 47.728***
I care about animals as much as I do other people.	3.49	3.30	4.00	Welch's F = 38.764***
Fish and wildlife are on earth primarily for people to use.	4.63	4.29	3.01	F = 239.564***
I take great comfort in the relationships I have with animals.	5.29	5.04	5.17	Welch's F = 5.731**
I believe that wildlife have intentions.	4.37	4.31	4.74	Welch's F = 22.768***
It is acceptable for people to kill wildlife if they think it poses a threat to their property.	6.06	5.61	4.32	Welch's F = 373.272***
We should strive for a world where humans and fish and wildlife can live side by side without fear.	4.17	4.12	5.12	Welch's F = 107.060***
It is acceptable for people to kill wildlife if they think it poses a threat to their life.	6.51	6.46	5.94	Welch's F = 73.864***
I value the sense of companionship I receive from animals.	5.29	4.99	5.45	F = 21.769***
People who want to hunt should be provided the opportunity to do so.	6.18	6.46	5.09	Welch's F = 331.373***
Wildlife are like my family and I want to protect them.	3.33	3.26	4.13	Welch's F = 82.384***
I believe that wildlife have minds of their own.	4.91	4.77	5.27	Welch's F = 25.457***
It is acceptable for people to use fish and wildlife in research even if it may harm or kill some animals.	4.60	4.70	3.97	Welch's F = 54.171***
It would be more rewarding for me to help animals rather than people.	2.56	2.60	3.13	F = 39.714***
Hunting is cruel and inhumane to the animals.	1.93	1.48	3.07	Welch's F = 312.292***
I believe that wildlife appear to experience emotions.	4.01	3.87	5.14	Welch's F = 188.433***

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 4-10: Wildlife values: Humans should manage fish and wildlife so that humans benefit.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1069	5.0%	4.6%	7.9%	16.7%	16.7%	19.7%	29.5%	5.13
Deer hunters	859	4.5%	4.9%	6.6%	11.8%	16.2%	23.5%	32.5%	5.31
Residents[2]	1302	6.9%	10.3%	12.8%	15.9%	20.1%	19.4%	14.6%	4.49
									Welch's F = 66.671*** ω^2 = .039

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 172.199***, V = .163
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 4-11: Wildlife values: Animals should have rights similar to the rights of humans.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1075	46.6%	15.0%	9.1%	12.6%	8.3%	5.8%	2.7%	2.49
Deer hunters	865	37.5%	16.3%	12.8%	12.8%	11.2%	5.0%	4.4%	2.77
Residents[2]	1304	15.8%	16.0%	11.4%	13.0%	19.4%	12.1%	12.3%	3.90
									Welch's F = 182.068*** ω^2 = .100

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 386.751***, V = .244
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 4-12: Wildlife values: We should strive for a world where there's an abundance of fish and wildlife for hunting and fishing.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1078	2.1%	1.5%	3.3%	16.1%	18.5%	23.0%	35.4%	5.58
Deer hunters	866	1.2%	0.9%	1.2%	6.0%	13.2%	25.9%	51.7%	6.14
Residents[2]	1298	2.8%	3.0%	3.9%	17.7%	18.9%	26.8%	27.0%	5.35
									Welch's F = 96.479*** ω^2 = .056

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 191.680***, V = .172
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Section 4: Identity and Wildlife Values

Table 4-13: Wildlife values: I view all living things as part of one big family.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1074	20.4%	10.1%	8.8%	22.0%	14.8%	12.3%	11.5%	3.84
Deer hunters	865	18.6%	9.9%	7.7%	19.8%	17.2%	13.1%	13.6%	4.01
Residents[2]	1301	5.5%	6.1%	6.1%	14.1%	20.9%	20.6%	26.6%	5.07
									Welch's F = 152.901*** ω^2 = .086

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 284.635***, V = .210
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 4-14: Wildlife values: Hunting does not respect the lives of animals.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1074	58.9%	15.2%	8.5%	9.2%	4.1%	2.0%	2.1%	1.99
Deer hunters	865	71.2%	14.1%	5.2%	4.0%	2.0%	1.5%	2.0%	1.64
Residents[2]	1297	23.0%	15.9%	19.0%	17.5%	11.6%	7.6%	5.5%	3.23
									Welch's F = 304.937*** ω^2 = .158

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 662.939***, V = .320
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 4-15: Wildlife values: I feel a strong emotional bond with animals.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1069	14.9%	7.1%	5.2%	25.6%	16.8%	16.8%	13.5%	4.27
Deer hunters	858	17.5%	7.3%	6.1%	25.1%	18.5%	14.7%	10.8%	4.07
Residents[2]	1292	6.3%	5.7%	5.1%	23.2%	22.5%	15.4%	21.8%	4.84
									Welch's F = 53.793*** ω^2 = .032

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 126.361***, V = .140
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 4-16: Wildlife values: The needs of humans should take priority over fish and wildlife protection.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1072	8.4%	9.0%	10.9%	18.4%	14.4%	15.0%	24.0%	4.62
Deer hunters	863	11.0%	10.5%	12.5%	18.9%	18.3%	13.7%	15.1%	4.24
Residents[2]	1290	13.4%	12.9%	15.5%	16.7%	22.1%	11.9%	7.6%	3.87
									Welch's F = 47.728*** ω^2 = .028

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 161.167***, V = .158
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 4-17: Wildlife values: I care about animals as much as I do other people.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1075	26.0%	12.2%	10.5%	18.2%	13.2%	11.3%	8.7%	3.49
Deer hunters	865	26.6%	15.7%	11.0%	17.8%	13.8%	7.2%	8.0%	3.30
Residents[2]	1300	13.8%	11.5%	16.5%	16.5%	15.8%	12.8%	13.2%	4.00
									Welch's F = 38.764*** ω^2 = .023

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 122.314***, V = .137
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 4-18: Wildlife values: Fish and wildlife are on earth primarily for people to use.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1078	8.1%	9.3%	10.2%	16.6%	16.5%	18.2%	21.2%	4.63
Deer hunters	864	13.0%	10.1%	10.4%	18.1%	16.3%	14.7%	17.5%	4.29
Residents[2]	1299	30.0%	18.5%	13.3%	15.0%	10.7%	7.1%	5.5%	3.01
									F = 239.564*** ω^2 = .128

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 422.791***, V = .255
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 4-19: Wildlife values: I take great comfort in the relationships I have with animals.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1073	4.3%	3.0%	2.1%	20.0%	18.5%	25.1%	26.9%	5.29
Deer hunters	862	4.8%	2.7%	3.2%	23.8%	23.2%	23.0%	19.4%	5.04
Residents[2]	1304	4.4%	4.1%	3.2%	21.0%	20.5%	19.3%	27.5%	5.17
									Welch's F = 5.731** ω^2 = .003

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 39.804**, V = .078
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 4-20: Wildlife values: I believe that wildlife have intentions.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1047	11.3%	5.2%	5.1%	32.7%	18.1%	15.2%	12.6%	4.37
Deer hunters	849	10.1%	6.4%	5.5%	34.5%	18.5%	13.3%	11.7%	4.31
Residents[2]	1276	4.7%	5.2%	5.2%	30.9%	21.0%	16.1%	17.0%	4.74
									Welch's F = 22.768*** ω^2 = .014

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 56.660**, V = .094
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 4-21: Wildlife values: It is acceptable for people to kill wildlife if they think it poses a threat to their property.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1078	2.1%	1.8%	2.3%	5.1%	13.7%	20.4%	54.5%	6.06
Deer hunters	863	2.2%	3.6%	6.0%	7.5%	18.5%	24.0%	38.1%	5.61
Residents[2]	1305	6.9%	13.0%	12.3%	16.7%	24.2%	13.7%	13.2%	4.32
									Welch's F = 373.272*** ω^2 = .187

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 714.182***, V = .332
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 4-22: Wildlife values: We should strive for a world where humans, and fish and wildlife, can live side by side without fear.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1065	16.6%	8.4%	8.4%	22.1%	14.1%	13.2%	17.3%	4.17
Deer hunters	863	15.5%	10.8%	8.2%	23.6%	12.9%	11.8%	17.1%	4.12
Residents[2]	1288	4.6%	4.7%	7.2%	17.8%	18.7%	17.5%	29.6%	5.12
									Welch's F = 107.060*** ω^2 = .062

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 208.309***, V = .180
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 4-23: Wildlife values: It is acceptable for people to kill wildlife if they think it poses a threat to their life.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1076	1.2%	1.0%	1.1%	2.0%	5.9%	14.5%	74.3%	6.51
Deer hunters	863	1.3%	1.0%	1.0%	2.2%	7.4%	15.4%	71.6%	6.46
Residents[2]	1305	1.4%	2.0%	3.7%	7.6%	12.4%	25.7%	47.2%	5.94
									Welch's F = 73.864*** ω^2 = .043

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 248.955***, V = .196
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 4-24: Wildlife values: I value the sense of companionship I receive from animals.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1071	4.7%	2.7%	2.8%	19.3%	18.6%	23.4%	28.5%	5.29
Deer hunters	867	5.2%	4.4%	3.1%	24.5%	20.2%	22.1%	20.5%	4.99
Residents[2]	1302	4.7%	2.5%	2.0%	15.2%	18.2%	24.5%	32.9%	5.45
									F = 21.769*** ω^2 = .013

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 64.571***, V = .100
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 4-25: Wildlife values: People who want to hunt should be provided the opportunity to do so.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1077	1.0%	0.6%	1.4%	8.1%	10.4%	21.7%	56.7%	6.18
Deer hunters	865	0.3%	0.1%	0.9%	4.5%	6.7%	20.3%	67.1%	6.46
Residents[2]	1304	4.2%	4.1%	6.6%	14.4%	25.2%	25.5%	20.0%	5.09
									Welch's F = 331.373*** ω^2 = .169

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 685.337***, V = .325
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 4-26: Wildlife values: Wildlife are like my family and I want to protect them.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1069	25.5%	13.8%	10.8%	22.5%	12.9%	8.5%	6.1%	3.33
Deer hunters	863	26.8%	14.6%	9.4%	22.6%	13.7%	7.4%	5.6%	3.26
Residents[2]	1301	9.5%	11.9%	10.3%	27.4%	18.9%	9.0%	13.0%	4.13
									Welch's F = 82.384*** ω^2 = .048

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 186.180***, V = .170
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 4-27: Wildlife values: I believe that wildlife have minds of their own.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1071	9.3%	5.2%	3.3%	18.2%	19.3%	20.5%	24.1%	4.91
Deer hunters	861	9.2%	6.7%	4.4%	19.2%	19.6%	20.3%	20.6%	4.77
Residents[2]	1295	4.7%	4.3%	2.2%	15.4%	23.0%	21.7%	28.7%	5.27
									Welch's F = 25.457*** ω^2 = .015

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 59.801***, V = .096
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 4-28: Wildlife values: It is acceptable for people to use fish and wildlife in research even if it may harm or kill some animals.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1074	9.8%	7.4%	8.4%	20.3%	16.3%	17.9%	20.0%	4.60
Deer hunters	863	6.5%	7.4%	8.6%	20.3%	19.2%	20.0%	18.0%	4.70
Residents[2]	1303	13.6%	13.0%	11.3%	19.4%	20.0%	13.6%	9.1%	3.97
									Welch's F = 54.171*** ω^2 = .032

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 129.463***, V = .141
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 4-29: Wildlife values: It would be more rewarding for me to help animals rather than people.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1069	44.1%	11.8%	8.8%	24.4%	5.0%	2.0%	4.0%	2.56
Deer hunters	861	39.6%	15.1%	11.7%	22.1%	5.3%	3.0%	3.1%	2.60
Residents[2]	1301	25.7%	15.3%	13.3%	27.0%	8.3%	5.4%	5.0%	3.13
									F = 39.714*** ω^2 = .023

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 119.482***, V = .136
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 4-30: Wildlife values: Hunting is cruel and inhumane to the animals.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1077	65.5%	12.0%	5.5%	8.2%	3.3%	1.4%	4.2%	1.93
Deer hunters	863	77.4%	12.2%	3.4%	3.6%	1.0%	0.5%	2.0%	1.48
Residents[2]	1294	28.3%	16.0%	15.3%	16.8%	12.7%	6.1%	4.8%	3.07
									Welch's F = 312.292*** ω^2 = .161

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 692.845***, V = .327
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 4-31: Wildlife values: I believe that wildlife appear to experience emotions.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1073	19.1%	6.7%	7.0%	25.2%	17.5%	12.2%	12.3%	4.01
Deer hunters	864	18.8%	9.8%	5.6%	26.4%	18.4%	12.6%	8.4%	3.88
Residents[2]	1302	4.2%	3.7%	3.6%	19.5%	23.4%	22.5%	23.1%	5.14
									Welch's F = 188.433*** ω^2 = .104

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 331.865***, V = .226
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Section 5: Trust in the Minnesota Department of Natural Resources

Results for Section 8 of the livestock producer, deer hunter, and resident surveys are presented below. We compare these groups on all variables. We found statistically significant differences among these research strata for all items described in this section.

Trust in the Minnesota Department of Natural Resources

Respondents rated their level of agreement with 17 statements used to gauge their trust in the Minnesota Department of Natural Resources using the scale 1 (strongly disagree) to 7 (strongly agree). Statements were associated with general trust, process, outcomes, social values similarity, and technical competence. Results are summarized in Table 5-1. Across the board, residents reported the highest levels of trust, followed by hunters, and livestock producers.

Results for items addressing general agency trust, process and outcomes are presented in Tables 5-2 through 5-10. Respondents rated items addressing general trust (Means = 3.72 – 5.03; Tables 5-3, 5-7, 5-9) greater than those measuring process (Means = 3.56 - 4.93 Tables 5-2, 5-4, 5-5) and outcomes (Means = 3.60 - 4.92; Tables 5-6, 5-8, 5-10). Results for items addressing social values similarity are presented in Tables 5-11 through 5-15. Means for social values similarity were: 3.46 for livestock producers, 4.07 for hunters, and 4.51 for residents. Results for items addressing technical competence are presented in Tables 5-16 through 5-18. Means for technical competence were: 4.43 for livestock producers, 4.79 for hunters, and 5.27 for residents.

Section 5: Trust in the Minnesota Department of Natural Resources

Table 5-1: Trust in the Minnesota Department of Natural Resources.

The Minnesota DNR…	Study strata mean[1]			F
	Livestock producers	Deer hunters	Residents[2]	
…is open and honest about things they do and say related to wildlife management.	3.40	4.00	4.87	Welch's F = 248.276***
…can be trusted to make decisions about wildlife management that are good for the resource.	3.62	4.12	5.01	Welch's F = 218.820***
…will make decisions about wildlife management in a way that is fair.	3.69	4.20	5.02	Welch's F = 209.695***
…listens to the concerns of citizens.	3.59	4.10	4.90	Welch's F = 182.721***
…does a good job of managing wildlife in Minnesota.	3.84	4.22	5.11	Welch's F = 197.943***
…can be trusted to take responsibility for managing Minnesota's wildlife resources.	3.87	4.30	5.09	Welch's F = 174.486***
…spends public money effectively.	3.18	3.68	4.59	Welch's F = 219.877***
…is trustworthy.	3.67	4.20	5.01	Welch's F = 204.345***
…adequately manages Minnesota's wildlife	3.78	4.21	5.05	Welch's F = 194.186***
… shares similar values as me.	3.61	4.30	4.64	Welch's F = 137.261***
… shares similar opinions as me.	3.51	4.11	4.53	Welch's F = 135.090***
… thinks in a similar way as me.	3.38	3.97	4.41	Welch's F = 139.024***
… takes similar actions as I would.	3.29	3.83	4.41	Welch's F = 159.358***
… shares similar goals as me.	3.50	4.15	4.57	Welch's F = 139.912***
… has wildlife managers and biologists who are well-trained for their jobs.	4.51	4.89	4.89	Welch's F = 93.223***
… is operated by employees who are well-qualified	4.43	4.78	5.22	Welch's F = 86.780***
… is operated by employees who understand the work that needs to be done	4.35	4.71	5.27	Welch's F = 121.516***

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 5-2: Trust in Minnesota Department of Natural Resources: The Minnesota DNR is open and honest about things they do and say related to wildlife management.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1075	19.5%	17.3%	16.7%	18.4%	11.3%	12.2%	4.6%	3.40
Deer hunters	868	11.4%	13.9%	15.3%	17.1%	15.2%	18.7%	8.4%	4.00
Residents[2]	1291	3.1%	3.3%	5.3%	31.5%	16.2%	29.7%	9.9%	4.87
									Welch's F = 248.276*** ω^2 = .133

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 530.673***, V = .286
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Section 5: Trust in the Minnesota Department of Natural Resources

Table 5-3: Trust in Minnesota Department of Natural Resources: The Minnesota DNR can be trusted to make decisions about wildlife management that are good for the resource.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1075	17.0%	15.6%	15.3%	17.8%	14.0%	15.3%	4.9%	3.62
Deer hunters	868	9.4%	13.9%	16.9%	12.7%	17.1%	21.8%	8.2%	4.12
Residents[2]	1291	3.2%	3.5%	6.0%	23.2%	18.9%	31.1%	14.3%	5.01
									Welch's F = 218.820*** ω^2 = .119

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 443.284***, V = .262
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 5-4: Trust in Minnesota Department of Natural Resources: The Minnesota DNR will make decisions about wildlife management in a way that is fair.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1070	15.1%	14.4%	14.9%	20.6%	16.7%	13.5%	4.9%	3.69
Deer hunters	865	9.0%	11.1%	14.2%	18.5%	19.2%	20.0%	8.0%	4.20
Residents[2]	1288	3.0%	2.8%	5.7%	24.6%	18.2%	33.3%	12.4%	5.02
									Welch's F = 209.695*** ω^2 = .115

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 407.043***. V = .251
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 5-5: Trust in Minnesota Department of Natural Resources: The Minnesota DNR listens to the concerns of citizens.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1058	19.8%	13.5%	14.7%	16.8%	16.5%	12.9%	5.8%	3.59
Deer hunters	861	11.0%	12.0%	13.6%	17.3%	19.2%	19.3%	7.7%	4.10
Residents[2]	1280	3.6%	3.7%	7.1%	24.8%	19.3%	28.2%	13.3%	4.90
									Welch's F = 182.721*** ω^2 = .102

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 374.328***, V = .242
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Section 5: Trust in the Minnesota Department of Natural Resources

Table 5-6: Trust in Minnesota Department of Natural Resources: The Minnesota DNR does a good job of managing wildlife in Minnesota.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1064	15.3%	11.2%	13.3%	21.1%	17.8%	15.8%	5.5%	3.84
Deer hunters	866	10.6%	9.9%	14.1%	16.4%	17.6%	23.6%	7.9%	4.22
Residents[2]	1290	2.6%	2.8%	5.2%	23.2%	16.1%	36.4%	13.7%	5.11
									Welch's F = 197.943*** ω^2 = .109

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 283.113***, V = .244
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 5-7: Trust in Minnesota Department of Natural Resources: The Minnesota can be trusted to take responsibility for managing Minnesota's wildlife resources.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1074	14.1%	12.8%	12.7%	20.9%	17.2%	16.7%	5.6%	3.87
Deer hunters	866	9.7%	9.2%	13.4%	17.4%	18.7%	22.3%	9.2%	4.30
Residents[2]	1287	3.3%	3.0%	4.0%	23.5%	18.5%	33.3%	14.5%	5.09
									Welch's F = 174.486*** ω^2 = .097

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 348.877***, V = .232
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 5-8: Trust in Minnesota Department of Natural Resources: The Minnesota DNR spends public money effectively.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1071	26.6%	14.6%	13.2%	21.8%	10.5%	10.0%	3.4%	3.18
Deer hunters	864	17.8%	11.8%	12.0%	25.3%	13.4%	15.3%	4.3%	3.68
Residents[2]	1287	5.1%	5.3%	5.4%	36.8%	13.2%	24.8%	9.3%	4.59
									Welch's F = 219.877*** ω^2 = .120

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 442.830***, V = .262
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Section 5: Trust in the Minnesota Department of Natural Resources

Table 5-9: Trust in Minnesota Department of Natural Resources: The Minnesota DNR is trustworthy.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1058	18.3%	12.4%	10.8%	25.4%	13.8%	14.3%	5.0%	3.67
Deer hunters	858	9.8%	11.4%	11.1%	21.9%	15.3%	23.8%	6.8%	4.20
Residents[2]	1287	3.0%	3.0%	4.0%	28.0%	17.9%	30.0%	14.1%	5.01
									Welch's F = 204.345*** ω^2 = .113

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 392.747***, V = .248
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 5-10: Trust in Minnesota Department of Natural Resources: The Minnesota DNR adequately manages Minnesota's wildlife.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1070	14.7%	13.3%	14.2%	19.8%	17.9%	15.5%	4.7%	3.78
Deer hunters	865	10.2%	10.2%	12.4%	19.3%	18.8%	22.4%	6.7%	4.21
Residents[2]	1289	3.4%	3.2%	3.3%	24.7%	18.6%	34.3%	12.6%	5.05
									Welch's F = 194.186*** ω^2 = .107

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 389.518***, V = .246
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 5-11: Trust in Minnesota Department of Natural Resources: The Minnesota DNR shares similar values as me.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1065	15.0%	12.3%	15.9%	27.5%	15.4%	11.0%	2.9%	3.61
Deer hunters	860	6.2%	9.1%	13.3%	24.4%	20.1%	21.5%	5.5%	4.30
Residents[2]	1285	3.3%	2.8%	5.0%	40.7%	17.6%	24.9%	5.8%	4.64
									Welch's F = 137.261*** ω^2 = .078

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 377.698***, V = .243
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Section 5: Trust in the Minnesota Department of Natural Resources

Table 5-12: Trust in Minnesota Department of Natural Resources: The Minnesota DNR shares similar opinions as me.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1063	15.5%	14.2%	15.9%	27.8%	13.5%	10.7%	2.4%	3.51
Deer hunters	862	7.3%	9.4%	15.7%	26.5%	19.0%	18.2%	3.9%	4.11
Residents[2]	1285	3.1%	3.5%	6.0%	44.4%	16.0%	21.9%	5.1%	4.53
									Welch's F = 135.090*** ω^2 = .077

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 379.927***, V = .243
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 5-13: Trust in Minnesota Department of Natural Resources: The Minnesota DNR thinks in a similar way as me.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1066	18.3%	13.8%	15.8%	29.2%	12.1%	8.5%	2.3%	3.38
Deer hunters	858	8.5%	9.6%	16.0%	28.4%	20.3%	14.3%	2.9%	3.97
Residents[2]	1284	3.5%	4.9%	5.8%	46.3%	16.6%	18.5%	4.4%	4.41
									Welch's F = 139.024*** ω^2 = .079

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 383.340***, V = .244
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 5-14: Trust in Minnesota Department of Natural Resources: The Minnesota DNR takes similar actions as I would.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1063	20.3%	14.5%	16.4%	26.5%	11.4%	8.9%	2.0%	3.29
Deer hunters	861	9.6%	13.7%	15.6%	26.5%	17.8%	13.6%	3.3%	3.83
Residents[2]	1283	3.7%	5.3%	7.6%	43.6%	15.3%	18.7%	5.8%	4.41
									Welch's F = 159.358*** ω^2 = .090

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 394.182***, V = .248
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Section 5: Trust in the Minnesota Department of Natural Resources

Table 5-15: Trust in Minnesota Department of Natural Resources: The Minnesota DNR shares similar goals as me.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1061	17.1%	14.3%	12.8%	29.1%	13.4%	10.6%	2.7%	3.50
Deer hunters	860	7.7%	10.3%	12.7%	26.0%	20.0%	18.0%	5.2%	4.15
Residents[2]	1282	3.7%	3.8%	4.3%	44.1%	15.8%	21.5%	6.9%	4.57
									Welch's F = 139.912*** ω^2 = .080

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 384.075***, V = .245
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 5-16: Trust in Minnesota Department of Natural Resources: The Minnesota DNR has wildlife managers and biologists who are well-trained for their jobs.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1064	5.3%	7.1%	7.0%	32.5%	16.7%	22.7%	8.6%	4.51
Deer hunters	863	3.5%	5.1%	5.7%	25.5%	17.8%	29.4%	13.0%	4.89
Residents[2]	1286	1.1%	1.6%	2.0%	29.4%	12.3%	31.8%	21.8%	5.33
									Welch's F = 93.223*** ω^2 = .054

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 216.444***, V = .184
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 5-17: Trust in Minnesota Department of Natural Resources: The Minnesota DNR is operated by employees who are well-qualified.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1066	7.0%	6.8%	7.6%	30.9%	18.2%	21.4%	8.2%	4.43
Deer hunters	863	3.9%	5.7%	6.3%	26.2%	19.0%	28.3%	10.7%	4.78
Residents[2]	1286	0.9%	1.7%	2.0%	32.2%	13.6%	31.7%	17.8%	5.22
									Welch's F = 86.780*** ω^2 = .051

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 222.440***, V = .186
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Section 5: Trust in the Minnesota Department of Natural Resources

Table 5-18: Trust in Minnesota Department of Natural Resources: The Minnesota DNR is operated by employees who understand the work that needs to be done.

Study strata	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Livestock producers	1066	6.8%	8.2%	9.8%	30.4%	16.5%	20.4%	8.0%	4.35
Deer hunters	863	4.8%	6.5%	7.8%	23.8%	19.4%	27.5%	10.4%	4.71
Residents[2]	1286	0.8%	1.5%	2.6%	30.5%	13.0%	32.7%	18.9%	5.27
									Welch's F = 121.516*** ω^2 = .070

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.

[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.

[3] χ^2 = 280.084***, V = .209

[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

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Section 6: Deer Hunting Experience and Beliefs (Hunter Survey)

Results for survey questions directed only to deer hunters are presented below.

2018 Deer Hunting Season Participation and Satisfaction

Nearly all respondents (97.4%) had hunted for deer during the 2018 firearm season (Table 6-1). On average, respondents hunted 6.05 days during the 2018 season (Table 6-2).

Respondents rated their satisfaction with six aspects of deer hunting during the 2018 season using the scale 1 (strongly disagree) to 7 (strongly agree). Results are summarized in Table 6-3. On average, respondents were slightly satisfied with their overall deer hunting experience. Respondents were also slightly satisfied with their harvest (M = 4.72) and the regulations (M = 4.91). Respondents were neutral to slightly satisfied with the total number of deer seen (M = 4.20) and the number of antlerless deer seen (M = 4.47). Respondents were neutral to slightly dissatisfied with the number of bucks seen (M = 3.46).

Perception of Deer Populations

Respondents rated their perceptions of and opinions about deer populations using 7-point scales. Questions focused on populations where the survey recipient hunted. Perceptions of deer populations over the last 5 years used the scale 1 (a lot fewer deer) to 7 (many more deer agree). On average, hunters felt that there were slightly fewer to about the same number of deer in the area where they hunted (Table 6-4). Opinions about deer populations were measured using the scale 1 (much too low) to 7 (much too high). Similar to perceptions of the population, hunters felt that deer populations were slightly too low to about right in the area where they hunted (Table 6-5).

Beliefs about Wolves

Respondents rated their level of their agreement with 6 statements addressing beliefs about wolves using the scale 1 (strongly disagree) to 7 (strongly agree). Results are summarized in Table 6-6. Hunters moderately to slightly disagreed that “I would be happier if there were no wolves in Minnesota at all” (M = 2.78). Hunters slightly agreed that “It’s important to maintain a wolf population in Minnesota” (M = 5.05). Hunters were neutral to slightly in agreement that: (a) “I think wolves are an important part of the Minnesota environment” (M = 4.56), and (b) “Wolves compete too much with Minnesota hunters for deer” (M = 4.67). Hunters were largely neutral that: (a) “Wolves help maintain healthy populations of deer” (M = 3.99), and (b) “Wolves are an unacceptable threat to livestock in Minnesota” (M = 4.20).

Deer-Hunting Involvement and Motivations

Respondents rated their level of their agreement with 5 statements used to gauge their involvement in deer hunting using the scale 1 (strongly disagree) to 7 (strongly agree). Results are summarized in Table 6-7. Respondents agreed that: (a) Being a deer hunter is an important part of who I am (M = 6.05), (b) I would be at a loss if I were forced to give up deer hunting (M = 5.57), and (c) Being a deer hunter is about more than just hunting (M = 6.53). Respondents disagreed that: (a) Deer hunting is something I rarely think about (M = 2.05), and (b) I have no clear feelings about being a deer hunter (M = 1.88).

Section 6: Deer Hunting Experience and Beliefs (Hunter Survey)

Respondents were asked to rate their motivations for deer hunting with 17 statements using the scale 1 (not at all important) to 5 (very important). Results are summarized in Table 6-8. Exploratory factor analysis identified four motivations for deer hunting in Minnesota, which we describe as: (a) bucks, (b) meat, (c) experience, and (d) skills. The "bucks" factor included the following items: (a) the challenge of harvesting a large buck, (b) getting a buck every year, (c) seeing a lot of bucks, (d) harvesting a large buck, and (e) selectively harvesting a large buck even if it means not killing a deer. The "meat" factor included the following items: (a) getting food for my family, (b) harvesting any deer for meat, (c) harvesting any buck, and (d) harvesting at least one deer. The "experience" factor included: (a) hunting with friends, (b) enjoying a preferred pastime, (c) enjoying nature and the outdoors, and (d) hunting with family. The "skills" factor included: (a) developing my skills and abilities, and (b) becoming a better deer hunter. On average, experience (M = 4.47) was rated more important than skills (M = 3.97), meat (M = 3.28), and bucks (M = 2.75).

Section 6: Deer Hunting Experience and Beliefs (Hunter Survey)

Table 6-1: Hunt during 2018 firearm deer season.

Study strata	n	% yes
Deer hunters	862	97.4%

Table 6-2: Number of days hunting during 2018 firearm deer season.

Study strata	n	Mean
Deer hunters	790	6.05

Table 6-3: Satisfaction with 2018 deer hunting season in Minnesota.

Satisfaction with…	n	Very dissatisfied	Moderately dissatisfied	Slightly dissatisfied	Neither	Slightly satisfied	Moderately satisfied	Very satisfied	Mean[1]
Overall deer hunting experience	847	3.3%	6.8%	9.1%	5.9%	17.5%	31.6%	25.7%	5.25
Deer hunting harvest	847	8.5%	8.5%	9.4%	13.5%	16.2%	23.6%	20.3%	4.72
Deer hunting regulations	835	5.3%	5.4%	9.9%	15.4%	18.1%	28.6%	17.2%	4.91
Total number of deer seen	844	14.6%	11.6%	15.0%	5.6%	18.5%	20.6%	14.1%	4.20
Number of bucks seen	843	23.8%	15.7%	16.8%	7.4%	14.8%	13.5%	7.9%	3.46
Number of antlerless deer seen	845	12.3%	10.8%	10.9%	8.2%	17.8%	22.2%	17.9%	4.47

[1] Mean based on the following scale: 1 = very dissatisfied, 2 = moderately dissatisfied, 3 = slightly dissatisfied, 4 = neither, 5 = slightly satisfied, 6 = moderately satisfied, 7 = very satisfied.
[2] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 6-4: Trend in the deer population where you hunt.

Study strata	n	A lot fewer deer	Moderately fewer deer	Slightly fewer deer	About the same number of deer	Slightly more deer	Moderately more deer	Many more deer	Mean[1]
Deer hunters	864	14.8%	13.5%	18.8%	28.9%	12.8%	8.1%	3.0%	3.48

Table 6-5: Opinion about the deer population where you hunt most often.

Study strata	n	Much too low	Moderately too low	Slightly too low	About right	Slightly too high	Moderately too high	Much too high	Mean[1]
Deer hunters	864	9.6%	17.2%	24.5%	36.1%	6.7%	4.1%	1.7%	3.32

Table 6-6: Beliefs about wolves in Minnesota.

	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
I think wolves are an important part of the Minnesota environment.	862	12.2%	9.3%	8.4%	8.0%	23.5%	20.0%	18.7%	4.56
Wolves compete too much with Minnesota hunters for deer.	858	7.2%	7.6%	10.3%	17.2%	21.7%	15.4%	20.6%	4.67
Wolves help maintain healthy populations of deer.	860	16.0%	10.3%	13.5%	12.0%	24.3%	14.7%	9.2%	3.99
I would be happier if there were no wolves in Minnesota at all.	861	40.5%	15.1%	12.1%	12.5%	6.3%	5.2%	8.2%	2.78
Wolves are an unacceptable threat to livestock in Minnesota.	862	15.4%	11.0%	10.4%	15.5%	15.8%	12.8%	19.0%	4.20
It's important to maintain a wolf population in Minnesota.	863	8.5%	5.6%	4.9%	11.6%	21.2%	19.8%	28.5%	5.05

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.

[2]

n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Section 6: Deer Hunting Experience and Beliefs (Hunter Survey)

Table 6-7: Deer-hunting involvement.

	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Being a deer hunter is an important part of who I am.	866	0.7%	1.3%	1.8%	7.2%	15.7%	24.4%	49.0%	6.05
Deer hunting is something I rarely think about.	867	46.9%	24.6%	15.9%	5.5%	4.2%	1.7%	1.2%	2.05
I would be at a loss if I were forced to give up deer hunting.	863	5.0%	4.3%	6.5%	8.1%	11.6%	18.5%	46.0%	5.57
Being a deer hunter is about more than just hunting.	867	1.2%	0.3%	2.3%	6.8%	17.9%	71.5%	1.2%	6.53
I have no clear feelings about being a deer hunter.	866	61.4%	15.9%	5.9%	11.3%	2.7%	1.4%	1.4%	1.88

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 6-8: Deer-hunting motivations.

	n	Not at all important	Slightly important	Somewhat important	Moderately important	Very important	Mean[1]
The challenge of harvesting a large buck	861	12.8%	16.3%	23.1%	22.3%	25.6%	3.32
Developing my skills and abilities	860	4.2%	7.9%	18.4%	30.2%	39.3%	3.93
Becoming a better deer hunter	856	3.7%	7.7%	15.1%	30.5%	43.0%	4.01
Hunting with friends	861	3.5%	3.7%	9.2%	21.4%	62.3%	4.35
Getting food for my family	858	12.7%	13.5%	19.5%	21.1%	33.2%	3.49
Harvesting any deer for meat	856	16.4%	15.0%	19.6%	22.2%	26.9%	3.28
Enjoying a preferred pastime	856	1.5%	3.7%	12.0%	26.3%	56.4%	4.32
Harvesting any buck	857	24.9%	20.0%	23.3%	16.5%	15.4%	2.78
Enjoying nature and the outdoors	859	0.6%	0.9%	3.8%	15.4%	79.3%	4.72
Helping manage deer populations	851	4.3%	8.5%	19.5%	28.1%	39.6%	3.90
Getting a buck every year	850	51.6%	19.4%	16.7%	6.4%	5.9%	1.95
Hunting with family	853	3.8%	3.3%	6.3%	14.5%	72.1%	4.48
Seeing a lot of bucks	855	13.2%	21.2%	29.4%	21.9%	14.4%	3.03
Harvesting a large buck	851	24.2%	21.4%	20.6%	16.2%	17.6%	2.82
Harvesting at least one deer	847	9.8%	14.2%	18.2%	24.7%	33.2%	3.57
Selectively harvesting a large buck even if it means not killing a deer	854	33.0%	16.3%	19.8%	15.0%	15.9%	2.65
Seeing a lot of deer	864	3.4%	8.7%	24.3%	32.5%	31.1%	3.79

[1] Mean based on the following scale: 1 = not at all important, 2 = slightly important, 3 = somewhat important, 4 = moderately important, 5 = very important.
[2] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Section 7: Experience with and Opinions about Wolf Depredation (Livestock Producer Survey)

Results for survey questions directed only to livestock producers are presented below. We compare cattle and sheep producers on all variables.

Property and Animals

Respondents were asked to report their acreage used for livestock in Minnesota, and the number of cattle and sheep they have on their property (Table 7-1). On average, cattle producers had 308 acres with 105 head of cattle and 4 sheep. Sheep producers had 167 acres with 48 head of cattle and 33 sheep.

Experiences and Opinions Related to Wolf Depredation

Respondents were asked if they had ever had livestock killed by wolves, and 40% of cattle producers and 30% of sheep producers indicated that they had lost livestock to wolves (Table 7-2). If producers had lost livestock, they were asked to report the number. On average, cattle producers had lost 4.5 head and sheep producers had lost 6.7 sheep in the past 5 years (Table 7-3). Only 7.0% of cattle producers and 8.6% of sheep producers reported carrying private insurance that covers wolf depredation (Table 7-4).

Respondents were asked to rate their agreement with three statements about wolf depredation and compensation, using the scale 1 (strongly disagree) to 7 (strongly agree) (Tables 7-5 to 7-7). On average, respondents tended to disagree that: (a) Current financial compensation payments for wolf depredation are enough to cover losses ($M = 3.15$ cattle producers, $M = 3.06$; $t = 0.735$ n.s.; Table 7-5), and (b) Livestock producers should only be compensated for losses if they are following best management practices ($M = 3.01$ cattle producers, $M = 3.58$ sheep producers; $t = 3.754$, $p < .001$; Table 7-7). On average, respondents were on the agree side of neutral that "livestock producers should have to have a wolf kill verified to receive payment" ($M = 4.36$ cattle producers, $M = 4.70$ sheep producers; $t = 2.227$, $p < .05$; Table 7-6).

Respondents were asked to rate the importance of four outcomes related to wolf depredation, using the scale 1 (not at all important) to 5 (very important) (Tables 7-8 to 7-11). Of the outcomes described, financial compensation was rated the most important ($M = 4.49$ cattle producers, $M = 4.27$ sheep producers; $t = 2.951$, $p < .01$; Table 7-10), followed by responsible wolves being killed ($M = 4.25$ cattle producers, $M = 3.86$ sheep producers; $t = 4.102$, $p < .001$; Table 7-8). Producers also felt that (a) reduction of wolf populations in the area ($M = 4.08$ cattle producers, $M = 3.66$ sheep producers; $t = 4.062$, $p < .001$; Table 7-11), and (b) producers adopting or modifying practices that help prevent depredation from happening again ($M = 3.44$ cattle producers, $M = 3.98$ sheep producers; $t = 5.874$, $p < .001$; Table 7-9) were important outcomes.

Techniques to Prevent Wolf Depredation

Respondents were asked to indicate their perception of the effectiveness of six techniques/strategies for reducing human/wolf conflict, using the scale 1 = not at all effective to 5 = very effective (Tables 7-12 to 7-17). Of the techniques/strategies described, trapping/shooting wolves was rated the most effective ($M = 4.14$ cattle producers, $M = 3.87$ sheep producers; $t = 3.026$, $p < .01$; Table 7-13), followed by financial compensation ($M = 3.40$ for both cattle producers and sheep producers; $t = .014$ n.s.; Table 7-15). Information/consulting on ways to reduce wolf depredation on livestock was seen as the next most

effective option (M = 2.65 cattle producers, M = 2.97 sheep producers; t = 3.519, p < .001; Table 7-12). Sheep producers saw relocating wolves (Table 7-14) and collaring and monitoring problem wolves (Table 7-17) as significantly more effective than cattle ranchers thought they were. Both groups felt that private insurance was only slightly effective (Table 7-16).

Respondents were asked to rate the effectiveness and their use of seven best management practices related to wolf depredation, using the scale 1 = not at all effective to 5 = very effective then checking "yes" if they use the practice (Tables 7-18 to 7-25). Of the practices, moving animals to less vulnerable locations at birthing (M = 3.17 cattle producers, M = 3.91 sheep producers; t = 8.286, p < .001; Table 7-20), and calving/lambing shelters or pens (M = 3.19 cattle producers, M = 3.99 sheep producers; t = 9.178, p < .001; Table 7-23) were seen as the most effective. Sheep producers saw all practices as significantly more effective than cattle producers saw them, and were more likely to report using the practices (Table 7-25). Over half of sheep producers reported using: (a) barriers (e.g., fencing, pens, fladry) (54.3%), (b) moving animals to less vulnerable locations at birthing (52.8%), and (c) maintaining intact fencing (53.5%).

Respondents were next asked to rate their agreement with three statements about protecting livestock from wolves, using the scale 1 = strongly disagree to 7 = strongly agree (Tables 7-26 to 7-28). Producers moderately to strongly agreed that: I feel an obligation to prevent wolves from attacking my livestock (M = 5.90 cattle producers, M = 6.41 sheep producers; t = 5.507, p < .001; Table 7-26). Respondents slightly to moderately agreed that: (a) I would feel guilty if I didn't use practices that reduce the risk of wolves attacking my livestock (M = 5.23 cattle producers, M = 5.98 sheep producers; t = 6.423, p < .001; Table 7-27), and (b) Using management practices that protect my livestock from wolves is the right thing to do (M = 5.36 cattle producers, M = 6.14 sheep producers; t = 7.346, p < .001; Table 7-28).

Finally, respondents were asked to rate their agreement with seven statements about risk and responsibility related to protecting livestock from wolves, using the scale 1 = strongly disagree to 7 = strongly agree (Tables 7-29 to 7-35). Results suggest that producers perceive risks from wolves and feel responsible for protecting their livestock from wolves. Although both groups perceive similar risks, sheep producers report greater levels of responsibility for protecting their livestock.

Section 7: Experience with and Opinions about Wolf Depredation (Livestock Producer Survey)

Table 7-1: Property and animals.

	Mean		
Study strata	**Acreage**	**Head of cattle**	**Number of sheep**
Cattle producers	307.88	105.10	3.57
Sheep producers	166.54	47.90	32.70
	t = 4.451***	t = 3.833***	t = 5.766***

Table 7-2: Ever had livestock killed by wolves?

Study strata	n	% yes
Cattle producers	826	39.5%
Sheep producers	236	29.7%

Table 7-3: If yes, number of wolves lost in the last 5 years.

Study strata	n	Mean
Cattle producers	297	4.53
Sheep producers	69	6.68
		t = 1.393 n.s.

Table 7-4: Carry private insurance on animals that covers wolf depredation?

Study strata	n	% yes
Cattle producers	816	7.0%
Sheep producers	233	8.6%

Table 7-5: Wolf depredation and compensation: Current financial compensation payments for wolf depredation are enough to cover losses.

	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Cattle producers	817	27.1%	12.7%	9.5%	34.0%	6.6%	5.3%	4.8%	3.15
Sheep producers	234	25.6%	15.0%	6.8%	42.3%	3.4%	4.3%	2.6%	3.06
									t = 0.735 n.s.

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.

[2] χ^2 = 11.355 n.s.

n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Section 7: Experience with and Opinions about Wolf Depredation (Livestock Producer Survey)

Table 7-6: Wolf depredation and compensation: Livestock producers should have to have a wolf kill verified to receive payment.

	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Cattle producers	15.9%	15.9%	8.2%	7.9%	14.7%	16.3%	19.1%	17.9%	4.36
Sheep producers	10.8%	10.8%	10.0%	7.9%	11.3%	14.2%	21.7%	24.2%	4.70
									t = 2.227*

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.

[2] $\chi^2 = 10.582$ n.s.

n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 7-7: Wolf depredation and compensation: Livestock producers should only be compensated for losses if they are following best management practices.

	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Cattle producers	825	35.3%	12.6%	11.3%	17.5%	9.8%	6.8%	6.8%	3.01
Sheep producers	242	25.2%	14.5%	8.3%	14.5%	14.9%	12.4%	10.3%	3.58
									t = 3.754***

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.

[2] $\chi^2 = 23.602$**, V = .149

n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 7-8: Importance of outcomes in the event of depredation: The wolves responsible are killed.

	n	Not at all important	Slightly important	Somewhat important	Moderately important	Very important	Mean[1]
Cattle producers	829	3.7%	7.7%	10.7%	15.4%	62.4%	4.25
Sheep producers	243	7.8%	11.9%	15.2%	16.5%	48.6%	3.86
							t = 4.102***

[1] Mean based on the following scale: 1 = not at all important, 2 = slightly important, 3 = somewhat important, 4 = moderately important, 5 = very important.

[2] $\chi^2 = 19.946$** V = .136

n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 7-9: Importance of outcomes in the event of depredation: You adopt or modify practices that help prevent it from happening again.

	n	Not at all important	Slightly important	Somewhat important	Moderately important	Very important	Mean[1]
Cattle producers	817	11.8%	13.3%	23.3%	22.4%	29.3%	3.44
Sheep producers	240	5.0%	9.6%	15.0%	23.8%	46.7%	3.98
							t = 5.874***

[1] Mean based on the following scale: 1 = not at all important, 2 = slightly important, 3 = somewhat important, 4 = moderately important, 5 = very important.

[2] $\chi^2 = 33.373$*** V = .178

n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Section 7: Experience with and Opinions about Wolf Depredation (Livestock Producer Survey)

Table 7-10: Importance of outcomes in the event of depredation: You receive financial compensation for your loss.

	n	Not at all important	Slightly important	Somewhat important	Moderately important	Very important	Mean[1]
Cattle producers	823	1.0%	4.3%	9.1%	15.8%	69.9%	4.49
Sheep producers	241	3.3%	5.0%	12.4%	19.9%	59.3%	4.27
							t = 2.951**

[1] Mean based on the following scale: 1 = not at all important, 2 = slightly important, 3 = somewhat important, 4 = moderately important, 5 = very important.

[2] χ^2 = 14.111** V = .115

n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 7-11: Importance of outcomes in the event of depredation: Wolf populations in my area are reduced.

	n	Not at all important	Slightly important	Somewhat important	Moderately important	Very important	Mean[1]
Cattle producers	824	5.3%	9.2%	13.6%	16.0%	55.8%	4.08
Sheep producers	242	12.0%	12.8%	16.5%	14.5%	44.2%	3.66
							t = 4.062***

[1] Mean based on the following scale: 1 = not at all important, 2 = slightly important, 3 = somewhat important, 4 = moderately important, 5 = very important.

[2] χ^2 = 20.616*** V = .139

n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 7-12: Effectiveness of techniques to reduce human/wolf conflict: Information/consulting on ways to reduce wolf depredation on livestock.

	n	Not at all effective	Slightly effective	Somewhat effective	Moderately effective	Very effective	Mean[1]
Cattle producers	812	22.8%	23.4%	29.2%	15.8%	8.9%	2.65
Sheep producers	239	13.4%	24.3%	29.3%	18.4%	14.6%	2.97
							t = 3.519***

[1] Mean based on the following scale: 1 = not at all effective, 2 = slightly effective, 3 = somewhat effective, 4 = moderately effective, 5 = very effective.

[2] χ^2 = 14.796** V = .119

n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 7-13: Effectiveness of techniques to reduce human/wolf conflict: Trapping/shooting wolves.

	n	Not at all effective	Slightly effective	Somewhat effective	Moderately effective	Very effective	Mean[1]
Cattle producers	821	2.9%	7.9%	15.0%	20.8%	53.3%	4.14
Sheep producers	240	5.4%	10.8%	17.1%	24.6%	42.1%	3.87
							t = 3.026**

[1] Mean based on the following scale: 1 = not at all effective, 2 = slightly effective, 3 = somewhat effective, 4 = moderately effective, 5 = very effective.

[2] χ^2 = 11.531* V = .104

n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 7-14: Effectiveness of techniques to reduce human/wolf conflict: Relocating problem wolves.

	n	Not at all effective	Slightly effective	Somewhat effective	Moderately effective	Very effective	Mean[1]
Cattle producers	814	39.7%	17.9%	19.0%	12.9%	10.4%	2.36
Sheep producers	238	26.9%	17.2%	19.3%	19.3%	17.2%	2.83
							t = 4.490***

[1] Mean based on the following scale: 1 = not at all effective, 2 = slightly effective, 3 = somewhat effective, 4 = moderately effective, 5 = very effective.

[2] χ^2 = 20.628*** V = .140

n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 7-15: Effectiveness of techniques to reduce human/wolf conflict: Financial compensation.

	n	Not at all effective	Slightly effective	Somewhat effective	Moderately effective	Very effective	Mean[1]
Cattle producers	816	15.3%	13.6%	20.7%	16.2%	34.2%	3.40
Sheep producers	239	14.2%	12.6%	20.5%	24.3%	28.5%	3.40
							t = 0.014 n.s.

[1] Mean based on the following scale: 1 = not at all effective, 2 = slightly effective, 3 = somewhat effective, 4 = moderately effective, 5 = very effective.

[2] χ^2 = 8.874 n.s.

n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 7-16: Effectiveness of techniques to reduce human/wolf conflict: Private insurance.

	n	Not at all effective	Slightly effective	Somewhat effective	Moderately effective	Very effective	Mean[1]
Cattle producers	790	44.3%	20.4%	23.5%	7.7%	4.1%	2.07
Sheep producers	232	43.1%	19.8%	21.1%	10.3%	5.6%	2.16
							t =0.985 n.s.

[1] Mean based on the following scale: 1 = not at all effective, 2 = slightly effective, 3 = somewhat effective, 4 = moderately effective, 5 = very effective.

[2] χ^2 = 3.010 n.s.

n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 7-17: Effectiveness of techniques to reduce human/wolf conflict: Collaring and monitoring problem wolves.

	n	Not at all effective	Slightly effective	Somewhat effective	Moderately effective	Very effective	Mean[1]
Cattle producers	817	51.3%	16.0%	14.9%	10.2%	7.6%	2.07
Sheep producers	240	30.4%	22.1%	18.3%	15.4%	13.8%	2.60
							t = 5.215***

[1] Mean based on the following scale: 1 = not at all effective, 2 = slightly effective, 3 = somewhat effective, 4 = moderately effective, 5 = very effective.

[2] χ^2 = 34.973*** V = .182

n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

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Table 7-18: Effectiveness of techniques to reduce human/wolf conflict: Guard animals (e.g., dogs, donkeys).

	n	Not at all effective	Slightly effective	Somewhat effective	Moderately effective	Very effective	Mean[1]
Cattle producers	785	10.8%	23.8%	36.7%	18.7%	9.9%	2.93
Sheep producers	236	2.5%	11.4%	28.8%	30.9%	26.3%	3.67
							t = 8.984***

[1] Mean based on the following scale: 1 = not at all effective, 2 = slightly effective, 3 = somewhat effective, 4 = moderately effective, 5 = very effective.

[2] χ^2 = 78.328*** V = .277

n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 7-19: Effectiveness of techniques to reduce human/wolf conflict: Barriers (e.g., fencing, pens, fladry).

	n	Not at all effective	Slightly effective	Somewhat effective	Moderately effective	Very effective	Mean[1]
Cattle producers	781	32.1%	24.6%	25.0%	12.7%	5.6%	2.35
Sheep producers	233	11.2%	18.5%	28.8%	20.2%	21.5%	3.22
							t = 9.522***

[1] Mean based on the following scale: 1 = not at all effective, 2 = slightly effective, 3 = somewhat effective, 4 = moderately effective, 5 = very effective.

[2] χ^2 = 88.305*** V = .295

n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 7-20: Effectiveness of techniques to reduce human/wolf conflict: Moving animals to less vulnerable locations at birthing.

	n	Not at all effective	Slightly effective	Somewhat effective	Moderately effective	Very effective	Mean[1]
Cattle producers	784	12.8%	18.6%	24.1%	28.2%	16.3%	3.17
Sheep producers	234	5.1%	9.0%	16.2%	29.5%	40.2%	3.91
							t = 8.286***

[1] Mean based on the following scale: 1 = not at all effective, 2 = slightly effective, 3 = somewhat effective, 4 = moderately effective, 5 = very effective.

[2] χ^2 = 71.848*** V = .266

n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 7-21: Effectiveness of techniques to reduce human/wolf conflict: Moving animals to less vulnerable locations at night.

	n	Not at all effective	Slightly effective	Somewhat effective	Moderately effective	Very effective	Mean[1]
Cattle producers	781	20.7%	24.2%	24.8%	21.1%	9.1%	2.74
Sheep producers	233	7.3%	10.7%	19.7%	27.0%	35.2%	3.72
							t = 10.510***

[1] Mean based on the following scale: 1 = not at all effective, 2 = slightly effective, 3 = somewhat effective, 4 = moderately effective, 5 = very effective.

[2] χ^2 = 119.604*** V = .343

n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 7-22: Effectiveness of techniques to reduce human/wolf conflict: Deterrents (e.g., lights, sounds).

	n	Not at all effective	Slightly effective	Somewhat effective	Moderately effective	Very effective	Mean[1]
Cattle producers	771	30.0%	29.1%	25.2%	11.4%	4.4%	2.31
Sheep producers	231	16.0%	25.5%	25.5%	21.6%	11.3%	2.87
							t = 6.341***

[1] Mean based on the following scale: 1 = not at all effective, 2 = slightly effective, 3 = somewhat effective, 4 = moderately effective, 5 = very effective.

[2] χ^2 = 41.127*** V = .203

n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 7-23: Effectiveness of techniques to reduce human/wolf conflict: Calving/lambing shelters or pens.

	n	Not at all effective	Slightly effective	Somewhat effective	Moderately effective	Very effective	Mean[1]
Cattle producers	767	11.9%	19.4%	23.7%	27.6%	17.3%	3.19
Sheep producers	233	2.6%	10.3%	17.2%	25.8%	44.2%	3.99
							t = 9.178***

[1] Mean based on the following scale: 1 = not at all effective, 2 = slightly effective, 3 = somewhat effective, 4 = moderately effective, 5 = very effective.

[2] χ^2 = 82.857*** V = .288

n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 7-24: Effectiveness of techniques to reduce human/wolf conflict: Maintain intact fencing.

	n	Not at all effective	Slightly effective	Somewhat effective	Moderately effective	Very effective	Mean[1]
Cattle producers	778	30.8%	23.0%	21.1%	16.1%	9.0%	2.49
Sheep producers	232	12.5%	12.9%	20.3%	24.6%	29.7%	3.46
							t = 9.750***

[1] Mean based on the following scale: 1 = not at all effective, 2 = slightly effective, 3 = somewhat effective, 4 = moderately effective, 5 = very effective.

[2] χ^2 = 94.463*** V = .306

n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

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Table 7-25: Use of techniques to reduce human/wolf conflict.

	% of cattle producers who use	% of sheep producers who use	χ^2
Guard animals (e.g., dogs, donkeys)	17.9%	36.2%	χ^2 = 38.864*** V = .185
Barriers (e.g., fencing, pens, fladry)	22.7%	54.3%	χ^2 = 94.385*** V = .288
Moving animals to less vulnerable locations at birthing	35.4%	52.8%	χ^2 = 25.028*** V = .148
Moving animals to less vulnerable locations at night	13.9%	39.4%	χ^2 = 81.324*** V = .267
Deterrents (e.g., lights, sounds)	10.6%	22.8%	χ^2 = 25.456*** V = .149
Calving/lambing shelters or pens	25.9%	48.8%	χ^2 = 48.575*** V = .207
Maintain intact fencing	26.6%	53.5%	χ^2 = 65.458*** V = .240

[1]

n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 7-26: Protecting against wolf depredation: I feel an obligation to prevent wolves from attacking my livestock.

	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Cattle producers	826	5.7%	1.9%	2.1%	8.6%	7.7%	16.3%	57.6%	5.90
Sheep producers	244	1.2%	0.4%	0.8%	5.3%	6.1%	17.6%	68.4%	6.41
									t = 5.507***

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.

[2] χ^2 = 19.480** V = .135

n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 7-27: Protecting against wolf depredation: I would feel guilty if I didn't use practices that reduce the risk of wolves attacking my livestock.

	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Cattle producers	820	9.8%	3.3%	3.0%	14.9%	13.3%	18.2%	37.6%	5.23
Sheep producers	245	3.3%	0.8%	2.0%	10.6%	8.2%	22.0%	53.1%	5.98
									t = 6.423***

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.

[2] χ^2 = 33.617*** V = .178

n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

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Table 7-28: Protecting against wolf depredation: Using management practices that protect my livestock from wolves is the right thing to do.

	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Cattle producers	822	7.7%	3.8%	2.9%	13.5%	13.6%	20.0%	38.6%	5.36
Sheep producers	244	2.0%	0.4%	0.8%	9.8%	10.2%	18.9%	57.8%	6.14
									t = 7.346***

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.

[2] χ^2 = 39.751*** V = .193

n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 7-29: Wolves and livestock: I am responsible for protecting my livestock from wolves.

	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Cattle producers	824	7.8%	3.9%	4.6%	7.3%	12.6%	18.6%	45.3%	5.50
Sheep producers	245	1.6%	2.4%	2.0%	7.8%	13.1%	22.0%	51.0%	5.98
									t = 4.372***

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.

[2] χ^2 = 17.972** V = .130

n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 7-30: Wolves and livestock: The safety of my livestock is my responsibility.

	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Cattle producers	824	4.7%	2.8%	3.3%	6.9%	12.3%	19.7%	50.4%	5.80
Sheep producers	244	0.4%	2.9%	3.3%	7.0%	11.1%	19.3%	56.1%	6.08
									t = 2.711**

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.

[2] χ^2 = 10.856 n.s.

n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 7-31: Wolves and livestock: Wolves pose a real risk to my livestock.

	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Cattle producers	824	5.0%	5.5%	5.5%	12.0%	15.9%	16.5%	39.7%	5.37
Sheep producers	244	6.1%	4.9%	5.7%	13.1%	17.6%	18.9%	33.6%	5.22
									t = 1.104 n.s.

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.

[2] χ^2 = 3.577 n.s.

n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

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Table 7-32: Wolves and livestock: It is not my responsibility to protect my livestock from wolves.

	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Cattle producers	819	33.8%	15.4%	12.8%	11.5%	7.0%	5.7%	13.8%	3.15
Sheep producers	243	49.8%	14.0%	13.6%	11.1%	4.1%	4.1%	3.3%	2.31
									t = 6.343***

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.

[2] χ^2 = 34.579*** V = .180

n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 7-33: Wolves and livestock: Wolves are a threat that I think about often.

	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Cattle producers	828	12.6%	10.0%	6.4%	17.5%	15.9%	15.1%	22.5%	4.49
Sheep producers	244	16.0%	13.5%	4.9%	20.5%	16.4%	12.7%	16.0%	4.10
									t = 2.668**

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.

[2] χ^2 = 9.928 n.s.

n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 7-34: Wolves and livestock: I am not responsible for acting to reduce the threat of wolves.

	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Cattle producers	817	25.7%	14.7%	13.2%	22.5%	6.4%	6.1%	11.4%	3.33
Sheep producers	241	36.1%	19.9%	10.8%	17.8%	5.8%	5.4%	4.1%	2.70
									t = 4.719***

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.

[2] χ^2 = 23.396** V = .149

n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 7-35: Wolves and livestock: The risk of wolf predation is something I take seriously.

	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
Cattle producers	824	2.4%	2.7%	3.3%	13.0%	17.0%	19.1%	42.6%	5.67
Sheep producers	245	5.7%	3.3%	1.6%	13.1%	13.1%	22.4%	40.8%	5.55
									t = 1.037 n.s.

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.

[2] χ^2 = 11.467 n.s.

n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Section 8: Involvement with Wolves, Wildlife, and Outdoor Recreation (Resident Survey)

Results for survey questions directed only to residents are presented below.

Participation in Outdoor Recreation Activities

Respondents were asked to indicate if they had participated in 13 outdoor recreation activities in the last 12 months, and if so the number of days during that time period (Table 8-1). Less than one in five respondents had participated in: (a) trail running (15.3%), (b) mountain biking (15.6%), (c) foraging for wild foods (11.3%), or (d) cross-country skiing/snowshoeing (16.9%). More than half of respondents had participated in: (a) motorized boating (51.4%), (b) viewing wildlife (other than birds) (59.2%), and (c) hiking (70.6%). Average days of participation ranged from 6.65 days for canoeing/kayaking/ paddleboarding to 90.74 days for birdwatching.

Interest in and Knowledge of Wildlife

Respondents were asked to rate their agreement with four statements related to their interest and knowledge of wildlife (Table 8-2). On average, respondents slightly agreed that: (a) In general, wildlife is important to me (M = 5.85), and (b) I find wildlife particularly interesting (M = 5.87). Respondents were neutral to in slight agreement that: (a) I spend a lot of time thinking about wildlife (M = 4.39), and (b) I know a lot about wildlife compared to most people (M = 4.17).

Respondents were also asked to indicate if they were current members of six types of organizations, including: (a) Animal rights group (examples: Humane Society of the United States, People for the Ethical Treatment of Animals), (b) Conservation group (examples: The Nature Conservancy, Audubon, Isaac Walton League), (c) Environmental group (examples: Minnesota Center for Environmental Advocacy, Sierra Club), (d) Hunting group (examples: Ducks Unlimited, Pheasants Forever, Minnesota Deer Hunters Association), (e) Wildlife education/science group (examples: the International Wolf Center, the National Eagle Center), and (f) Wolf advocacy group (examples: Howling for Wolves, HOWL, Defenders of Wildlife) (Table 8-3). Current membership in the various types of groups was small, ranging from 0.5% for wolf advocacy groups to 3.4% for conservation groups.

Participation in Wolf-Related Policy Actions

Respondents were asked to rate their participation in six wolf-related policy actions support (Table 8-4). Participation was rated on the scale 1 (never) to 5 (very often). Average participation for all actions was low. Over 90% of respondents had never (a) “Volunteered your time for wolves in some way,” (b) “Contacted your state or federal legislator to voice your opinion about wolves,” nor (c) “Contacted the Minnesota Department of Natural Resources to discuss wolf management.” However, nearly half (47.2%) “talked about wolves with your friends and family” sometimes, often, or very often.

Section 8: Involvement with Wolves, Wildlife, and Outdoor Recreation (Resident Survey)

Table 8-1: Participation in outdoor recreation activities.

	n	% who participate	If participate, number of days in past 12 months
Camping	1316	41.6%	9.44
Hiking	1322	70.6%	19.12
Canoeing/kayaking/paddle boarding	1313	40.9%	6.65
Motorized boating	1318	51.4%	11.05
Fishing	1324	39.6%	12.51
Hunting	1325	8.8%	17.67
Mountain Biking	1317	15.6%	14.97
Cross-country skiing/snowshoeing	1320	16.9%	7.77
Trail running	1315	15.3%	23.88
Birdwatching	1321	42.3%	90.74
Viewing wildlife (other than birds)	1318	59.2%	59.10
Snowmobiling or ATV riding	1320	18.5%	21.17
Foraging for wild foods	1323	11.3%	8.96

[1] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[2] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 8-2: Importance of wildlife.

	n	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree	Mean[1]
I spend a lot of time thinking about wildlife.	1319	7.2%	10.0%	9.9%	20.1%	25.1%	17.8%	9.9%	4.39
I know a lot about wildlife compared to most people.	1319	8.9%	8.3%	11.3%	26.6%	24.6%	14.3%	6.1%	4.17
In general, wildlife is important to me.	1322	1.3%	1.3%	1.5%	10.2%	18.6%	26.6%	40.5%	5.85
I find wildlife particularly interesting.	1322	1.8%	0.8%	1.9%	7.7%	20.0%	27.1%	40.6%	5.87

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Section 8: Involvement with Wolves, Wildlife, and Outdoor Recreation (Resident Survey)

Table 8-3: Membership in organizations

	n	% yes
Animal rights group (examples: Humane Society of the United States, People for the Ethical Treatment of Animals)	3359	3.1%
Conservation group (examples: The Nature Conservancy, Audubon, Isaac Walton League)	3359	3.4%
Environmental group (examples: Minnesota Center for Environmental Advocacy, Sierra Club)	3359	3.2%
Hunting group (examples: Ducks Unlimited, Pheasants Forever, Minnesota Deer Hunters Association)	3359	2.3%
Wildlife education/science group (examples: the International Wolf Center, the National Eagle Center)	3359	1.9%
Wolf advocacy group (examples: Howling for Wolves, HOWL, Defenders of Wildlife)	3359	0.5%

[1] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[2] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 8-4: Participation in wolf-related policy action.

	n	Never	Rarely	Sometimes	Often	Very often	Mean[1]
Donated money to an organization whose mission is wolf protection	1315	82.6%	8.2%	7.7%	0.7%	0.8%	1.29
Volunteered your time for wolves in some way	1313	92.%	4.6%	2.0%	0.4%	0.5%	1.12
Visited wolf tourism sites like the International Wolf Center in Ely, MN or the Wildlife Science Center in Stacy, MN	1313	65.%	17.1%	14.5%	2.6%	0.3%	1.55
Talked about wolves with your friends and family	1316	27.5%	25.3%	34.9%	9.6%	2.7%	2.35
Contacted your state or federal legislator to voice your opinion about wolves	1313	91.3%	4.5%	2.5%	1.5%	0.2%	1.15
Contacted the Minnesota Department of Natural Resources to discuss wolf management	1315	95.7%	2.2%	1.1%	1.0%	0.0%	1.07

[1] Mean based on the following scale: 1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = very often.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Section 9: Sociodemographics

Results for section addressing sociodemographics for the livestock producer, deer hunter, and resident surveys are reviewed below. We compare these groups on all variables. We found statistically significant differences among these research strata for all items described in this section.

Age and Gender

The mean ages for respondents were: 59.9 for livestock producers, 52.7 for hunters, and 48.6 for residents (Table 9-1). The majority of respondents in each stratum were male: (a) livestock producers (82.1%), (b) hunters (89.7%), and (c) residents (50.5%) (Table 9-2).

Education and Residence

Residents reported higher levels of education compared to hunters and livestock producers. Over half (59.5%) of residents held a 4-year college degree or higher level of education, compared to 27.2% of hunters and 20.3% of livestock producers (Table 9-3). Livestock producers reported more rural residency compared to hunters and residents (Table 9-4). Less than 1% of livestock producers reported residing in small cities, suburbs, or large cities, compared to 32.7% of hunters and 68.6% of residents.

Political Orientation and Race

Respondents were asked to rate their political orientation on the scale 1 (very liberal) to 7 (very conservative) (Table 9-5). On average, livestock producers (M = 5.11) and hunters (M = 5.00) reported more conservative orientations compared to residents (M = 3.69). The large majority of respondents from all three strata were white: (a) livestock producers (91.3%), (b) hunters (94.3%), and (c) residents (94.6%) (Table 9-6).

Section 9: Sociodemographics

Table 9-1: Age of study population and survey respondents

Study strata	n	18-19	20 – 29	30 – 39	40 – 49	50 - 59	60 - 64	65 +	Mean age
Livestock producers	1075	0.2%	2.1%	6.3%	12.4%	23.8%	15.4%	39.7%	59.90
Deer hunters	877	0.1%	7.6%	13.3%	18.0%	24.3%	13.7%	22.9%	52.72
Residents[2]	1311	1.8%	8.9%	28.0%	15.6%	17.5%	9.2%	19.0%	48.64
									Welch's F = 170.005*** ω^2 .= .094.

[1] Mean based on the following scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = moderately agree, 7 = strongly agree.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] χ^2 = 391.180*** V = .245
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 9-2: Gender

Study strata	n	% Female
Livestock producers	1084	17.9%
Deer hunters	871	10.3%
Residents[1]	1325	49.5%
		χ^2 = 508.941***, V = .394

[1] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[2] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 9-3: Highest Level of Education.

	Grade school	Some high school	High school diploma (or GED)	Some vocational or technical school	Associate's degree	Some college	4-year college degree	Some graduate school	Graduate degree
Livestock producers	3.6%	2.6%	26.7%	13.1%	17.1%	16.5%	12.3%	2.6%	5.4%
Deer hunters	0.2%	2.2%	19.7%	10.7%	22.2%	17.7%	19.1%	2.8%	5.3%
Residents[1]	0.2%	0.9%	8.5%	5.2%	9.3%	16.5%	34.0%	4.3%	21.2%

[1] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[2] χ^2 = 601.504*** V = .302
[3] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Section 9: Sociodemographics

Table 9-4: Current residence.

	On a farm	In the country, but not on a farm	Small town (less than 2,000)	Large town (2,000 to 9,999)	Small city or suburb (10,000 to 25,000)	Large city (over 25,000)	Tribal reservation
Livestock producers	93.8%	3.7%	0.9%	0.2%	0.5%	0.1%	0.9%
Deer hunters	15.7%	29.7%	10.6%	11.3%	16.8%	15.9%	0.1%
Residents[1]	4.5%	11.2%	6.9%	8.7%	21.6%	47.0%	0.2%

[1] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[2] $\chi^2 = 2671.923$***, V = .640
[3] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 9-5: Political orientation.

Study strata	n	Very liberal	Somewhat liberal	Closer to liberal	Neither	Closer to conservative	Somewhat conservative	Very conservative	Mean[1]
Livestock producers	1017	1.6%	5.4%	6.4%	25.5%	12.1%	26.8%	22.2%	5.11
Deer hunters	845	1.3%	7.1%	7.1%	25.0%	12.7%	28.0%	18.8%	5.00
Residents[2]	1280	15.0%	18.5%	11.6%	21.5%	11.3%	14.9%	7.3%	3.69
									Welch's F = 233.419*** ω^2 = .129

[1] Mean based on the following scale: 1 = very liberal, 2 = somewhat liberal, 3 = closer to liberal, 4 = neither, 5 = closer to conservative, 6 = somewhat conservative, 7 = very conservative.
[2] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[3] $\chi^2 = 476.572$***, V = .275
[4] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

Table 9-6: Race

Study strata	n	% White	% Black	% Hispanic	% American Indian	%Asian	% Other
Livestock producers	1139	91.3%	0.0%	0.0%	1.8%	0.1%	2.5%
Deer hunters	895	94.3%	2.1%	0.3%	0.7%	0.6%	1.0%
Residents[1]	1325	94.6%	1.1%	1.7%	1.5%	1.6%	0.9%
		χ^2 = 12.172** V = .060	χ^2 = 23.348*** V = .083	χ^2 = 25.599*** V = .087	χ^2 = 4.690 n.s.	χ^2 = 18.137*** V = .073	χ^2 = 12.015** V = .060

[1] The resident sample was stratified based on MNDNR management regions. Resident data are weighted to reflect region, age, gender, and hunting participation proportions in the population.
[2] n.s. = not significant, *p < 0.05, **p< 0.01, ***p< 0.001

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Appendix A: Hunter Survey

SURVEY OF MINNESOTANS' ATTITUDES TOWARD WOLVES

(Photo: Terry Sohl)

A cooperative study conducted by the University of Minnesota for the Minnesota Department of Natural Resources

Your help on this study is greatly appreciated!

Your response to this survey will help to inform the Minnesota Wolf Management Plan update. Thank you in advance for your time and effort. ***Please return your completed questionnaire in the enclosed envelope. The envelope is self-addressed and no postage is required. Thanks!***

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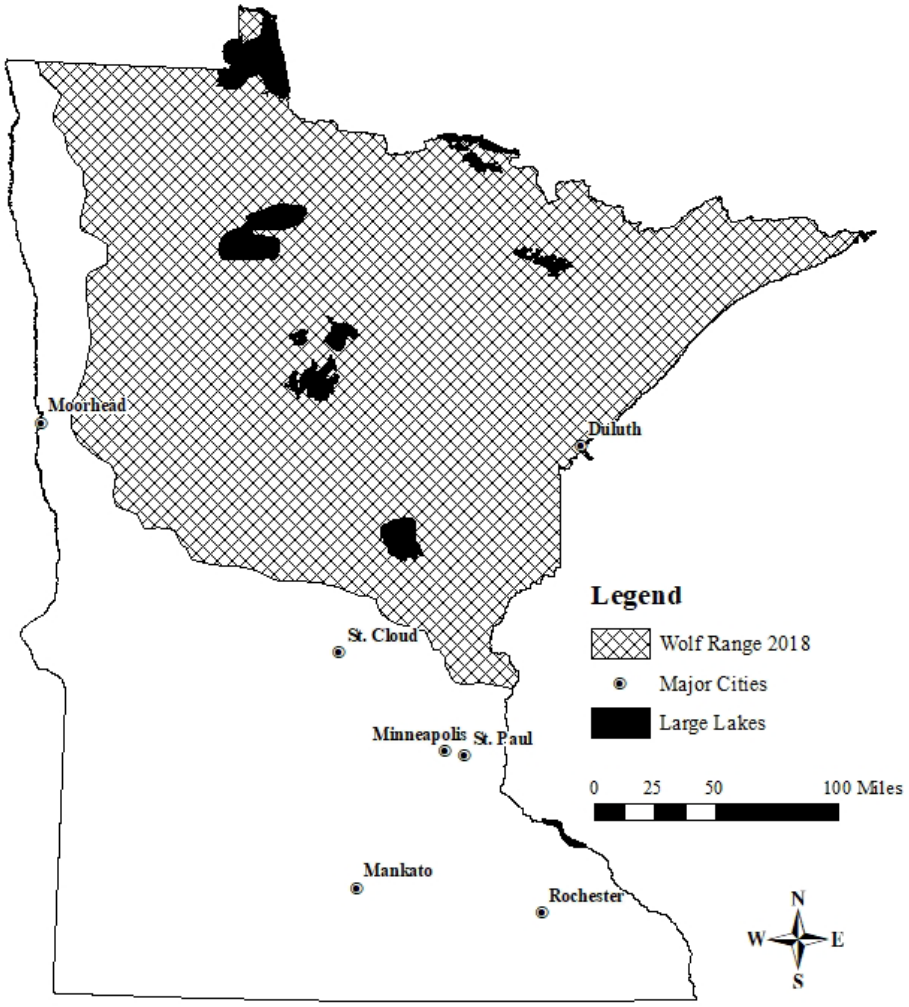
Fig. 1 Minnesota Wolf Range 2018



Wolves in Minnesota

Information on this page is provided for your reference, please feel free to refer back to this information while completing the questionnaire.

Current Range: Wolves can be found in most of the northern half of the state of Minnesota. Fig. 1 shows the geographic distribution of wolves. More wolves are found in the northeast part of the state than other areas within the range.

Population: The DNR conducted a survey of wolves in the winter of 2017/18. It was estimated that there were 2,655 (between 1,955 and 3,400) wolves living in the state at the time of the survey. This number goes up and down throughout the year as some animals are born or die.

More information on the range and population of wolves in MN can be found here:

https://files.dnr.state.mn.us/wildlife/wolves/2018/survey-wolf.pdf

More information on wolf management can be found in the current Minnesota wolf management plan

https://files.dnr.state.mn.us/natural_resources/animals/mammals/wolves/wolfplan.pdf

Section 1. Attitudes About and Experiences with Wolves in Minnesota

1. Which of the following best describes your personal experiences with wolves <u>in Minnesota</u>? *(Check all that apply.)*

- ❑ I have never seen or heard a wolf (captive or wild)
- ❑ I have seen a wolf in captivity (zoo, educational facility)
- ❑ I have seen wolf tracks in the wild
- ❑ I have heard a wolf howl in the wild
- ❑ I have seen game or livestock killed by wolves
- ❑ I have seen a wolf in the wild once
- ❑ I have seen a wolf in the wild multiple times

2. In general, how important are wolves <u>in Minnesota</u> to you personally? (*Circle one*.)

Not at all important	Slightly important	Somewhat important	Moderately important	Very important
1	2	3	4	5

3. People <u>value having wolves in Minnesota</u> for a number of reasons, how much do you agree or disagree with the following statements about wolves? (*Circle one number for each.)*

I value having wolves in Minnesota…	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree
…so that future generations can enjoy them.	1	2	3	4	5	6	7
…because they are an important part of the ecosystem.	1	2	3	4	5	6	7
…because of their value to science and research.	1	2	3	4	5	6	7
…because they have a right to exist.	1	2	3	4	5	6	7
…because they contribute to the economy through tourism.	1	2	3	4	5	6	7
…for the opportunity to hunt or trap them.	1	2	3	4	5	6	7
…for the opportunity to see or hear them in the wild.	1	2	3	4	5	6	7
….because they are a symbol of wilderness.	1	2	3	4	5	6	7
…because I have an emotional connection to them.	1	2	3	4	5	6	7
…because they are an important part of human culture.	1	2	3	4	5	6	7

4. In general, do you think wolves <u>in Minnesota</u> are: (*Circle one number for each.)*

	Very	Moderately	Slightly	Neither	Slightly	Moderately	Very	
Dangerous	3	2	1	0	1	2	3	Harmless
Bad	3	2	1	0	1	2	3	Good
Harmful	3	2	1	0	1	2	3	Beneficial
Negative	3	2	1	0	1	2	3	Positive

5. If you saw a wolf <u>within 20 miles of your home</u>, how much of each of the following would you feel? (*Circle one number for each.)*

	None	Very little	Some	A moderate amount	A large amount
Joy	1	2	3	4	5
Fear	1	2	3	4	5
Surprise	1	2	3	4	5
Anger	1	2	3	4	5
Interest	1	2	3	4	5
Hatred	1	2	3	4	5
Awe	1	2	3	4	5
Disgust	1	2	3	4	5
Worry	1	2	3	4	5
Sadness	1	2	3	4	5

6. Thinking about where wolves <u>currently exist in Minnesota</u>, please indicate how much <u>risk you believe wolves pose to…</u> (*Circle one number for each.)*

What is the level of risk posed to:	No risk at all	Very little risk	Some risk	A moderate amount of risk	A large amount of risk
The safety of children	1	2	3	4	5
Personal property	1	2	3	4	5
My personal safety	1	2	3	4	5
Pets (e.g., domestic dogs and cats)	1	2	3	4	5
Hunting dogs	1	2	3	4	5
Livestock	1	2	3	4	5
White-tailed deer populations	1	2	3	4	5
Moose populations	1	2	3	4	5

Section 2. Interactions between Wolves, Moose and Deer

1. The following comparisons are meant to measure your preferences for tradeoffs among wolves, moose and deer. In general, how important are each of the following species to you in comparison to one another? (*Circle the number that indicates your feelings about the relative importance of each species in the comparisons below.*)

	Much more important	Moderately more important	Slightly more important	Equally important	Slightly more important	Moderately more important	Much more important	
Wolves	3	2	1	0	1	2	3	Moose
Deer	3	2	1	0	1	2	3	Wolves
Moose	3	2	1	0	1	2	3	Deer

Section 3. Preferences for Wolf Populations

1. There were an estimated 2,655 wolves in Minnesota in winter 2017/18. In the future, I would like to have _____ wolves in Minnesota. *(Circle only one.)*

Zero	Many fewer	Fewer	About the same number	More	Many more
1	2	3	4	5	6

2. Compared to today, I would like to see wolves occupy _____ territory in Minnesota. *(Circle only one.)*

No	Much less	Less	About the same amount of	More	Much more
1	2	3	4	5	6

3. How much do you agree or disagree with the statement: It is important to maintain a wolf population in Minnesota? *(Circle only one.)*

Strongly disagree	Moderately disagree	Slightly disagree	Neither	Slightly agree	Moderately agree	Strongly agree
1	2	3	4	5	6	7

Section 4. Preferences for Wolf Management

1. Wolf management involves tradeoffs in competing objectives. How important do you personally think it is that the Minnesota DNR do each of the following concerning wolves in Minnesota? *(Circle one number for each.)*

	Not at all important	Slightly important	Somewhat important	Moderately important	Very important
Kill wolves in areas where they are attacking domestic livestock	1	2	3	4	5
Protect individual wolves	1	2	3	4	5
Reduce wolf populations on public lands if they are killing hunting dogs	1	2	3	4	5
Promote diverse animal communities that include wolves	1	2	3	4	5
Promote public opportunities to see and hear wolves	1	2	3	4	5
Reduce wolf populations to address concerns about deer and moose populations	1	2	3	4	5
Educate people about wolves	1	2	3	4	5
Kill wolves that show aggression or threatening behavior toward people	1	2	3	4	5
Educate livestock producers about best management practices to prevent conflict	1	2	3	4	5
Compensate livestock producers for animals lost to wolves	1	2	3	4	5
Study wolf populations	1	2	3	4	5

2. If a wolf were <u>seen near a residential neighborhood</u>, how acceptable would it be for the Minnesota DNR to take each of the following actions? (*Circle one number for each.)*

How acceptable to:	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately Acceptable	Highly acceptable
Do nothing	1	2	3	4	5	6	7
Monitor the situation	1	2	3	4	5	6	7
Try to frighten it away	1	2	3	4	5	6	7
Capture and relocate it	1	2	3	4	5	6	7
Kill it	1	2	3	4	5	6	7

3. If a wolf <u>killed someone's pet (e.g., domestic dog or cat)</u>, how acceptable would it be for the Minnesota DNR to take each of the following actions? (*Circle one number for each.)*

How acceptable to:	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately Acceptable	Highly acceptable
Do nothing	1	2	3	4	5	6	7
Monitor the situation	1	2	3	4	5	6	7
Try to frighten it away	1	2	3	4	5	6	7
Capture and relocate it	1	2	3	4	5	6	7
Kill it	1	2	3	4	5	6	7

4. If a wolf <u>killed livestock (e.g., cow, sheep, goat)</u>, how acceptable would it be for the Minnesota DNR to take each of the following actions? *(Circle one number for each.)*

How acceptable to:	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately Acceptable	Highly acceptable
Do nothing	1	2	3	4	5	6	7
Monitor the situation	1	2	3	4	5	6	7
Try to frighten it away	1	2	3	4	5	6	7
Capture and relocate it	1	2	3	4	5	6	7
Kill it	1	2	3	4	5	6	7

5. Some Minnesotans want the opportunity to hunt and trap wolves, while others feel that hunting and trapping of wolves is wrong. If wolves are removed from the endangered species list and management authority moves to the state of Minnesota, how much do you support or oppose the following? *(Circle one number for each.)*

	Strongly oppose	Moderately oppose	Slightly oppose	Neither	Slightly support	Moderately support	Strongly support
Establishing a regulated wolf hunting season	1	2	3	4	5	6	7
Establishing a regulated wolf trapping season	1	2	3	4	5	6	7

Section 5. Preferences for Geographic Distribution of Wolves in Minnesota

1. How acceptable is it to you to have wolves living in the following areas <u>in Minnesota</u>. *(Circle one number for each.)*

How acceptable to have wolves in:	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately acceptable	Highly acceptable
Primarily forested areas that are mostly publicly owned	1	2	3	4	5	6	7
Primarily forested areas that are mostly privately owned	1	2	3	4	5	6	7
Areas with a mix of forest, open land, farms and small towns	1	2	3	4	5	6	7
Areas that are mostly farmland with small towns	1	2	3	4	5	6	7
Rural areas on the fringes of suburban development	1	2	3	4	5	6	7
Suburban and urban residential areas	1	2	3	4	5	6	7
Anywhere wolves become established on their own	1	2	3	4	5	6	7

Section 6. Identity

1. To what extent do you identify with each of the following labels? (*Circle one number for each.*)

	Not at all like me	Very little like me	Somewhat like me	Moderately like me	Very much like me
Wolf advocate	1	2	3	4	5
Hunter	1	2	3	4	5
Environmentalist	1	2	3	4	5
Nature enthusiast	1	2	3	4	5
Farmer	1	2	3	4	5
Trapper	1	2	3	4	5
Conservationist	1	2	3	4	5

Section 7. Wildlife Values

1. How much do you agree or disagree with the following statements meant to measure your values for wildlife in general. (*Circle one number for each.)*

	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree
Humans should manage fish and wildlife so that humans benefit.	1	2	3	4	5	6	7
Animals should have rights similar to the rights of humans.	1	2	3	4	5	6	7
We should strive for a world where there's an abundance of fish and wildlife for hunting and fishing.	1	2	3	4	5	6	7
I view all living things as part of one big family.	1	2	3	4	5	6	7
Hunting does not respect the lives of animals.	1	2	3	4	5	6	7
I feel a strong emotional bond with animals.	1	2	3	4	5	6	7
The needs of humans should take priority over fish and wildlife protection.	1	2	3	4	5	6	7
I care about animals as much as I do other people.	1	2	3	4	5	6	7
Fish and wildlife are on earth primarily for people to use.	1	2	3	4	5	6	7
I take great comfort in the relationships I have with animals.	1	2	3	4	5	6	7
I believe that wildlife have intentions.	1	2	3	4	5	6	7
It is acceptable for people to kill wildlife if they think it poses a threat to their property.	1	2	3	4	5	6	7
We should strive for a world where humans and fish and wildlife can live side by side without fear.	1	2	3	4	5	6	7
It is acceptable for people to kill wildlife if they think it poses a threat to their life.	1	2	3	4	5	6	7
I value the sense of companionship I receive from animals.	1	2	3	4	5	6	7
People who want to hunt should be provided the opportunity to do so.	1	2	3	4	5	6	7
Wildlife are like my family and I want to protect them.	1	2	3	4	5	6	7
I believe that wildlife have minds of their own.	1	2	3	4	5	6	7
It is acceptable for people to use fish and wildlife in research even if it may harm or kill some animals.	1	2	3	4	5	6	7
It would be more rewarding for me to help animals rather than people.	1	2	3	4	5	6	7
Hunting is cruel and inhumane to the animals.	1	2	3	4	5	6	7
I believe that wildlife appear to experience emotions.	1	2	3	4	5	6	7

Section 8. Trust in the Minnesota Department of Natural Resources

1. The following statements are meant to measure your trust in the Minnesota DNR. *(Circle one number for each.)*

The Minnesota DNR	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree
…is open and honest about things they do and say related to wildlife management.	1	2	3	4	5	6	7
…can be trusted to make decisions about wildlife management that are good for the resource.	1	2	3	4	5	6	7
…will make decisions about wildlife management in a way that is fair.	1	2	3	4	5	6	7
…listens to the concerns of citizens.	1	2	3	4	5	6	7
…does a good job of managing wildlife in Minnesota.	1	2	3	4	5	6	7
…can be trusted to take responsibility for managing Minnesota's wildlife resources.	1	2	3	4	5	6	7
…spends public money effectively.	1	2	3	4	5	6	7
…is trustworthy.	1	2	3	4	5	6	7
…adequately manages Minnesota's wildlife	1	2	3	4	5	6	7

2. The following statements are meant to measure how much the Minnesota DNR shares your personal views and values. *(Circle one number for each.)*

The Minnesota DNR	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree
… shares similar values as me.	1	2	3	4	5	6	7
… shares similar opinions as me.	1	2	3	4	5	6	7
… thinks in a similar way as me.	1	2	3	4	5	6	7
… takes similar actions as I would.	1	2	3	4	5	6	7
… shares similar goals as me.	1	2	3	4	5	6	7

3. The following statements are meant to measure your beliefs about the skills and abilities of Minnesota DNR employees. *(Circle one number for each.)*

The Minnesota DNR…	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree
has wildlife managers and biologists who are well-trained for their jobs.	1	2	3	4	5	6	7
is operated by employees who are well-qualified	1	2	3	4	5	6	7
is operated by employees who understand the work that needs to be done	1	2	3	4	5	6	7

Section 9. Deer Hunting Experience and Beliefs about Wolves and Deer

1. Did you hunt deer during the 2018 firearm season? *(Please check one.)*

- ❑ Yes (*If yes, please answer questions 2 and 3.*)
- ❑ No (*If no, please skip to question 4.*)

2. If yes, how many days did you hunt <u>during the 2018 deer firearm season</u>?

_____Days

3. How satisfied or dissatisfied were you with each of the following <u>during the 2018 deer hunting season</u> in Minnesota? *(Circle one number for each.)*

	Very dissatisfied	Moderately dissatisfied	Slightly dissatisfied	Neither	Slightly satisfied	Moderately satisfied	Very satisfied
Overall deer hunting experience	1	2	3	4	5	6	7
Deer hunting harvest	1	2	3	4	5	6	7
Deer hunting regulations	1	2	3	4	5	6	7
Total number of deer seen	1	2	3	4	5	6	7
Number of bucks seen	1	2	3	4	5	6	7
Number of antlerless deer seen	1	2	3	4	5	6	7

4. <u>Over the last 5 years</u>, what trend have you seen in the deer population where you hunt? *(Circle one number.)*

A lot fewer deer	Moderately fewer deer	Slightly fewer deer	About the same number of deer	Slightly more deer	Moderately more deer	Many more deer
1	2	3	4	5	6	7

5. Do you think the deer population where you hunt most often is: *(Circle one number.)*

Much too low	Moderately too low	Slightly too low	About right	Slightly too high	Moderately too high	Much too high
1	2	3	4	5	6	7

6. To what extent do you agree or disagree with the following statements about the relationship between deer and wolves? *(Circle one number for each.)*

	Strongly disagree	Moderately disagree	Slightly disagree	Neither	Slightly agree	Moderately agree	Strongly agree
I think wolves are an important part of the Minnesota environment.	1	2	3	4	5	6	7
Wolves compete too much with Minnesota hunters for deer.	1	2	3	4	5	6	7
Wolves help maintain healthy populations of deer.	1	2	3	4	5	6	7
I would be happier if there were no wolves in Minnesota at all.	1	2	3	4	5	6	7
Wolves are an unacceptable threat to livestock in Minnesota.	1	2	3	4	5	6	7
It's important to maintain a wolf population in Minnesota.	1	2	3	4	5	6	7

7. How much do you agree or disagree with the following statements measuring the importance of deer hunting to you personally? *(Circle one number for each.)*

	Strongly disagree	Moderately disagree	Slightly disagree	Neither	Slightly agree	Moderately agree	Strongly agree
Being a deer hunter is an important part of who I am.	1	2	3	4	5	6	7
Deer hunting is something I rarely think about.	1	2	3	4	5	6	7
I would be at a loss if I were forced to give up deer hunting.	1	2	3	4	5	6	7
Being a deer hunter is about more than just hunting.	1	2	3	4	5	6	7
I have no clear feelings about being a deer hunter.	1	2	3	4	5	6	7

8. How important are the following experiences to your deer-hunting satisfaction? *(Circle one number for each.)*

	Not at all important	Slightly important	Somewhat important	Moderately important	Very important
The challenge of harvesting a large buck	1	2	3	4	5
Developing my skills and abilities	1	2	3	4	5
Becoming a better deer hunter	1	2	3	4	5
Hunting with friends	1	2	3	4	5
Getting food for my family	1	2	3	4	5
Harvesting any deer for meat	1	2	3	4	5
Enjoying a preferred pastime	1	2	3	4	5
Harvesting any buck	1	2	3	4	5
Enjoying nature and the outdoors	1	2	3	4	5
Helping manage deer populations	1	2	3	4	5
Getting a buck every year	1	2	3	4	5
Hunting with family	1	2	3	4	5
Seeing a lot of bucks	1	2	3	4	5
Harvesting a large buck	1	2	3	4	5
Harvesting at least one deer	1	2	3	4	5
Selectively harvesting a large buck even if it means not killing a deer	1	2	3	4	5
Seeing a lot of deer	1	2	3	4	5

Section 10. Socio-demographics

This section includes personal questions about you. These questions will be used understand how well survey respondents represent Minnesotans.

1. What best describes where you live now? *(Check one.)*

- ❑ On a farm
- ❑ In the country, but not on a farm
- ❑ Small town (less than 2,000)
- ❑ Large town (2,000 to 9,999)
- ❑ Small city or suburb (10,000 to 25,000)
- ❑ Large city (over 25,000)
- ❑ Tribal reservation

2. What is your age? _____ Years

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

- ❑ Grade school
- ❑ Some high school
- ❑ High school diploma or GED
- ❑ Some vocational or technical school
- ❑ Vocational or technical school (associate's) degree
- ❑ Some college
- ❑ Four-year college (bachelor's) degree
- ❑ Some graduate school
- ❑ Graduate (master's or doctoral) degree

4. Are you?

❑ Male ❑ Female

5. What was your annual household income from all sources, before taxes, in 2018? $_____

6. Overall would you say you are? *(Circle one number.)*

Very liberal	Somewhat liberal	Closer to liberal	Neither liberal nor conservative	Closer to conservative	Somewhat conservative	Very conservative
3	2	1	0	1	2	3

7. What is your race? *(Check all that apply.)*

- ❑ White
- ❑ Black or African American
- ❑ Hispanic, Latino, or Spanish origin
- ❑ American Indian or Alaskan Native
- ❑ Asian
- ❑ Other: _____

Comments:

THANK YOU FOR YOUR HELP!
Please return the completed questionnaire in the enclosed self-addressed, stamped envelope.

Appendix B: Livestock Producer Survey

SURVEY OF MINNESOTANS' ATTITUDES TOWARD WOLVES

(Photo: Terry Sohl)

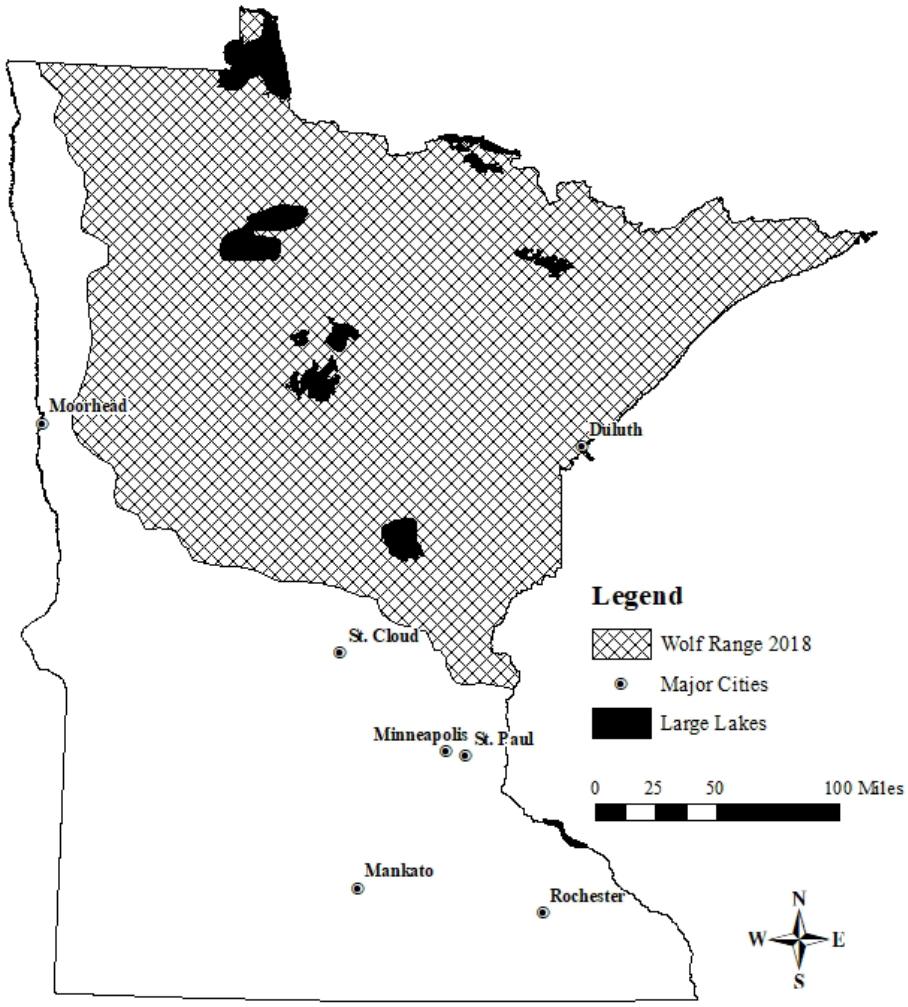
A cooperative study conducted by the University of Minnesota for the Minnesota Department of Natural Resources

Your help on this study is greatly appreciated!

Your response to this survey will help to inform the Minnesota Wolf Management Plan update. Thank you in advance for your time and effort. ***Please return your completed questionnaire in the enclosed envelope. The envelope is self-addressed and no postage is required. Thanks!***

Minnesota Cooperative Fish and Wildlife Research Unit,
Department of Fisheries, Wildlife and Conservation Biology
University of Minnesota
St. Paul, Minnesota 55108-6124
(612) 624-3479
sas@umn.edu

Fig. 1 Minnesota Wolf Range 2018



Wolves in Minnesota

Information on this page is provided for your reference, please feel free to refer back to this information while completing the questionnaire.

Current Range: Wolves can be found in most of the northern half of the state of Minnesota. Fig. 1 shows the geographic distribution of wolves. More wolves are found in the northeast part of the state than other areas within the range.

Population: The DNR conducted a survey of wolves in the winter of 2017/18. It was estimated that there were 2,655 (between 1,955 and 3,400) wolves living in the state at the time of the survey. This number goes up and down throughout the year as some animals are born or die.

More information on the range and population of wolves in MN can be found here:

https://files.dnr.state.mn.us/wildlife/wolves/2018/survey-wolf.pdf

More information on wolf management can be found in the current Minnesota wolf management plan

https://files.dnr.state.mn.us/natural_resources/animals/mammals/wolves/wolfplan.pdf

Section 1. Attitudes About and Experiences with Wolves in Minnesota

1. Which of the following best describes your personal experiences with wolves <u>in Minnesota</u>? *(Check all that apply.)*

- ❑ I have never seen or heard a wolf (captive or wild)
- ❑ I have seen a wolf in captivity (zoo, educational facility)
- ❑ I have seen wolf tracks in the wild
- ❑ I have heard a wolf howl in the wild
- ❑ I have seen game or livestock killed by wolves
- ❑ I have seen a wolf in the wild once
- ❑ I have seen a wolf in the wild multiple times

2. In general, how important are wolves <u>in Minnesota</u> to you personally? (*Circle one*.)

Not at all important	Slightly important	Somewhat important	Moderately important	Very important
1	2	3	4	5

3. People <u>value having wolves in Minnesota</u> for a number of reasons, how much do you agree or disagree with the following statements about wolves? (*Circle one number for each.)*

I value having wolves in Minnesota…	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree
…so that future generations can enjoy them.	1	2	3	4	5	6	7
…because they are an important part of the ecosystem.	1	2	3	4	5	6	7
…because of their value to science and research.	1	2	3	4	5	6	7
…because they have a right to exist.	1	2	3	4	5	6	7
…because they contribute to the economy through tourism.	1	2	3	4	5	6	7
…for the opportunity to hunt or trap them.	1	2	3	4	5	6	7
…for the opportunity to see or hear them in the wild.	1	2	3	4	5	6	7
….because they are a symbol of wilderness.	1	2	3	4	5	6	7
…because I have an emotional connection to them.	1	2	3	4	5	6	7
…because they are an important part of human culture.	1	2	3	4	5	6	7

4. In general, do you think wolves <u>in Minnesota</u> are: (*Circle one number for each.)*

	Very	Moderately	Slightly	Neither	Slightly	Moderately	Very	
Dangerous	3	2	1	0	1	2	3	Harmless
Bad	3	2	1	0	1	2	3	Good
Harmful	3	2	1	0	1	2	3	Beneficial
Negative	3	2	1	0	1	2	3	Positive

5. If you saw a wolf <u>within 20 miles of your home</u>, how much of each of the following would you feel? (*Circle one number for each.)*

	None	Very little	Some	A moderate amount	A large amount
Joy	1	2	3	4	5
Fear	1	2	3	4	5
Surprise	1	2	3	4	5
Anger	1	2	3	4	5
Interest	1	2	3	4	5
Hatred	1	2	3	4	5
Awe	1	2	3	4	5
Disgust	1	2	3	4	5
Worry	1	2	3	4	5
Sadness	1	2	3	4	5

6. Thinking about where wolves <u>currently exist in Minnesota</u>, please indicate how much <u>risk you believe wolves pose to…</u> (*Circle one number for each.)*

What is the level of risk posed to:	No risk at all	Very little risk	Some risk	A moderate amount of risk	A large amount of risk
The safety of children	1	2	3	4	5
Personal property	1	2	3	4	5
My personal safety	1	2	3	4	5
Pets (e.g., domestic dogs and cats)	1	2	3	4	5
Hunting dogs	1	2	3	4	5
Livestock	1	2	3	4	5
White-tailed deer populations	1	2	3	4	5
Moose populations	1	2	3	4	5

Section 2. Interactions between Wolves, Moose and Deer

1. The following comparisons are meant to measure your preferences for tradeoffs among wolves, moose and deer. In general, how important are each of the following species to you in comparison to one another? (*Circle the number that indicates your feelings about the relative importance of each species in the comparisons below*.)

	Much more important	Moderately more important	Slightly more important	Equally important	Slightly more important	Moderately more important	Much more important	
Wolves	3	2	1	0	1	2	3	Moose
Deer	3	2	1	0	1	2	3	Wolves
Moose	3	2	1	0	1	2	3	Deer

Section 3. Preferences for Wolf Populations

1. There were an estimated 2,655 wolves in Minnesota in winter 2017/18. In the future, I would like to have _____ wolves in Minnesota. *(Circle only one.)*

Zero	Many fewer	Fewer	About the same number	More	Many more
1	2	3	4	5	6

2. Compared to today, I would like to see wolves occupy _____ territory in Minnesota. *(Circle only one.)*

No	Much less	Less	About the same amount of	More	Much more
1	2	3	4	5	6

3. How much do you agree or disagree with the statement: It is important to maintain a wolf population in Minnesota? *(Circle only one.)*

Strongly disagree	Moderately disagree	Slightly disagree	Neither	Slightly agree	Moderately agree	Strongly agree
1	2	3	4	5	6	7

Section 4. Preferences for Wolf Management

1. Wolf management involves tradeoffs in competing objectives. How important do you personally think it is that the Minnesota DNR do each of the following concerning wolves in Minnesota? *(Circle one number for each.)*

	Not at all important	Slightly important	Somewhat important	Moderately important	Very important
Kill wolves in areas where they are attacking domestic livestock	1	2	3	4	5
Protect individual wolves	1	2	3	4	5
Reduce wolf populations on public lands if they are killing hunting dogs	1	2	3	4	5
Promote diverse animal communities that include wolves	1	2	3	4	5
Promote public opportunities to see and hear wolves	1	2	3	4	5
Reduce wolf populations to address concerns about deer and moose populations	1	2	3	4	5
Educate people about wolves	1	2	3	4	5
Kill wolves that show aggression or threatening behavior toward people	1	2	3	4	5
Educate livestock producers about best management practices to prevent conflict	1	2	3	4	5
Compensate livestock producers for animals lost to wolves	1	2	3	4	5
Study wolf populations	1	2	3	4	5

2. If a wolf were <u>seen near a residential neighborhood</u>, how acceptable would it be for the Minnesota DNR to take each of the following actions? (*Circle one number for each.)*

How acceptable to:	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately Acceptable	Highly acceptable
Do nothing	1	2	3	4	5	6	7
Monitor the situation	1	2	3	4	5	6	7
Try to frighten it away	1	2	3	4	5	6	7
Capture and relocate it	1	2	3	4	5	6	7
Kill it	1	2	3	4	5	6	7

3. If a wolf <u>killed someone's pet (e.g., domestic dog or cat)</u>, how acceptable would it be for the Minnesota DNR to take each of the following actions? (*Circle one number for each.)*

How acceptable to:	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately Acceptable	Highly acceptable
Do nothing	1	2	3	4	5	6	7
Monitor the situation	1	2	3	4	5	6	7
Try to frighten it away	1	2	3	4	5	6	7
Capture and relocate it	1	2	3	4	5	6	7
Kill it	1	2	3	4	5	6	7

4. If a wolf <u>killed livestock (e.g., cow, sheep, goat)</u>, how acceptable would it be for the Minnesota DNR to take each of the following actions? *(Circle one number for each.)*

How acceptable to:	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately Acceptable	Highly acceptable
Do nothing	1	2	3	4	5	6	7
Monitor the situation	1	2	3	4	5	6	7
Try to frighten it away	1	2	3	4	5	6	7
Capture and relocate it	1	2	3	4	5	6	7
Kill it	1	2	3	4	5	6	7

5. Some Minnesotans want the opportunity to hunt and trap wolves, while others feel that hunting and trapping of wolves is wrong. If wolves are removed from the endangered species list and management authority moves to the state of Minnesota, how much do you support or oppose the following? *(Circle one number for each.)*

	Strongly oppose	Moderately oppose	Slightly oppose	Neither	Slightly support	Moderately support	Strongly support
Establishing a regulated wolf hunting season	1	2	3	4	5	6	7
Establishing a regulated wolf trapping season	1	2	3	4	5	6	7

Section 5. Preferences for Geographic Distribution of Wolves in Minnesota

2. How acceptable is it to you to have wolves living in the following areas <u>in Minnesota</u>. *(Circle one number for each.)*

How acceptable to have wolves in:	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately acceptable	Highly acceptable
Primarily forested areas that are mostly publicly owned	1	2	3	4	5	6	7
Primarily forested areas that are mostly privately owned	1	2	3	4	5	6	7
Areas with a mix of forest, open land, farms and small towns	1	2	3	4	5	6	7
Areas that are mostly farmland with small towns	1	2	3	4	5	6	7
Rural areas on the fringes of suburban development	1	2	3	4	5	6	7
Suburban and urban residential areas	1	2	3	4	5	6	7
Anywhere wolves become established on their own	1	2	3	4	5	6	7

Section 6. Identity

1. To what extent do you identify with each of the following labels? (*Circle one number for each.*)

	Not at all like me	Very little like me	Somewhat like me	Moderately like me	Very much like me
Wolf advocate	1	2	3	4	5
Hunter	1	2	3	4	5
Environmentalist	1	2	3	4	5
Nature enthusiast	1	2	3	4	5
Farmer	1	2	3	4	5
Trapper	1	2	3	4	5
Conservationist	1	2	3	4	5

Section 7. Wildlife Values

1. How much do you agree or disagree with the following statements meant to measure your values for wildlife in general. (*Circle one number for each.)*

	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree
Humans should manage fish and wildlife so that humans benefit.	1	2	3	4	5	6	7
Animals should have rights similar to the rights of humans.	1	2	3	4	5	6	7
We should strive for a world where there's an abundance of fish and wildlife for hunting and fishing.	1	2	3	4	5	6	7
I view all living things as part of one big family.	1	2	3	4	5	6	7
Hunting does not respect the lives of animals.	1	2	3	4	5	6	7
I feel a strong emotional bond with animals.	1	2	3	4	5	6	7
The needs of humans should take priority over fish and wildlife protection.	1	2	3	4	5	6	7
I care about animals as much as I do other people.	1	2	3	4	5	6	7
Fish and wildlife are on earth primarily for people to use.	1	2	3	4	5	6	7
I take great comfort in the relationships I have with animals.	1	2	3	4	5	6	7
I believe that wildlife have intentions.	1	2	3	4	5	6	7
It is acceptable for people to kill wildlife if they think it poses a threat to their property.	1	2	3	4	5	6	7
We should strive for a world where humans and fish and wildlife can live side by side without fear.	1	2	3	4	5	6	7
It is acceptable for people to kill wildlife if they think it poses a threat to their life.	1	2	3	4	5	6	7
I value the sense of companionship I receive from animals.	1	2	3	4	5	6	7
People who want to hunt should be provided the opportunity to do so.	1	2	3	4	5	6	7
Wildlife are like my family and I want to protect them.	1	2	3	4	5	6	7
I believe that wildlife have minds of their own.	1	2	3	4	5	6	7
It is acceptable for people to use fish and wildlife in research even if it may harm or kill some animals.	1	2	3	4	5	6	7
It would be more rewarding for me to help animals rather than people.	1	2	3	4	5	6	7
Hunting is cruel and inhumane to the animals.	1	2	3	4	5	6	7
I believe that wildlife appear to experience emotions.	1	2	3	4	5	6	7

Section 8. Trust in the Minnesota Department of Natural Resources

1. The following statements are meant to measure your trust in the Minnesota DNR. *(Circle one number for each.)*

The Minnesota DNR	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree
…is open and honest about things they do and say related to wildlife management.	1	2	3	4	5	6	7
…can be trusted to make decisions about wildlife management that are good for the resource.	1	2	3	4	5	6	7
…will make decisions about wildlife management in a way that is fair.	1	2	3	4	5	6	7
…listens to the concerns of citizens.	1	2	3	4	5	6	7
…does a good job of managing wildlife in Minnesota.	1	2	3	4	5	6	7
…can be trusted to take responsibility for managing Minnesota's wildlife resources.	1	2	3	4	5	6	7
…spends public money effectively.	1	2	3	4	5	6	7
…is trustworthy.	1	2	3	4	5	6	7
…adequately manages Minnesota's wildlife	1	2	3	4	5	6	7

2. The following statements are meant to measure how much the Minnesota DNR shares your personal views and values. *(Circle one number for each.)*

The Minnesota DNR	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree
… shares similar values as me.	1	2	3	4	5	6	7
… shares similar opinions as me.	1	2	3	4	5	6	7
… thinks in a similar way as me.	1	2	3	4	5	6	7
… takes similar actions as I would.	1	2	3	4	5	6	7
… shares similar goals as me.	1	2	3	4	5	6	7

3. The following statements are meant to measure your beliefs about the skills and abilities of Minnesota DNR employees. *(Circle one number for each.)*

The Minnesota DNR…	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree
has wildlife managers and biologists who are well-trained for their jobs.	1	2	3	4	5	6	7
is operated by employees who are well-qualified	1	2	3	4	5	6	7
is operated by employees who understand the work that needs to be done	1	2	3	4	5	6	7

Section 9. About Your Property and Animals

1. What is the approximate acreage of your property used for livestock in Minnesota? _____

2. On average, how many head of cattle do you have on your property? _____

3. On average, how many sheep do you have on your property? _____

Section 10. Experience with and Opinions about Wolf Depredation

1. Have you ever had livestock killed by wolves?

❑ Yes ❑ No

→ 2. **How many animals have you lost to wolves in the last 5 years**? _____

3. Do you carry private insurance on your animals that covers wolf depredation?

❑ Yes ❑ No

4. How much do you agree or disagree with the following statements about wolf depredation and compensation? *(Circle one number for each.)*

	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree
Current financial compensation payments for wolf depredation are enough to cover losses	1	2	3	4	5	6	7
Livestock producers should have to have a wolf kill verified to receive payment	1	2	3	4	5	6	7
Livestock producers should only be compensated for losses if they are following best management practices	1	2	3	4	5	6	7

5. In the event that one of your animals is killed by wolves, how important is it to you that: *(Circle one for each.)*

	Not at all important	Slightly important	Somewhat important	Moderately important	Very important
The wolves responsible are killed	1	2	3	4	5
You adopt or modify practices that help prevent it from happening again	1	2	3	4	5
You receive financial compensation for your loss	1	2	3	4	5
Wolf populations in my area are reduced	1	2	3	4	5

Section 11. Techniques to Prevent Wolf Depredation

1. How effective do you believe the following techniques/strategies are at reducing human/wolf conflict? *(Circle one number for each.)*

	Not all effective	Slightly effective	Somewhat effective	Moderately effective	Very effective
Information/consulting on ways to reduce wolf depredation on livestock	1	2	3	4	5
Trapping/shooting wolves	1	2	3	4	5
Relocating problem wolves	1	2	3	4	5
Financial compensation	1	2	3	4	5
Private insurance	1	2	3	4	5
Collaring and monitoring problem wolves	1	2	3	4	5

2. We are interested in the effectiveness and use of best management practices related to wolf depredation. Please indicate: 1) how effective do you perceive the following best management practices are in reducing the risk of livestock depredation by wolves, and 2) whether you use them. *(Circle one number for each practice, and check yes if you use the practice currently.)*

	Not at all effective	Slightly effective	Somewhat effective	Moderately effective	Very effective	I use this practice
Guard animals (e.g., dogs, donkeys)	1	2	3	4	5	❑ Yes
Barriers (e.g., fencing, pens, fladry)	1	2	3	4	5	❑ Yes
Moving animals to less vulnerable locations at birthing	1	2	3	4	5	❑ Yes
Moving animals to less vulnerable locations at night	1	2	3	4	5	❑ Yes
Deterrents (e.g., lights, sounds)	1	2	3	4	5	❑ Yes
Calving/lambing shelters or pens	1	2	3	4	5	❑ Yes
Maintain intact fencing	1	2	3	4	5	❑ Yes

3. How much do you agree or disagree with the following statements about protecting your livestock from wolves. *(Circle one number for each.)*

	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree
I feel an obligation to prevent wolves from attacking my livestock	1	2	3	4	5	6	7
I would feel guilty if I didn't use practices that reduce the risk of wolves attacking my livestock	1	2	3	4	5	6	7
Using management practices that protect my livestock from wolves is the right thing to do	1	2	3	4	5	6	7

4. How much do you agree or disagree with the following statements about wolves and your livestock? *(Circle one number for each.)*

	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree
I am responsible for protecting my livestock from wolves	1	2	3	4	5	6	7
The safety of my livestock is my responsibility	1	2	3	4	5	6	7
Wolves pose a real risk to my livestock	1	2	3	4	5	6	7
It is not my responsibility to protect my livestock from wolves	1	2	3	4	5	6	7
Wolves are a threat that I think about often	1	2	3	4	5	6	7
I am not responsible for acting to reduce the threat of wolves	1	2	3	4	5	6	7
The risk of wolf predation is something I take seriously	1	2	3	4	5	6	7

Section 12. Socio-demographics

This section includes personal questions about you. These questions will be used understand how well survey respondents represent Minnesotans.

1. What best describes where you live now? *(Check one.)*

- ❑ On a farm
- ❑ In the country, but not on a farm
- ❑ Small town (less than 2,000)
- ❑ Large town (2,000 to 9,999)
- ❑ Small city or suburb (10,000 to 25,000)
- ❑ Large city (over 25,000)
- ❑ Tribal reservation

2. What is your age? _____ Years

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

- ❑ Grade school
- ❑ Some high school
- ❑ High school diploma or GED
- ❑ Some vocational or technical school
- ❑ Vocational or technical school (associate's) degree
- ❑ Some college
- ❑ Four-year college (bachelor's) degree
- ❑ Some graduate school
- ❑ Graduate (master's or doctoral) degree

4. Are you?

❑ Male ❑ Female

5. What was your annual household income from all sources, before taxes, in 2018? $_____

6. Overall would you say you are? *(Circle one number.)*

Very liberal	Somewhat liberal	Closer to liberal	Neither liberal nor conservative	Closer to conservative	Somewhat conservative	Very conservative
3	2	1	0	1	2	3

7. What is your race? *(Check all that apply.)*

- ❑ White
- ❑ Black or African American
- ❑ Hispanic, Latino, or Spanish origin
- ❑ American Indian or Alaskan Native
- ❑ Asian
- ❑ Other: _____

Comments:

THANK YOU FOR YOUR HELP!

Please return the completed questionnaire in the enclosed self-addressed, stamped envelope.

Appendix C: Resident Survey

SURVEY OF MINNESOTANS' ATTITUDES TOWARD WOLVES

(Photo: Terry Sohl)

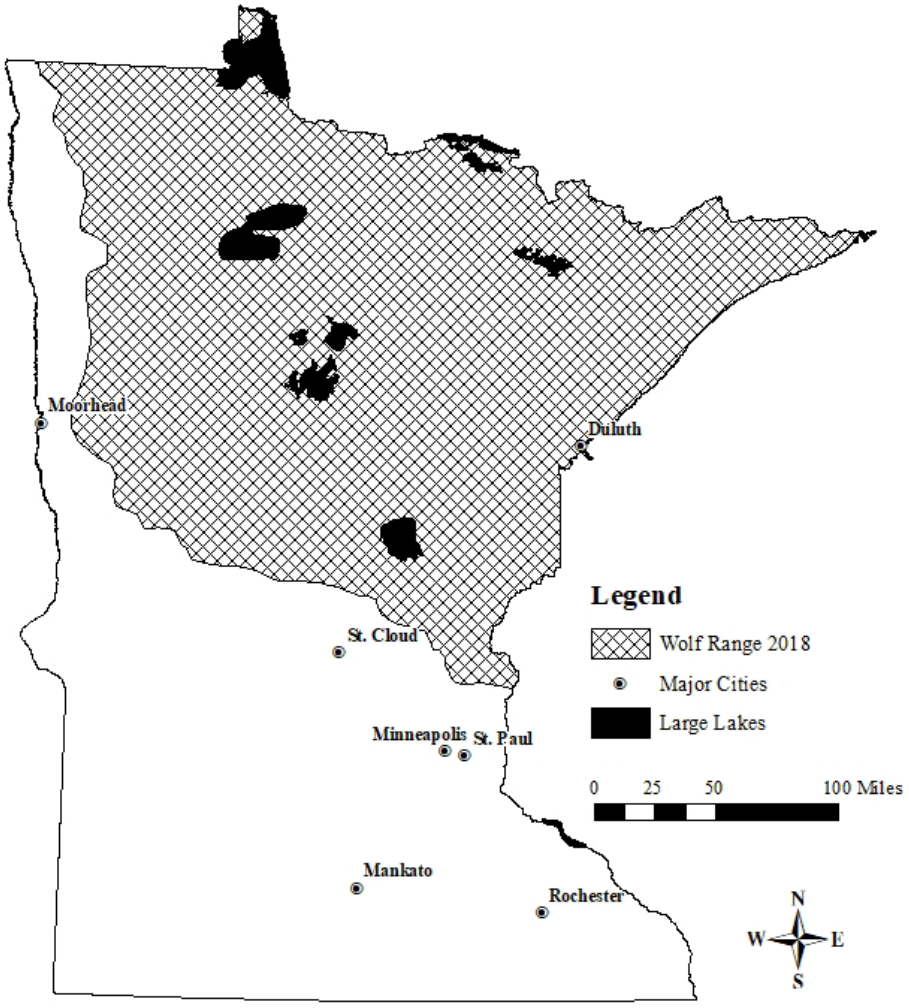
A cooperative study conducted by the University of Minnesota for the Minnesota Department of Natural Resources

Your help on this study is greatly appreciated!

Your response to this survey will help to inform the Minnesota Wolf Management Plan update. Thank you in advance for your time and effort. ***Please return your completed questionnaire in the enclosed envelope. The envelope is self-addressed and no postage is required. Thanks!***

Minnesota Cooperative Fish and Wildlife Research Unit,
Department of Fisheries, Wildlife and Conservation Biology
University of Minnesota
St. Paul, Minnesota 55108-6124
(612) 624-3479
sas@umn.edu

Fig. 1 Minnesota Wolf Range 2018



Wolves in Minnesota

Information on this page is provided for your reference, please feel free to refer back to this information while completing the questionnaire.

Current Range: Wolves can be found in most of the northern half of the state of Minnesota. Fig. 1 shows the geographic distribution of wolves. More wolves are found in the northeast part of the state than other areas within the range.

Population: The DNR conducted a survey of wolves in the winter of 2017/18. It was estimated that there were 2,655 (between 1,955 and 3,400) wolves living in the state at the time of the survey. This number goes up and down throughout the year as some animals are born or die.

More information on the range and population of wolves in MN can be found here:

https://files.dnr.state.mn.us/wildlife/wolves/2018/survey-wolf.pdf

More information on wolf management can be found in the current Minnesota wolf management plan

https://files.dnr.state.mn.us/natural_resources/animals/mammals/wolves/wolfplan.pdf

Section 1. Attitudes About and Experiences with Wolves in Minnesota

1. Which of the following best describes your personal experiences with wolves <u>in Minnesota</u>? *(Check all that apply.)*

- ❑ I have never seen or heard a wolf (captive or wild)
- ❑ I have seen a wolf in captivity (zoo, educational facility)
- ❑ I have seen wolf tracks in the wild
- ❑ I have heard a wolf howl in the wild
- ❑ I have seen game or livestock killed by wolves
- ❑ I have seen a wolf in the wild once
- ❑ I have seen a wolf in the wild multiple times

2. In general, how important are wolves <u>in Minnesota</u> to you personally? (*Circle one*.)

Not at all important	Slightly important	Somewhat important	Moderately important	Very important
1	2	3	4	5

3. People <u>value having wolves in Minnesota</u> for a number of reasons, how much do you agree or disagree with the following statements about wolves? (*Circle one number for each.)*

I value having wolves in Minnesota…	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree
…so that future generations can enjoy them.	1	2	3	4	5	6	7
…because they are an important part of the ecosystem.	1	2	3	4	5	6	7
…because of their value to science and research.	1	2	3	4	5	6	7
…because they have a right to exist.	1	2	3	4	5	6	7
…because they contribute to the economy through tourism.	1	2	3	4	5	6	7
…for the opportunity to hunt or trap them.	1	2	3	4	5	6	7
…for the opportunity to see or hear them in the wild.	1	2	3	4	5	6	7
….because they are a symbol of wilderness.	1	2	3	4	5	6	7
…because I have an emotional connection to them.	1	2	3	4	5	6	7
…because they are an important part of human culture.	1	2	3	4	5	6	7

4. In general, do you think wolves <u>in Minnesota</u> are: (*Circle one number for each.)*

	Very	Moderately	Slightly	Neither	Slightly	Moderately	Very	
Dangerous	3	2	1	0	1	2	3	Harmless
Bad	3	2	1	0	1	2	3	Good
Harmful	3	2	1	0	1	2	3	Beneficial
Negative	3	2	1	0	1	2	3	Positive

5. If you saw a wolf <u>within 20 miles of your home</u>, how much of each of the following would you feel? (*Circle one number for each.)*

	None	Very little	Some	A moderate amount	A large amount
Joy	1	2	3	4	5
Fear	1	2	3	4	5
Surprise	1	2	3	4	5
Anger	1	2	3	4	5
Interest	1	2	3	4	5
Hatred	1	2	3	4	5
Awe	1	2	3	4	5
Disgust	1	2	3	4	5
Worry	1	2	3	4	5
Sadness	1	2	3	4	5

6. Thinking about where wolves <u>currently exist in Minnesota</u>, please indicate how much <u>risk you believe wolves pose to…</u> (*Circle one number for each.)*

What is the level of risk posed to:	No risk at all	Very little risk	Some risk	A moderate amount of risk	A large amount of risk
The safety of children	1	2	3	4	5
Personal property	1	2	3	4	5
My personal safety	1	2	3	4	5
Pets (e.g., domestic dogs and cats)	1	2	3	4	5
Hunting dogs	1	2	3	4	5
Livestock	1	2	3	4	5
White-tailed deer populations	1	2	3	4	5
Moose populations	1	2	3	4	5

Section 2. Interactions between Wolves, Moose and Deer

1. The following comparisons are meant to measure your preferences for tradeoffs among wolves, moose and deer. In general, how important are each of the following species to you in comparison to one another? (*Circle the number that indicates your feelings about the relative importance of each species in the comparisons below.*)

	Much more important	Moderately more important	Slightly more important	Equally important	Slightly more important	Moderately more important	Much more important	
Wolves	3	2	1	0	1	2	3	Moose
Deer	3	2	1	0	1	2	3	Wolves
Moose	3	2	1	0	1	2	3	Deer

Section 3. Preferences for Wolf Populations

1. There were an estimated 2,655 wolves in Minnesota in winter 2017/18. In the future, I would like to have _____ wolves in Minnesota. *(Circle only one.)*

Zero	Many fewer	Fewer	About the same number	More	Many more
1	2	3	4	5	6

2. Compared to today, I would like to see wolves occupy _____ territory in Minnesota. *(Circle only one.)*

No	Much less	Less	About the same amount of	More	Much more
1	2	3	4	5	6

3. How much do you agree or disagree with the statement: It is important to maintain a wolf population in Minnesota? *(Circle only one.)*

Strongly disagree	Moderately disagree	Slightly disagree	Neither	Slightly agree	Moderately agree	Strongly agree
1	2	3	4	5	6	7

Section 4. Preferences for Wolf Management

1. Wolf management involves tradeoffs in competing objectives. How important do you personally think it is that the Minnesota DNR do each of the following concerning wolves in Minnesota? *(Circle one number for each.)*

	Not at all important	Slightly important	Somewhat important	Moderately important	Very important
Kill wolves in areas where they are attacking domestic livestock	1	2	3	4	5
Protect individual wolves	1	2	3	4	5
Reduce wolf populations on public lands if they are killing hunting dogs	1	2	3	4	5
Promote diverse animal communities that include wolves	1	2	3	4	5
Promote public opportunities to see and hear wolves	1	2	3	4	5
Reduce wolf populations to address concerns about deer and moose populations	1	2	3	4	5
Educate people about wolves	1	2	3	4	5
Kill wolves that show aggression or threatening behavior toward people	1	2	3	4	5
Educate livestock producers about best management practices to prevent conflict	1	2	3	4	5
Compensate livestock producers for animals lost to wolves	1	2	3	4	5
Study wolf populations	1	2	3	4	5

2. If a wolf were <u>seen near a residential neighborhood</u>, how acceptable would it be for the Minnesota DNR to take each of the following actions? (*Circle one number for each.)*

How acceptable to:	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately Acceptable	Highly acceptable
Do nothing	1	2	3	4	5	6	7
Monitor the situation	1	2	3	4	5	6	7
Try to frighten it away	1	2	3	4	5	6	7
Capture and relocate it	1	2	3	4	5	6	7
Kill it	1	2	3	4	5	6	7

3. If a wolf <u>killed someone's pet (e.g., domestic dog or cat)</u>, how acceptable would it be for the Minnesota DNR to take each of the following actions? (*Circle one number for each.)*

How acceptable to:	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately Acceptable	Highly acceptable
Do nothing	1	2	3	4	5	6	7
Monitor the situation	1	2	3	4	5	6	7
Try to frighten it away	1	2	3	4	5	6	7
Capture and relocate it	1	2	3	4	5	6	7
Kill it	1	2	3	4	5	6	7

4. If a wolf <u>killed livestock (e.g., cow, sheep, goat)</u>, how acceptable would it be for the Minnesota DNR to take each of the following actions? *(Circle one number for each.)*

How acceptable to:	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately Acceptable	Highly acceptable
Do nothing	1	2	3	4	5	6	7
Monitor the situation	1	2	3	4	5	6	7
Try to frighten it away	1	2	3	4	5	6	7
Capture and relocate it	1	2	3	4	5	6	7
Kill it	1	2	3	4	5	6	7

5. Some Minnesotans want the opportunity to hunt and trap wolves, while others feel that hunting and trapping of wolves is wrong. If wolves are removed from the endangered species list and management authority moves to the state of Minnesota, how much do you support or oppose the following? *(Circle one number for each.)*

	Strongly oppose	Moderately oppose	Slightly oppose	Neither	Slightly support	Moderately support	Strongly support
Establishing a regulated wolf hunting season	1	2	3	4	5	6	7
Establishing a regulated wolf trapping season	1	2	3	4	5	6	7

Section 5. Preferences for Geographic Distribution of Wolves in Minnesota

3. How acceptable is it to you to have wolves living in the following areas <u>in Minnesota</u>. *(Circle one number for each.)*

How acceptable to have wolves in:	Highly unacceptable	Moderately unacceptable	Slightly unacceptable	Neither	Slightly acceptable	Moderately acceptable	Highly acceptable
Primarily forested areas that are mostly publicly owned	1	2	3	4	5	6	7
Primarily forested areas that are mostly privately owned	1	2	3	4	5	6	7
Areas with a mix of forest, open land, farms and small towns	1	2	3	4	5	6	7
Areas that are mostly farmland with small towns	1	2	3	4	5	6	7
Rural areas on the fringes of suburban development	1	2	3	4	5	6	7
Suburban and urban residential areas	1	2	3	4	5	6	7
Anywhere wolves become established on their own	1	2	3	4	5	6	7

Section 6. Identity

1. To what extent do you identify with each of the following labels? (*Circle one number for each.*)

	Not at all like me	Very little like me	Somewhat like me	Moderately like me	Very much like me
Wolf advocate	1	2	3	4	5
Hunter	1	2	3	4	5
Environmentalist	1	2	3	4	5
Nature enthusiast	1	2	3	4	5
Farmer	1	2	3	4	5
Trapper	1	2	3	4	5
Conservationist	1	2	3	4	5

Section 7. Wildlife Values

1. How much do you agree or disagree with the following statements meant to measure your values for wildlife in general. (*Circle one number for each.)*

	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree
Humans should manage fish and wildlife so that humans benefit.	1	2	3	4	5	6	7
Animals should have rights similar to the rights of humans.	1	2	3	4	5	6	7
We should strive for a world where there's an abundance of fish and wildlife for hunting and fishing.	1	2	3	4	5	6	7
I view all living things as part of one big family.	1	2	3	4	5	6	7
Hunting does not respect the lives of animals.	1	2	3	4	5	6	7
I feel a strong emotional bond with animals.	1	2	3	4	5	6	7
The needs of humans should take priority over fish and wildlife protection.	1	2	3	4	5	6	7
I care about animals as much as I do other people.	1	2	3	4	5	6	7
Fish and wildlife are on earth primarily for people to use.	1	2	3	4	5	6	7
I take great comfort in the relationships I have with animals.	1	2	3	4	5	6	7
I believe that wildlife have intentions.	1	2	3	4	5	6	7
It is acceptable for people to kill wildlife if they think it poses a threat to their property.	1	2	3	4	5	6	7
We should strive for a world where humans and fish and wildlife can live side by side without fear.	1	2	3	4	5	6	7
It is acceptable for people to kill wildlife if they think it poses a threat to their life.	1	2	3	4	5	6	7
I value the sense of companionship I receive from animals.	1	2	3	4	5	6	7
People who want to hunt should be provided the opportunity to do so.	1	2	3	4	5	6	7
Wildlife are like my family and I want to protect them.	1	2	3	4	5	6	7
I believe that wildlife have minds of their own.	1	2	3	4	5	6	7
It is acceptable for people to use fish and wildlife in research even if it may harm or kill some animals.	1	2	3	4	5	6	7
It would be more rewarding for me to help animals rather than people.	1	2	3	4	5	6	7
Hunting is cruel and inhumane to the animals.	1	2	3	4	5	6	7
I believe that wildlife appear to experience emotions.	1	2	3	4	5	6	7

Section 8. Trust in the Minnesota Department of Natural Resources

1. The following statements are meant to measure your trust in the Minnesota DNR. *(Circle one number for each.)*

The Minnesota DNR	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree
…is open and honest about things they do and say related to wildlife management.	1	2	3	4	5	6	7
…can be trusted to make decisions about wildlife management that are good for the resource.	1	2	3	4	5	6	7
…will make decisions about wildlife management in a way that is fair.	1	2	3	4	5	6	7
…listens to the concerns of citizens.	1	2	3	4	5	6	7
…does a good job of managing wildlife in Minnesota.	1	2	3	4	5	6	7
…can be trusted to take responsibility for managing Minnesota's wildlife resources.	1	2	3	4	5	6	7
…spends public money effectively.	1	2	3	4	5	6	7
…is trustworthy.	1	2	3	4	5	6	7
…adequately manages Minnesota's wildlife	1	2	3	4	5	6	7

2. The following statements are meant to measure how much the Minnesota DNR shares your personal views and values. *(Circle one number for each.)*

The Minnesota DNR	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree
… shares similar values as me.	1	2	3	4	5	6	7
… shares similar opinions as me.	1	2	3	4	5	6	7
… thinks in a similar way as me.	1	2	3	4	5	6	7
… takes similar actions as I would.	1	2	3	4	5	6	7
… shares similar goals as me.	1	2	3	4	5	6	7

3. The following statements are meant to measure your beliefs about the skills and abilities of Minnesota DNR employees. *(Circle one number for each.)*

The Minnesota DNR…	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree
has wildlife managers and biologists who are well-trained for their jobs.	1	2	3	4	5	6	7
is operated by employees who are well-qualified	1	2	3	4	5	6	7
is operated by employees who understand the work that needs to be done	1	2	3	4	5	6	7

Section 9. Involvement with Wolves, Wildlife, and Outdoor Recreation

1. In the last 12 months have you participated in any of the following outdoor recreation activities? (*Circle one number for each.*)

	For each activity, please check yes OR no.		If yes, number of days in past 12 months
Camping	❑ Yes	❑ No	_____ days
Hiking	❑ Yes	❑ No	_____ days
Canoeing/kayaking/paddle boarding	❑ Yes	❑ No	_____ days
Motorized boating	❑ Yes	❑ No	_____ days
Fishing	❑ Yes	❑ No	_____ days
Hunting	❑ Yes	❑ No	_____ days
Mountain Biking	❑ Yes	❑ No	_____ days
Cross-country skiing/snowshoeing	❑ Yes	❑ No	_____ days
Trail running	❑ Yes	❑ No	_____ days
Birdwatching	❑ Yes	❑ No	_____ days
Viewing wildlife (other than birds)	❑ Yes	❑ No	_____ days
Snowmobiling or ATV riding	❑ Yes	❑ No	_____ days
Foraging for wild foods	❑ Yes	❑ No	_____ days

2. How much do you agree or disagree with the following statements about the importance of wildlife in your life? Please choose the option that best matches your response. (*Circle one number for each.*)

	Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree
I spend a lot of time thinking about wildlife.	1	2	3	4	5	6	7
I know a lot about wildlife compared to most people.	1	2	3	4	5	6	7
In general, wildlife is important to me.	1	2	3	4	5	6	7
I find wildlife particularly interesting.	1	2	3	4	5	6	7

3. Are you currently a member of any of the following types of organizations? (*Check all that apply*.)

- ❑ Animal rights group (examples: Humane Society of the United States, People for the Ethical Treatment of Animals)
- ❑ Conservation group (examples: The Nature Conservancy, Audubon, Isaac Walton League)
- ❑ Environmental group (examples: Minnesota Center for Environmental Advocacy, Sierra Club)
- ❑ Hunting group (examples: Ducks Unlimited, Pheasants Forever, Minnesota Deer Hunters Association)
- ❑ Wildlife education/science group (examples: the International Wolf Center, the National Eagle Center)
- ❑ Wolf advocacy group (examples: Howling for Wolves, HOWL, Defenders of Wildlife)

5. We are interested in understanding a little more about your participation in wolf-related policy action. How often have you engaged in the following behaviors? (*Circle one number for each.*)

	Never	Rarely	Sometimes	Often	Very often
Donated money to an organization whose mission is wolf protection	1	2	3	4	5
Volunteered your time for wolves in some way	1	2	3	4	5
Visited wolf tourism sites like the International Wolf Center in Ely, MN or the Wildlife Science Center in Stacy, MN	1	2	3	4	5
Talked about wolves with your friends and family	1	2	3	4	5
Contacted your state or federal legislator to voice your opinion about wolves	1	2	3	4	5
Contacted the Minnesota Department of Natural Resources to discuss wolf management	1	2	3	4	5

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Section 10. Socio-demographics

This section includes personal questions about you. These questions will be used understand how well survey respondents represent Minnesotans.

1. What best describes where you live now? *(Check one.)*

- ❑ On a farm
- ❑ In the country, but not on a farm
- ❑ Small town (less than 2,000)
- ❑ Large town (2,000 to 9,999)
- ❑ Small city or suburb (10,000 to 25,000)
- ❑ Large city (over 25,000)
- ❑ Tribal reservation

2. What is your age? _____ Years

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

- ❑ Grade school
- ❑ Some high school
- ❑ High school diploma or GED
- ❑ Some vocational or technical school
- ❑ Vocational or technical school (associate's) degree
- ❑ Some college
- ❑ Four-year college (bachelor's) degree
- ❑ Some graduate school
- ❑ Graduate (master's or doctoral) degree

4. Are you?

❑ Male ❑ Female

5. What was your annual household income from all sources, before taxes, in 2018? $_____

6. Overall would you say you are? *(Circle one number.)*

Very liberal	Somewhat liberal	Closer to liberal	Neither liberal nor conservative	Closer to conservative	Somewhat conservative	Very conservative
3	2	1	0	1	2	3

7. What is your race? *(Check all that apply.)*

- ❑ White
- ❑ Black or African American
- ❑ Hispanic, Latino, or Spanish origin
- ❑ American Indian or Alaskan Native
- ❑ Asian
- ❑ Other: _____

Comments:

THANK YOU FOR YOUR HELP!

Please return the completed questionnaire in the enclosed self-addressed, stamped envelope.

Appendix D: Information on Weighting of Resident Response

Proportions of the state population were calculated by region (1-4, and 3a), gender (male versus female), hunting status (hunter versus non-hunter), and age (18-39, 40-49, 50-59, 60-69, and 70+). Proportions of these corresponding cells within the sample were also calculated (Table AD-1), and weights calculated following Equation 1. $Weight_{ijk}$ is the cell specific (i=gender, j=hunt status, k=age category) survey weight within region derived by dividing 1 by the percent of that cell in the population over the percent of that cell in the survey sample. Final survey weights are presented in Table AD-2. Weights are applied to all statewide estimates for the resident sample.

Equation 1.

$$\boldsymbol{Weight}_{\boldsymbol{ijk}} = \mathbf{1}/\left(\frac{\boldsymbol{Sample\ Proportion}_{\boldsymbol{ijk}}}{\boldsymbol{Population\ Proportion}_{\boldsymbol{ijk}}}\right)$$

Table AD-1. Population and sample proportions by gender, hunting status, and age, and region										
	Population Proportion					***Sample Proportion***				
	R1	***R2***	***R3a***	***R3b***	***R4***	***R1***	***R2***	***R3a***	***R3b***	***R4***
Male_Hunter_18-39	0.00491	0.00359	0.01225	0.00328	0.00439	0.01507	0.00754	0.00603	0.00829	0.01583
Male_NonHunter_18-39	0.00890	0.00985	0.06190	0.06690	0.01886	0.00301	0.00528	0.01583	0.00603	0.01206
Female_Hunter_18-39	0.00153	0.00106	0.00251	0.00035	0.00098	0.00528	0.00226	0.00075	0.00301	0.00226
Female_NonHunter_18-39	0.01160	0.01106	0.06915	0.06862	0.02062	0.00603	0.01281	0.01733	0.00980	0.01281
Male_Hunter_40-49	0.00226	0.00192	0.00600	0.00134	0.00206	0.01356	0.00904	0.00301	0.00528	0.00980
Male_NonHunter_40-49	0.00321	0.00353	0.02702	0.02356	0.00701	0.00377	0.00452	0.01130	0.00377	0.00754
Female_Hunter_40-49	0.00046	0.00038	0.00067	0.00009	0.00026	0.00151	0.00151	0.00075	0.00000	0.00301
Female_NonHunter_40-49	0.00480	0.00465	0.03181	0.02445	0.00846	0.00377	0.00754	0.00829	0.00452	0.01130
Male_Hunter_50-59	0.00253	0.00219	0.00689	0.00166	0.00219	0.01733	0.01733	0.00226	0.01281	0.01206
Male_NonHunter_50-59	0.00423	0.00454	0.02969	0.02422	0.00858	0.01130	0.00904	0.00980	0.00904	0.02110
Female_Hunter_50-59	0.00049	0.00042	0.00066	0.00010	0.00025	0.00678	0.00226	0.00000	0.00000	0.00075
Female_NonHunter_50-59	0.00619	0.00625	0.03613	0.02648	0.01021	0.01432	0.01281	0.01130	0.00904	0.01206
Male_Hunter_60-69	0.00261	0.00234	0.00507	0.00136	0.00199	0.02411	0.02864	0.00301	0.00904	0.01733
Male_NonHunter_60-69	0.00442	0.00500	0.02310	0.02031	0.00818	0.01658	0.01809	0.01658	0.01281	0.02411
Female_Hunter_60-69	0.00038	0.00032	0.00036	0.00006	0.00016	0.00301	0.00151	0.00000	0.00000	0.00226
Female_NonHunter_60-69	0.00655	0.00698	0.02887	0.02392	0.00977	0.01583	0.01432	0.01809	0.01130	0.02110
Male_Hunter_70+	0.00160	0.00141	0.00231	0.00064	0.00096	0.02411	0.01959	0.00754	0.00829	0.01733
Male_NonHunter_70+	0.00487	0.00487	0.01981	0.01573	0.00827	0.02035	0.02487	0.00980	0.01206	0.03994
Female_Hunter_70+	0.00015	0.00012	0.00010	0.00002	0.00004	0.00226	0.00151	0.00075	0.00000	0.00075
Female NonHunter_70+	0.00757	0.00737	0.02788	0.02254	0.01187	0.01583	0.02035	0.01507	0.00904	0.02035

Notes: R1 = Northwest region, R2 = Northeast region , R3a = Central region excluding Hennepin and Ramsey counties, which are the Twin Cities metropolitan area, R3b = Hennepin and Ramsey counties in the Twin Cities metropolitan region, R4 = South region

Table AD-2. Survey weights by gender, hunting status, and age, and region					
	Population Proportion				
	R1	***R2***	***R3a***	***R3b***	***R4***
Male_Hunter_18-39	0.325481068	0.476144797	2.031889806	0.395492812	0.277492728
Male_NonHunter_18-39	2.953929657	1.866665297	3.911596249	11.09734498	1.56415413
Female_Hunter_18-39	0.290555866	0.467780576	3.327317696	0.116611602	0.432065868
Female_NonHunter_18-39	1.92493811	0.863473706	3.989525682	7.004203758	1.609298961
Male_Hunter_40-49	0.166412068	0.212286995	1.989940418	0.254005469	0.210333106
Male_NonHunter_40-49	0.853150489	0.77987376	2.390422374	6.251736536	0.930737614
Female_Hunter_40-49	0.303575021	0.254313354	0.889173083	0.000000000	0.087901286
Female_NonHunter_40-49	1.274707201	0.616879221	3.837819706	5.408417855	0.748017882
Male_Hunter_50-59	0.145723506	0.126219634	3.048065623	0.129873313	0.181787096
Male_NonHunter_50-59	0.374142358	0.501519686	3.030303003	2.678218267	0.406694643
Female_Hunter_50-59	0.071668883	0.185654906	0.000000000	0.000000000	0.337750302
Female_NonHunter_50-59	0.432303534	0.488143272	3.195994303	2.928657396	0.846935052
Male_Hunter_60-69	0.10819286	0.081889419	1.68197803	0.150658597	0.114533375
Male_NonHunter_60-69	0.266880677	0.276237361	1.393349447	1.584994124	0.339087679
Female_Hunter_60-69	0.12507845	0.212440937	0.000000000	0.000000000	0.072250444
Female_NonHunter_60-69	0.414105885	0.487220569	1.59624477	2.115932262	0.463257593
Male_Hunter_70+	0.066416657	0.071843878	0.306099681	0.077475167	0.055205194
Male_NonHunter_70+	0.239477838	0.195861774	2.022404567	1.30451051	0.207009374
Female_Hunter_70+	0.064758566	0.079896266	0.132082844	0.000000000	0.054803604
Female NonHunter_70+	0.478409954	0.362130266	1.850098862	2.492409418	0.583328833

Notes: R1 = Northwest region, R2 = Northeast region , R3a = Central region excluding Hennepin and Ramsey counties, which are the Twin Cities metropolitan area, R3b = Hennepin and Ramsey counties in the Twin Cities metropolitan region, R4 = South region