2005 Survey of Deer Hunter Satisfaction and Preferences for Regulation Changes in Minnesota

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Introduction

Abundant deer populations have the potential for substantive negative ecological, economic, and social impacts. According to many of Minnesota wildlife managers, current strategies to encourage an increase in harvest of antlerless deer effectively reduced deer populations to desired densities. For this reason, deer researchers and managers intend to evaluate alternative hunting regulations that might increase antlerless deer harvests and reduce deer population growth rates.

Similar to most states, Minnesota has entered a period of transition in deer management. Historically, deer were managed for maximum sustained yield, whereby antlerless deer were protected and harvest pressure was focused on antlered males. Although this management strategy successfully allowed deer populations to increase while allowing a deer hunting season to occur each year, there have been unintended side effects as well. For example, human tolerance toward deer has likely declined while hunter expectations for a successful deer season have likely increased. In addition, there is concern from some hunters that the high buck harvest rates combined with low female harvests rates have caused skewed buck:doe ratios and relatively few mature males in the deer population.

Landscape changes, whether through forest management practices or agricultural development, have created situations where biological carrying capacity is generally not exceeded. Consequently, social tolerance of deer populations is likely a more important measurement of deer population objectives. Defining social carrying capacity as a deer population objective somewhere below biological carrying capacity yet within the constructs of what number the public can support will be a recurring deer management challenge. In addition, hunters are the vehicle for managing Minnesota's deer population and support for regulation changes is critically important. Without a base level support from hunters, it would be difficult to keep deer populations in line with this social carrying capacity.

Previous surveys of Minnesota deer hunters have assessed both satisfaction with deer management and preferences toward regulatory changes. Fulton et al. (2004) examined attitudes of northwest Minnesota deer hunters towards management for more antlered males and found that a majority of hunters (60%) would prefer to see more mature bucks in the population however, less than one-half of the surveyed hunters agreed on an alternative hunting regulation that would allow for this type of management to be effective.

Study Purpose and Objectives

This study was to provide baseline information on deer hunter demographics, attitudes and motivations regarding deer hunting, preference for regulation changes, and measure hunter satisfaction. Ultimately, the purpose of this project was to identify the hunter-preferred regulatory attributes that have the potential to increase antlerless deer harvest in Minnesota.

The specific objectives of the project were to:

1. Describe hunter effort in Minnesota in 2004 including: type of land hunted, hunting methods and locations, and number of years hunting;

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2. Describe hunting satisfaction with deer hunting in Minnesota in 2004, and identify activities and experiences that affect hunting satisfaction;
3. Determine Minnesota deer hunter support for various regulatory changes that might lead to more mature bucks in the deer population; and
4. Determine deer hunter preference for regulatory changes when a finite number of choices are presented to the respondent.

Methods

Sampling

The study sample was divided into four strata: Northwest, Transition Zone, East Central, and South East (Figure 1). These areas represented the locations where alternative harvest strategies may be necessary to control and manage deer population growth. The samples were drawn using stratified random sampling of 2004 licensed deer hunters aged 18 years or older in the Electronic Licensing System (ELS) database. At the time of license purchase, hunters are asked to indicate which permit area they hunt most often. Deer harvest data indicates ~90% of successful hunters harvest a deer in the permit area they say they hunt most often. For this reason, we used the hunters' responses to the question of which permit area they hunt most often as the basis for stratification of the sample. The target completed sample size for firearm deer hunters who hunt in each region was 700 (n = 2,800 statewide). An initial stratified random sample of 6,000 individuals (1,500 in each region) was drawn from the ELS.

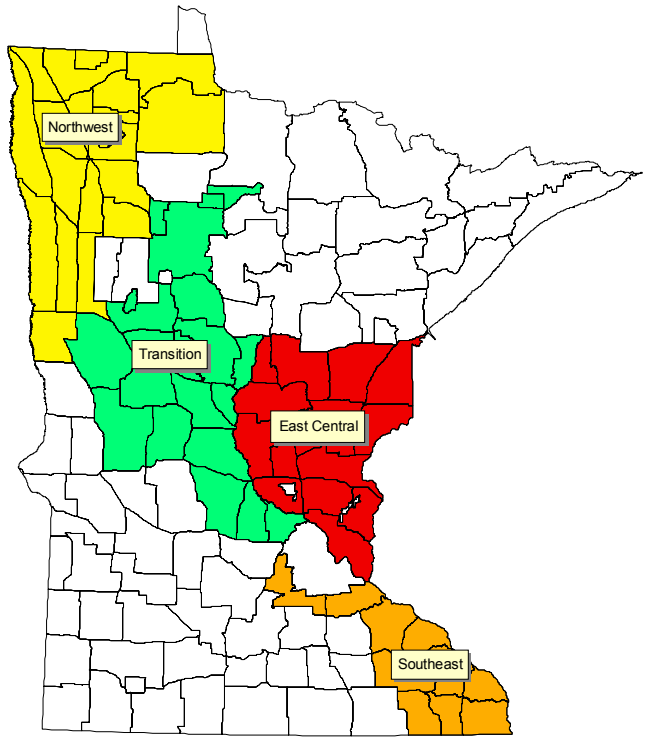

Figure 1. 2004 Minnesota Permit Areas with Choice Survey Regions.

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Survey design

The survey contained 4 sections. The first section contained questions that assessed recent hunter experiences and general perceptions about hunting deer in Minnesota. The second section included questions to quantify hunter support for alternative deer hunting regulations, and the third section focused on past deer hunting experience. The final section was a unique survey design that, to our knowledge, has not been previously used in wildlife sciences. In this last section, we provided hunters with different population management scenarios and queried them about what changes in deer hunting regulations were most preferable. Hunters were presented with 5 scenarios related to Minnesota deer management. In total, there were 7 choices within each management scenario, but each hunter was presented only 3 choices in which they were asked to rank preference in descending order (1, 2, 3). Each choice was assigned at random using a balanced incomplete block design (Cochran and Cox 1957), which allowed for the same number of choices represented in all 6,000 surveys. Finally, the option of 'doing nothing' was not a choice under any scenario as the intent of the instrument was to gauge acceptance of regulation change. However, the options of 'not hunting' or 'moving to another area' were offered as choices on some scenarios.

Data collection

Data were collected using a mail-back survey questionnaire following the process outlined in Dillman (2000). The process involved development of a survey that was relatively easy to complete, and was not time consuming to complete. The first 3 sections of the survey were relatively easy to complete; however, the fourth section did require more thought and consideration as it asked hunters to rank order several scenarios that may have had only slight differences between the choices. In total, 3 attempts were made to contact potential respondents. The first mailing was sent in late October, 2005. In the initial attempt, a cover letter, survey questionnaire, and postage-paid envelope were sent to participants. The cover letter attempted to convey the importance of completing and returning the survey. Approximately 30 days later, a second survey, postage-paid envelope and new cover letter was sent to non-respondents. Approximately 8 weeks after the first mailing, a third mailing was sent to non-respondents with another survey, postage-paid envelope, and cover letter. Returned surveys were collected through March, 2006.

Survey instrument

The survey was a 16-page (14 pages of questions), self-administered questionnaire (Appendix A). The survey was organized into 4 sections and addressed the following topics:

1. Minnesota deer hunting experiences
2. Deer management in Minnesota
3. Past hunting experiences
4. Choice preferences for deer season options and regulatory changes

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Data entry and analysis

The data entry template was designed using the Questionnaire Programming Language version 5 (http://qpl.gao.gov) that allowed for online data entry at any computer with internet access. Data were entered by University of Minnesota undergraduates where 1 student would enter data and another would proof data entered from the same survey. This method assured 2 people reviewed each survey, which decreased data entry errors. Data were analyzed using the Statistical Program for the Social Sciences (SPSS 14). For the statewide level, descriptive statistics and frequencies were computed. Regional level results were compared using chi-square tests, analysis of variance (ANOVA), and cross-tabulations. The choice portion of the survey (Section 4) was analyzed using one-way ANOVA.

Survey response rate

Of the 6,000 questionnaires mailed, 426 were undeliverable, which resulted in 5,574 valid surveys. A total of 3,293 deer hunters completed and returned the questionnaire, yielding an overall response rate of 59.1% (Table I-1).

Because the response rate did not exceed the pre-determined goal of 60%, an additional non-response survey to determine non-response bias was recently mailed. However, at the time of this report, these data have not been compiled.

Variable weights and margin of error

The study sample was drawn from a stratified random sample of individuals who indicated they hunted in 1 of 4 regions. Therefore, data were weighted to reflect the proportion of hunters sampled within each region and the proportion of regional respondents. For total estimates, data were weighted based on these proportions (Table I-2).

The margin of error for this survey was calculated using the formula provided by Scheaffer et al. (2000). We opted to calculate a maximum error rate, which implies a 50:50 split between responses. Overall, our stratified error rate for this survey was 0.29% and ranged from 3.3% to 3.5% between regions (Table I-2). If respondents were treated as a simple random sample drawn statewide, the error estimate was 1.7%. Overall, samples sizes were adequate to draw conclusions both in total and by individual survey areas.

Table I-1. Response rates for each survey region.

Region	Initial Sample Size	Number Undeliverable	Valid Sample Size	Number Returned	Response Rate (%)
East Central	1,500	118	1,382	775	56.1
Northwest	1,500	96	1,404	819	58.3
Southeast	1,500	106	1,394	821	58.9
Transition	1,500	106	1,394	878	63.0
Total	6,000	426	5,574	3,293	59.1

Table I-2. Weights assigned by proportions of deer hunters based on region they hunted and survey response rates.

Region	Number Returned	Proportion in Sample	Total Number of Hunters	Proportion in Population	Weight	Percent Margin of Error[1]
East Central	775	0.2353	67,157	0.3332	1.4156	3.50
Northwest	819	0.2487	25,188	0.1250	0.5024	3.37
Southeast	821	0.2493	31,379	0.1557	0.6244	3.38
Transition	878	0.2666	77,848	0.3862	1.4485	3.29
Total	3,293		201,572		3.9909	0.29

[1]Total margin of error is stratified by regional response rate and number of adult hunters in the survey areas during 2004.

Section 1: Experience, Background, and Hunter Participation

Findings

This suite of questions focused on experiences during the 2004 deer season, hunter participation, and demographic characteristics. Total summaries are presented as a weighted total of all responses while regional comparisons were made using the aforementioned stratified sampling design.

Hunter background

Respondents were first asked if they hunted during the 2004 Minnesota deer season. Statewide, nearly 99% indicated they hunted deer during 2004 and there were no significant differences in participation rates across hunting regions (Table 1-1). These data are consistent with previous deer hunter surveys where the vast majority of hunters who purchase a license actually participate in the hunting season (e.g., Fulton et. al 2004).

In Minnesota, 2004 the median age of deer hunters was 39 years (2005 ELS license database). As the hunting population is becoming older, we can surmise that as a group, the population has been hunting for many years. However, we could not disprove that notion in this survey. Statewide, hunters had approximately 25 years of deer hunting experience. However, there was regional variation in that southeast hunters had hunted for significantly fewer years ($F = 7.694$, $p < .001$) than respondents in the other 3 regions (Table 1-2).

Hunting patterns

In total, a majority of hunters pursued deer on private land. Only 15% of respondents hunted deer exclusively on public land, which illustrates the importance of private landowners' in deer management at the broad landscape level (Tables 1-3, 1-4). Mean scores indicated hunters in the southeast were most reliant on private land, especially property they did not own, while hunters in the northwest and east central regions tended to pursue deer on public land (Table 1-5). This finding is logical in that the vast majority of land in the southeast is privately held.

Respondents were also asked if they hunted: new areas every year, new areas every 1 to 2 years, new areas every 3-5 years, or the same area every year. A large majority of hunters (90%) indicated they hunted the same area every year, and there was little difference in those rates by region. Hunters in the northwest stayed in their traditional areas most often (93%), while hunters in southeast Minnesota were least likely to stay in the same location every year (89%; Table 1-6). This finding suggests that the agency may find great challenges in attempting shift hunters away from their traditional deer management areas to areas where increased hunter numbers are desirable to increase the antlerless harvest.

We examined the land ownership of property hunted had on the willingness of hunters to change hunting locations and we did identify some noticeable trends. For example, hunters who did not own land tended to move more frequently than hunters who owned property. In addition, people who indicated they did 'some' or 'most' of their hunting on public land tended to change locations every 1 to 2, or 3 to 5 years (Table 1-7). Thus, we believe that financial costs

associated with land ownership may be responsible for much of the fidelity we observed for hunting location behavior.

Respondents were asked how they hunted deer throughout the season: 1 – hunt big bucks all season, 2 – hunt big bucks early, take any deer later, 3 – take any legal buck, 4 – take the first legal deer they can, 5 – take a doe first then hunt for a buck, and 6 – take only antlerless deer. Overall, hunters were most inclined to take the first legal deer that presented a shot (35%). In total, 32% of respondents indicated they either hunted for big bucks all season (11%) or early in the season (21%) and nearly one-quarter of respondents indicated they attempted to take a doe first and then wait for a buck. As all of the permit areas in this study allow the liberal taking of antlerless deer, it was not surprising that some hunters would prefer to take an antlerless deer first. Only 2% of those surveys indicated they hunted antlerless deer exclusively. Regionally, southeast hunters were most inclined to hunt all season for big bucks (16%), while northwest hunters tended to hunt for antlerless deer first (30%) (Table 1-8).

Hunting methods

The majority of hunters in this survey hunted deer from a tree stand (68%), while a much smaller percentage preferred to still hunt (11%). In total, hunters were least likely to participate in deer drives of at least 5 people (7%), hunt from ground blinds (7%), or deer drives of less than 5 people (5%; Table 1-9).

Regionally, a large majority of hunters in the transition (83%) and east central (78%) areas hunted from tree stands, while northwest (59%) and southeast (50%) were least likely to hunt from tree stands. Conversely, southeast hunters were most likely to either still hunt (18%) or participate in a deer drive (21%), while northwest hunters relied on deer drives as 22% of respondents indicated that was their primary hunting method (Table 1-9).

As noted previously, the vast majority of respondents hunted deer in the same place every year (Table 1-6). While sample sizes were small, those who were more willing to move their deer hunting location were also more inclined to still hunt or participate in deer drives (Table 1-10). Because most people do not change location, regional analyses were not conducted because sample sizes were too small to draw conclusions.

Knowledge of the deer program

Over the last few years, there have been numerous changes to Minnesota's deer program. Permit area boundaries have been restructured, zone boundaries moved, and the drawing for either-sex permits has been largely eliminated (antlerless permits are now available over the counter in most areas). Some wildlife managers have received hunter complaints about a complex deer hunting season that has been created by making too many changes over a short period of time. Despite these concerns regarding confusion, hunters in this survey appeared to have good knowledge of the deer program. Overall, 97% of respondents indicated they had a working knowledge of the deer program. Of those, 26% indicated they knew a great deal about the deer program. In contrast, only 2% of hunters in this survey said they knew nothing about the program (Table 1-11).

Section 1: Experience, Background, and Hunter Participation

Table 1-1. Deer hunter participation rates, 2004.

Hunting Region	n	Percent Who Hunted in 2004
East Central	750	98.3
Northwest	799	99.0
Southeast	805	98.7
Transition	860	99.0
Total	3,214	98.7
$\chi 2$=2.079, n.s.		

Table 1-2. Numbers of years Minnesota hunters have been deer hunting.

Region	N	Mean[1]	Median	Std. Deviation	Std. Error	95% Lower CI	95% Upper CI
East Central	752	25.0	25	13.8	0.5	24.0	26.0
Northwest	803	26.9	25	14.2	0.5	25.2	27.2
Southeast	807	22.9	20	13.5	0.5	22.0	23.9
Transition	858	25.1	25	14.0	0.5	24.1	26.0
Total	3,211	24.9	25	13.9	0.2	24.4	25.4

[1]$F = 7.694$, $p < .001$. Mean differences between regions were analyzed using one-way ANOVA and the Bonferroni post hoc procedure.

Table 1-3. Percentage of total respondents who hunted different land ownership types.

	None	Some	Most	All
Land that I own	45.6	12.9	15.2	26.3
Private land I don't own	20.4	20.4	17.9	41.4
Public land	48.3	26.6	9.8	15.3

Table 1-4. Percentage of respondents who hunted different land ownership types by region.

Region	n	Percent hunting land that they own			
		None	Some	Most	All
East Central	557	40.2	11.3	13.5	35.0
Northwest	619	37.3	16.2	20.4	26.2
Southeast	570	60.9	10.9	10.9	17.4
Transition	627	44.8	13.1	15.5	26.6
Total	2,373	45.6	12.9	15.2	26.3

$\chi 2 = 102.486$, $p < 0.001$

Region	n	Percent hunting private land they don't own			
		None	Some	Most	All
East Central	582	27.0	19.1	12.4	41.6
Northwest	623	22.2	28.7	20.5	28.6
Southeast	719	9.9	13.4	22.0	54.8
Transition	685	24.1	21.2	15.9	38.8
Total	2,609	20.4	20.4	17.9	41.4

$\chi 2 = 174.114$, $p < 0.001$

Region	n	Percent hunting public land			
		None	Some	Most	All
East Central	521	53.6	19.2	8.3	19.0
Northwest	575	36.9	35.7	15.1	12.3
Southeast	526	59.5	26.8	5.1	8.6
Transition	609	44.8	24.3	10.0	20.9
Total	2,231	48.3	26.6	9.8	15.3

$\chi 2 = 128.923$, $p < 0.001$

Table 1-5. Average ranking for respondents hunting on different land ownership types (rankings: 1-None, 2-Some, 3-Most, 4-All).

Region	Land they own[1]	Private land they don't own[2]	Public land[3]
East Central	2.1	2.3	1.6
Northwest	1.9	2.3	1.9
Southeast	1.6	3.0	1.5
Transition	2.0	2.4	1.8
Total	2.0	2.5	1.7

[1]F=29.067, p <.001; [2]F=38.512, p <.001; [3]F=16.292, p <.001. Regional differences were analyzed using a one-way ANOVA and the Bonferroni post hoc procedure.

Table 1-6. Movement patterns of Minnesota deer hunters.

Region	n	% of hunters who move around			
		Never hunt same area every year	Change every 1 to 2 years	Change every 3 to 5 years	Same place every year
East Central	762	0.7	3.0	7.1	89.2
Northwest	805	0.7	1.7	4.3	93.2
Southeast	804	1.4	4.0	6.0	88.7
Transition	866	2.1	3.0	4.3	90.6
Total	3,237	1.2	2.9	5.4	90.5
$\chi 2$ =24.960, p =0.003					

Section 1: Experience, Background, and Hunter Participation

Table 1-7. Cross tabulation of how often a person changed hunting location versus the property type they hunted, by region.

Region	How much hunting	% for PRIVATE LAND YOU OWN: n	% of hunters who move around: Never same area every year	Change every 1 to 2 years	Change every 3 to 5 years	Same place every year	% PRIVATE LAND YOU DON'T OWN: n	% of hunters who move around: Never same area every year	Change every 1 to 2 years	Change every 3 to 5 years	Same place every year	% PUBLIC LAND: n	% of hunters who move around: Never same area every year	Change every 1 to 2 years	Change every 3 to 5 years	Same place every year
East Central	None	221	1.4	4.1	11.3	83.3	157	0.6	2.5	5.7	91.1	277	0.4	1.1	5.4	93.1
	Some	62	0.0	6.5	4.8	88.7	111	0.0	2.7	5.4	91.9	99	0.0	5.1	9.1	85.9
	Most	75	0.0	1.3	4.0	94.7	70	0.0	4.3	12.9	82.9	43	0.0	7.0	9.3	83.7
	All	193	0.0	0.5	1.6	97.9	238	0.4	2.9	7.6	89.1	97	4.1	5.2	12.4	78.4
	Total	551	0.5	2.7	6.2	90.6	576	0.3	3.0	7.3	89.4	516	1.0	3.1	7.8	88.2
		χ^2=32.608, p<.001					χ^2=6.104, n.s.					χ^2=27.626, p=.001				
Northwest	None	229	0.4	1.7	8.3	89.5	138	0.0	0.7	2.9	96.4	210	0.5	0.0	3.8	95.7
	Some	98	0.0	3.1	5.1	91.8	176	0.0	2.8	5.1	92.0	203	0.0	2.5	3.4	94.1
	Most	125	0.0	0.8	0.0	99.2	127	0.8	0.8	6.3	92.1	86	0.0	2.3	11.6	86.0
	All	161	1.2	1.2	0.6	96.9	177	0.6	2.3	4.0	93.2	71	1.4	2.8	8.5	87.3
	Total	613	0.5	1.6	4.1	93.8	618	0.3	1.8	4.5	93.4	570	0.4	1.6	5.4	92.6
		χ^2=25.997, p=.002					χ^2=7.225, n.s.					χ^2=19.311, p=.021				
Southeast	None	339	1.5	4.4	6.5	87.6	69	1.4	7.2	1.4	89.9	307	0.7	2.0	3.9	93.5
	Some	62	0.0	4.8	6.5	88.7	94	0.0	3.2	7.4	89.4	140	1.4	10.7	7.9	80.0
	Most	61	0.0	3.3	3.3	93.4	156	0.6	5.8	7.7	85.9	25	0.0	0.0	8.0	92.0
	All	98	0.0	2.0	0.0	98.0	387	2.3	2.8	5.2	89.7	44	2.3	9.1	13.6	75.0
	Total	560	0.9	3.9	5.0	90.2	706	1.6	4.0	5.7	88.8	516	1.0	4.8	6.0	88.2
		χ^2=12.577, n.s					χ^2=12.484, n.s.					χ^2=30.162, p<.001				
Transition	None	280	2.9	4.3	6.8	86.1	160	1.9	0.6	4.4	93.1	270	1.1	1.9	5.6	91.5
	Some	82	3.7	0.0	4.9	91.5	145	2.1	2.1	4.1	91.7	147	3.4	5.4	2.7	88.4
	Most	95	1.1	0.0	5.3	93.7	108	3.7	2.8	9.3	84.3	60	5.0	1.7	6.7	86.7
	All	164	1.8	1.8	1.8	94.5	262	1.9	5.7	3.8	88.5	127	2.4	0.0	7.1	90.6
	Total	621	2.4	2.4	5.0	90.2	675	2.2	3.3	4.9	89.6	604	2.3	2.3	5.3	90.1
		χ^2=16.395, n.s.					χ^2=16.047, n.s.					χ^2=16.840, n.s.				

Section 1: Experience, Background, and Hunter Participation

Table 1-8. Preferred type of deer pursued by hunters.

Region	n	Percent indicating how respondent's hunt deer throughout the season					
		Hunt big bucks all season	Hunt big bucks early, any deer later	Shoot any legal buck	Shoot first legal deer	Shoot doe first, wait for buck	Shoot only antlerless deer
East Central	759	6.7	26.2	6.9	37.2	21.6	1.4
Northwest	799	12.3	23.8	4.3	28.4	30.3	1.0
Southeast	808	16.0	17.9	6.3	32.4	24.8	2.6
Transition	859	8.5	18.2	5.5	41.4	24.6	1.9
Total	3,225	10.9	21.4	5.7	34.9	25.3	1.7
χ^2=102.79, $p < 0.001$							

Table 1-9. Hunting techniques.

Region	n	Percent indicating their primary method of hunting					
		Deer drive < 5 people	Deer drive => 5 people	Tree stand	Ground blind	Still hunt	Other
East Central	722	1.7	1.9	82.5	5.1	7.5	1.2
Northwest	754	8.8	12.7	58.9	7.2	9.4	3.1
Southeast	741	8.6	11.3	50.2	9.4	17.5	2.8
Transition	837	2.4	3.6	77.8	6.1	8.6	1.6
Total	3,054	5.3	7.3	67.6	6.9	10.7	2.2
χ^2=296.715, $p < 0.001$							

Table 1-10. Comparison between how often hunters change location versus their primary hunting method.

How often do you change location	n	Percent indicating their primary hunting method					
		Deer drive < 5 people	Deer drive => 5 people	Tree stand	Ground blind	Still hunt	Other
Never hunt same area every year	36	5.6	8.3	63.9	2.8	19.4	0.0
Change every 1 to 2 years	89	1.1	0.0	69.7	6.7	20.2	2.2
Change every 3 to 5 years	161	6.8	1.9	77.0	4.3	8.1	1.9
Same place every year	2,753	5.3	7.9	67.2	7.2	10.4	2.0
Total	3,039	5.3	7.4	67.8	6.9	10.7	1.9
$\chi 2$=35.055, p = 0.002							

Table 1-11. Respondent's knowledge of the Minnesota deer management program.

Region	n	Percent indicating how much they know about Minnesota's deer program				
		A great deal	A moderate amount	A little	Nothing	Don't know
East Central	758	26.8	53.6	17.5	2.0	0.1
Northwest	807	26.9	53.2	17.7	2.0	0.2
Southeast	816	24.5	53.8	19.0	2.6	0.1
Transition	865	26.6	54.6	15.7	2.8	0.3
Total	3,246	26.2	53.8	17.5	2.3	0.2
$\chi 2$ = 7.032, n.s.						

Notes:

A great deal: I read most of the hunting handbook, DNR news releases, and follow the outdoor media

A moderate amount: I read parts of the handbook and occasionally follow the outdoor media

A little: I only read the parts of the handbook that pertain to me and otherwise don't follow the outdoor media

Nothing: I buy my license just before the season and follow the advice of my friends

Section 2: Hunter Satisfaction

Findings

This section of the survey summarizes hunter satisfaction regarding deer regulations, perceptions of deer populations and their quality (e.g., mature bucks), hunter crowding, and land access issues. We also report the actualization of the importance of activities to the individual (e.g., scenic beauty, interpersonal experience).

Study participants were asked to rate their satisfaction on a 5-point scale where 1 = Very Satisfied, 2 = Somewhat Satisfied, 3 = Neither, 4 = Somewhat Dissatisfied, and 5 = Very Dissatisfied. Respondent's were also asked whether they agree or disagree with the quality and number of mature bucks, and numbers of both antlerless and total deer observed. These ratings were similar to the satisfaction rating where 1 = Strongly Agree, 2 = Slightly Agree, 3 = Neither, 4 = Slightly Disagree, and 5 = Strongly Disagree.

Satisfaction of deer-hunting related issues

Deer hunt and regulations

Minnesota hunters appeared satisfied with the outcome of their 2004 deer hunting season. In total, 76% of respondents indicated they were very satisfied (40%) or slightly satisfied (36%) with their season. Only 13% said they were slightly dissatisfied (9%) or very dissatisfied (4%) in 2004. Regionally, northwest deer hunters were most satisfied (81%), while hunters in southeast Minnesota expressed the highest dissatisfaction rates (15%) (Table 2-1).

Minnesota offers a multitude of seasons and license types, and the ability of hunters to comprehend the deer regulations have been questioned both internally and externally. This study revealed that the vast majority of deer hunters were satisfied with their ability to understand existing deer hunting regulations. In total, 83% of respondents were either very satisfied (42%) or slightly satisfied (41%) with their ability to understand the regulations. Only 10% noted they were dissatisfied with the regulations (Table 2-2). Regionally, southeast hunters had the lowest satisfaction (78%) and east central deer hunters indicated the highest satisfaction rates (87%) (Table 2-3). While not testable, it was possible that the observed dissatisfaction rates in the southeast may be attributable to the changes that occurred in 2003 and 2004. The zone 3 season structure (9-day 3A, 7-day 3B) had been in place since 1978. Given the average number of years southeast respondents had been hunting was 23, it is possible that most respondents had never hunted under different regulations. Previously, the 3A season was known as "buck season" where the harvest of antlerless deer was not allowed. The 3B season was termed "doe season", during which time antlerless harvest was encouraged and they comprised a majority of deer harvested. In 2003, the numbers of days in the 3A and 3B seasons were reversed and the DNR moved away from the concept of bucks-only hunting during 3A by offering lottery either-sex permits. In 2004, the system was further liberalized to allow antlerless harvest without making a lottery application. The effect may have been a higher percentage of hunters who were not satisfied with their ability to understand the regulations relative to the rest of the study area.

Section 2: Hunter Satisfaction

Land access and hunter numbers

Minnesota has high hunter densities relative to some other Midwest states. These densities, combined with a preponderance of private land and deer populations that are perceived to be higher on private lands, may lead to lower than expected satisfaction levels for some questions in this section. Indeed, this phenomenon was observed in this survey as approximately one-half of respondents were satisfied with the amount of public land (51%), private land (51%), and the number of other hunters in their area (48%) (Table 2.3).

Regionally, 59% of northwest hunters were either very satisfied (26%) or slightly satisfied (33%) with the amount of available public hunting land. Conversely, only 45% of southeast hunters were very satisfied (17%) or slightly satisfied (28%) (Table 2-4). These results are consistent with relatively more public lands and much lower hunter densities in northwest Minnesota as compared to southeast Minnesota.

There was a significant difference in satisfaction regarding the availability of private lands for deer hunting (Table 2-5). Satisfaction was significantly lower for southeast deer hunters relative to the other study areas. For that region, 32% were either somewhat dissatisfied (17%) or very dissatisfied (15%). Conversely, hunters in the northwest (52%) and transition (52%) areas indicated the highest satisfaction with private land availability. Again, the comparatively low dissatisfaction rates in the east central, northwest, and transition areas (~20%) as compared to the southeast (32%) may be indicative of the lack of public land in that area. Additionally, access may be limited due to high hunter densities, thereby making it more difficult to gain hunting permission on private land.

Hunter interference rates may be related to satisfaction and how the individual may feel about the outcome of their deer hunting experience. Obviously, 1 person's opinion of "too many hunters" may be different from another person's opinion. For example, 1 person may view high hunter densities as a good thing because it may result in more deer movement because of disturbance, while another person may not appreciate seeing anyone while they are hunting. For that reason, an accurate disturbance estimate may be difficult to elucidate from this survey. However, regardless of how an individual hunter perceives interference, hunters in this survey were typically satisfied or neither satisfied or dissatisfied. In total, 48% were either very satisfied (17%) or slightly satisfied (31%). An additional 31% indicated they were neither satisfied nor dissatisfied with the number of other hunters (Table 2-6).

The lowest hunter density was observed in the northwest area (4 hunters/mi^2). Densities were next highest in the southeast (9 hunters/mi^2), followed by the transition and east central areas (11 hunters/mi^2). There was a significant positive relationship ($r = 0.83$, $p < 0.001$) between firearm hunter density and satisfaction. This means that as the hunter density increased, hunter satisfaction declined.

Aesthetic and family attributes

The scenic beauty of one's hunting location and the intrinsic value of being among family and friends may be difficult to quantify. In other words, aesthetics associated with hunting may be

something we feel in a qualitative sense, rather than something we can quantitatively measure. Despite the potential biases or differences in interpretation, both measurements yielded very high positive satisfaction scores. The aesthetic beauty of a hunting area, while different among areas, yielded an overall satisfaction of 85%. Hunters in the southeast had the most strongly held satisfaction with the scenic beauty of their location (91%) while slightly lower percentages were observed in the other 3 areas (Table 2-7).

In this study, hunters were nearly unilaterally satisfied with the experience they had hunting with family and friends. Overall, satisfaction exceeded 95% and did not vary among study region (Table 2-8). This measurement underscores the importance of camaraderie, friendship, and the family importance of the Minnesota deer hunt.

Harvest success and the weather

In Minnesota, approximately 40% of license deer hunters tag a deer. Of those successful hunters, the average number of deer tagged per hunter is approximately 1.4. In other words, 60% of Minnesota hunters do not tag a deer, but those who are successful at killing deer will register >1 deer. These data may be confounded by party hunting regulations, where a hunter can legally shoot a deer but put someone else's tag on the animal. These comparatively low success rates may have the potential to decrease one's satisfaction rating towards killing a deer if the actual kill is of primary importance. However, we observed very high satisfaction rates that would indicate killing a deer may be of secondary or tertiary importance. In this study, 71% of respondent's were either very satisfied (44%) or slightly satisfied (27%). Regionally, northwest (76%) and transition (73%) were most satisfied, followed by east central (69%) hunters and southeast (67%) (Table 2-9).

The weather during Minnesota's deer season can be highly variable and, while it cannot be controlled, is worth measuring because it may influence how comfortable a hunter may be while in the field thereby affecting deer harvest rates. In our study, hunters were generally satisfied with the weather during the 2004 deer hunting season. In total, 75% were either very satisfied (36%) or slightly satisfied (37%; Table 2-10).

Interpretation of mean scores

Overall, Bonferroni adjusted ANOVA results revealed significant differences in satisfaction regarding the deer hunting-related issues presented to respondents (Table 2-11). The only issue that was not statistically significant was the experience with family and friends. These results indicate that the satisfaction of being among family and friends was very high (95%) throughout the study area.

Satisfaction with deer numbers and quality

Mature bucks

While a majority of hunters indicated they had heard about or seen big bucks in the area they hunted (58%; Table 2-12), they were evenly split as to whether they agreed with the statement "I

am satisfied with the quality of bucks in the area I hunt" (43% agree and 43% disagree; Table 2-13). Additionally, one-half of respondents indicated disagreement with the statement "I am satisfied with the number of mature bucks" in the area they hunt (Table 2-14). These results appear to indicate that, although hunters had seen (or heard about) mature bucks, they were inclined to believe there should be a higher proportion in the total deer population.

Antlerless deer and total populations

Concomitant with the opinion there may not be enough mature bucks in the population, should be the belief that hunters are generally satisfied with the number of antlerless deer in the population. Indeed, this was observed as 77% of respondents agreed with the statement "I am satisfied with the number of antlerless deer" (Table 2-15). We did observe significant regional variation, in that northwest hunters had the highest level of agreement (81%) while southeast hunters had the lowest level (70%). With respect to total deer numbers, a majority of hunters agreed with the statement, "I am satisfied with the number of deer I see while hunting" (Table 2-16). These results should be expected as Minnesota deer populations are currently at their highest recorded levels.

Comparison of satisfaction levels

In comparing overall satisfaction with the 2004 deer hunt (Table 2-1) with opinions relative to deer population structure (mature bucks; Table 2-14) and total numbers of deer (Table 2-16), we observed a significant trend among respondents. For mature bucks, a large proportion of hunters who classified their deer season as slightly or very dissatisfying disagreed with the statement "I am satisfied with the number of mature bucks" (89%). Conversely, hunters who rated their season as very or slightly satisfied were much more inclined to agree with the above statement (56%) (Table 2-17).

We observed similar trends for overall satisfaction and the total number of deer in the population. Hunters who classified their season as very or slightly satisfying were much more likely to agree with the statement "I am satisfied with the number of deer I see while hunting" (87% and 66%, respectively) than hunters who were either slightly (32%) or very dissatisfied (13%) with their deer season (Table 2-18). These findings might suggest that hunter satisfaction should be expected to decrease as deer densities decrease, regardless of the proportion of mature bucks in the deer population.

Interpretation of mean scores

Overall, Bonferroni adjusted ANOVA results indicated significant regional differences in satisfaction regarding the agreements with the statements regarding deer quality, mature bucks, antlerless deer, and total populations (Table 2-19). The only statement that was not significant related to the quality of bucks in the area respondent's hunted. Mean score for that statement was around 3, which indicated hunters neither agreed nor disagreed with the statement.

Section 2: Hunter Satisfaction

Table 2-1. Respondent's satisfaction with the 2004 Minnesota deer season.

Region	n	Percent indicating their satisfaction with the 2004 deer season				
		Very Satisfied	Somewhat Satisfied	Neither	Somewhat Dissatisfied	Very Dissatisfied
East Central	744	37.5	35.9	11.8	11.0	3.8
Northwest	778	43.4	37.7	8.6	7.7	2.6
Southeast	790	36.3	36.5	12.2	10.3	4.8
Transition	838	43.0	35.8	9.4	8.0	3.8
Total	3,150	40.1	36.4	10.5	9.2	3.7
$\chi 2=29.922$, $p = 0.012$						

Table 2-2. Respondent's satisfaction with their ability to understand the deer regulations, by survey region.

Region	n	Percent indicating their satisfaction with their ability to understand the deer regulations				
		Very Satisfied	Slightly Satisfied	Neither	Somewhat Dissatisfied	Very Dissatisfied
East Central	741	50.5	36.0	5.0	6.7	1.8
Northwest	768	37.0	44.4	8.1	8.5	5.0
Southeast	788	35.0	42.8	8.6	9.3	4.3
Transition	839	44.2	40.4	6.6	6.8	2.0
Total	3,136	41.6	40.9	7.1	7.8	2.6
$\chi 2=61.207$, $p < 0.001$						

Section 2: Hunter Satisfaction

Table 2-3. Percentage of respondent's indicating their satisfaction towards several deer-hunting related issues.

Issue	n	Percent of hunters indicating that satisfaction				
		Very Satisfied	Somewhat Satisfied	Neither	Somewhat Dissatisfied	Very Dissatisfied
Ability to understand the deer hunting regulations	3,136	41.6	40.9	7.1	7.8	2.6
Amount of PUBLIC land available for deer hunting	2,595	21.2	29.9	27.2	15.1	6.6
Amount of PRIVATE land available for deer hunting	2,796	25.4	25.1	26.2	13.3	10.0
Number of other hunters	3,007	17.2	30.9	30.7	14.7	6.6
Scenic beauty of hunting areas	3,082	55.7	28.9	11.8	2.1	1.4
Experiences with family and friends	3,136	78.3	16.9	3.0	0.6	1.1
Success in killing a deer	3,128	44.1	27.0	11.7	8.9	8.2
Weather conditions	3,138	35.6	36.8	14.1	9.8	3.7

Table 2-4. Respondent's satisfaction with the amount of public land available for hunting.

Region	n	Percent indicating their satisfaction with the amount of public hunting land				
		Very Satisfied	Slightly Satisfied	Neither	Somewhat Dissatisfied	Very Dissatisfied
East Central	588	19.2	32.8	29.8	12.9	5.3
Northwest	679	26.1	32.7	21.2	14.3	5.7
Southeast	637	16.5	28.1	30.9	16.0	8.5
Transition	691	22.4	26.5	27.5	16.9	6.7
Total	2,595	21.2	29.9	27.2	15.1	6.6
$\chi 2=46.134$, $p < 0.001$						

Section 2: Hunter Satisfaction

Table 2-5. Respondent's satisfaction with the amount of private land available for hunting.

Region	n	Percent indicating their satisfaction with the amount of private hunting land				
		Very Satisfied	Slightly Satisfied	Neither	Somewhat Dissatisfied	Very Dissatisfied
East Central	635	26.9	23.1	31.0	12.1	6.8
Northwest	701	27.1	24.8	27.2	12.7	8.1
Southeast	743	21.0	27.6	19.1	17.0	15.3
Transition	717	27.1	24.4	28.2	11.3	9.1
Total	2,796	21.2	29.9	27.2	15.1	6.6
$\chi 2=73.471$, $p < 0.001$						

Table 2-6. Respondent's satisfaction with the number of other hunters in their hunting area.

Region	n	Hunter density[1]	Percent indicating their satisfaction with the number of other hunters				
			Very Satisfied	Slightly Satisfied	Neither	Somewhat Dissatisfied	Very Dissatisfied
East Central	708	11.15	16.2	29.4	32.6	16.1	5.6
Northwest	739	3.70	21.1	32.6	30.9	10.3	5.1
Southeast	759	9.01	14.6	31.6	28.2	18.3	7.2
Transition	801	10.77	16.7	29.8	31.1	14.2	8.1
Total	3,007	8.14	21.2	29.9	27.2	15.1	6.6
$\chi 2=38.299$, $p < 0.001$							

[1]Hunter density is an estimate of the number of firearm hunters in each study region. While the survey sample included only regular firearm and all-season hunters, this estimate includes all license types.

Section 2: Hunter Satisfaction

Table 2-7. Satisfaction with the scenic beauty of the hunting location.

Region	n	Percent indicating their satisfaction with the scenic beauty of their hunting location				
		Very Satisfied	Slightly Satisfied	Neither	Somewhat Dissatisfied	Very Dissatisfied
East Central	723	54.4	31.4	10.5	2.4	1.4
Northwest	760	44.1	33.4	17.9	2.9	1.7
Southeast	776	67.7	23.3	7.2	0.9	0.9
Transition	823	56.5	27.9	11.7	2.4	1.5
Total	3,082	55.7	28.9	11.8	2.1	1.4
χ^2=102.875, $p < 0.001$						

Table 2-8. Satisfaction with the experience of family and friend during the deer season.

Region	n	Percent indicating their satisfaction with their hunting experience with family and friends				
		Very Satisfied	Slightly Satisfied	Neither	Somewhat Dissatisfied	Very Dissatisfied
East Central	737	78.6	17.1	2.4	0.7	1.2
Northwest	773	79.7	16.3	2.2	0.8	1.0
Southeast	788	77.8	16.8	4.3	0.3	0.9
Transition	838	77.2	17.5	3.1	0.7	1.4
Total	3,136	78.3	16.9	3.0	0.6	1.1
χ^2=11.039, n.s.						

Section 2: Hunter Satisfaction

Table 2-9. Satisfaction with the success of killing a deer.

Region	n	Percent indicating their satisfaction with their success in killing a deer				
		Very Satisfied	Slightly Satisfied	Neither	Somewhat Dissatisfied	Very Dissatisfied
East Central	733	39.6	29.5	10.9	10.2	9.8
Northwest	773	49.5	26.8	11.1	7.2	5.3
Southeast	788	39.5	27.0	14.1	9.1	10.3
Transition	834	47.6	25.2	10.6	9.1	7.6
Total	3,128	44.1	27.0	11.7	8.9	8.2
$\chi 2=41.566$, $p < 0.001$						

Table 2-10. Satisfaction with the weather during the 2004 deer season.

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Region	n	Percent indicating their satisfaction with the weather during the deer hunt				
		Very Satisfied	Slightly Satisfied	Neither	Somewhat Dissatisfied	Very Dissatisfied
East Central	740	33.2	34.9	14.5	12.4	5.0
Northwest	771	38.0	38.7	11.8	8.4	3.1
Southeast	785	34.1	36.9	16.4	8.9	3.6
Transition	842	36.7	36.7	13.8	9.7	3.1
Total	3,138	35.6	36.8	14.1	9.8	3.7
$\chi 2=22.996$, $p = 0.028$						

Section 2: Hunter Satisfaction

Table 2-11. Mean scores of ratings for deer-hunting satisfaction indices.

Issue	Average rating of satisfaction for deer-hunting related issues by survey region				F	*p*
	East Central	Northwest	Southeast	Transition		
(n) range of responses	*588 - 741*	*679 - 773*	*637 - 788*	*691 - 842*		
Ability to understand the deer hunting regulations	1.71	1.95	2.06	1.84	13.198	<0.001
Amount of PUBLIC land available for deer hunting	2.51	2.42	2.72	2.65	4.907	0.002
Amount of PRIVATE land available for deer hunting	2.59	2.58	2.89	2.60	6.565	<0.001
Number of other hunters	2.68	2.51	2.77	2.73	4.366	0.004
Scenic beauty of hunting areas	1.66	1.88	1.49	1.66	15.993	<0.001
Experiences with family and friends	1.28	1.28	1.33	1.33	0.554	0.645
Success in killing a deer	2.19	1.89	2.28	2.03	7.865	<0.001
Weather conditions	2.21	2.01	2.16	2.09	5.023	0.002

Notes:
1 – Very Satisfied
2 – Slightly Satisfied
3 – Neither
4 – Slightly Dissatisfied
5 – Very Dissatisfied

Table 2-12. Agreement/disagreement with having heard about or seen big bucks in the area.

Region	n	Percent agreement with the statement that hunters had heard about or seen big bucks in the area they hunt				
		Strongly Agree	Slightly Agree	Neither	Slightly Disagree	Strongly Disagree
East Central	740	17.7	33.5	13.0	14.9	20.9
Northwest	772	25.6	37.4	13.1	12.2	11.7
Southeast	786	25.2	35.8	10.2	12.7	16.2
Transition	831	23.5	31.0	13.8	11.4	20.2
Total	3,129	23.1	34.4	12.5	12.8	17.3
$\chi 2=51.885$, $p < 0.001$						

Table 2-13. Agreement/disagreement with satisfaction related to buck quality.

Region	n	Percent agreement with hunter satisfaction regarding the quality of bucks in the area they hunt				
		Strongly Agree	Slightly Agree	Neither	Slightly Disagree	Strongly Disagree
East Central	738	11.9	29.1	14.2	26.7	18.0
Northwest	763	15.6	29.4	12.3	25.3	17.4
Southeast	787	14.7	29.9	13.2	25.4	16.8
Transition	821	15.5	26.1	14.5	26.6	17.4
Total	3,109	14.5	28.6	13.6	26.0	17.4
χ^2=9.62, n.s.						

Table 2-14. Agreement/disagreement with the number of mature bucks present in the area hunted.

Region	n	Percent agreement with hunter satisfaction regarding the number of mature bucks in the area they hunt				
		Strongly Agree	Slightly Agree	Neither	Slightly Disagree	Strongly Disagree
East Central	734	9.1	26.2	11.6	29.2	24.0
Northwest	764	14.1	28.7	8.9	27.4	20.9
Southeast	790	12.0	28.6	11.3	25.6	22.5
Transition	828	12.0	25.7	12.1	28.9	21.4
Total	3,116	11.8	27.3	11.0	27.7	22.2
χ^2=18.504, n.s.						

Section 2: Hunter Satisfaction

Table 2-15. Agreement/disagreement with the number of antlerless deer present in the area hunted.

Region	n	Percent agreement with hunter satisfaction regarding the number of antlerless deer in the area they hunt				
		Strongly Agree	Slightly Agree	Neither	Slightly Disagree	Stongly Disagree
East Central	746	37.7	39.3	8.0	9.7	5.4
Northwest	774	49.5	31.5	7.1	7.4	4.5
Southeast	789	36.8	33.6	9.9	10.1	9.6
Transition	836	45.7	32.9	6.7	9.0	5.7
Total	3,145	42.5	34.2	7.9	9.0	6.3
$\chi 2=57.879$, $p < 0.001$						

Table 2-16. Agreement/disagreement with the total number of deer present in the area hunted.

Region	n	Percent agreement with the satisfaction regarding the total number deer in the area they hunt				
		Strongly Agree	Slightly Agree	Neither	Slightly Disagree	Strongly Disagree
East Central	745	21.5	37.7	9.4	19.2	12.2
Northwest	776	39.6	36.9	7.5	11.6	4.5
Southeast	794	30.2	35.6	9.4	14.1	10.6
Transition	838	28.9	37.4	9.2	16.2	8.4
Total	3,153	30.1	36.9	8.9	15.3	8.9
$\chi 2=89.206$, $p < 0.001$						

Section 2: Hunter Satisfaction

Table 2-17. Comparison between overall season satisfaction and the belief there are enough mature bucks in the population.

Overall satisfaction with the deer season	n	Percent agreement with hunter satisfaction regarding the number of mature bucks in the area they hunted				
		Strongly Agree	Slightly Agree	Neither	Slightly Disagree	Strongly Disagree
Very Satisfied	1,244	20.1	35.5	9.0	24.0	11.5
Slightly Satisfied	1,126	7.2	26.6	10.4	31.9	23.9
Neither	324	6.8	17.6	24.7	28.4	22.5
Slightly Dissatisfied	282	4.6	13.1	9.6	30.5	42.2
Very Dissatisfied	113	0.9	8.0	2.7	17.7	70.8
Total	3,089	11.9	27.3	11.0	27.7	22.1
$\chi 2=524.002$, $p < 0.001$						

Table 2-18. Comparison between overall season satisfaction and the belief there are enough deer in the population.

Overall satisfaction with the deer season	n	Percent agreement with the satisfaction regarding the total number deer in the area they hunted				
		Strongly Agree	Slightly Agree	Neither	Slightly Disagree	Strongly Disagree
Very Satisfied	1,260	48.9	37.6	4.2	7.4	1.9
Slightly Satisfied	1,130	21.4	44.9	9.1	18.5	6.1
Neither	328	13.7	32.0	23.8	19.2	11.3
Slightly Dissatisfied	289	11.1	20.8	13.5	30.8	23.9
Very Dissatisfied	117	6.0	6.8	5.1	15.4	66.7
Total	3,124	30.2	36.9	8.9	15.1	8.9
$\chi 2=1,158.195$, $p < 0.001$						

Table 2-19. Mean scores of ratings for agreements with deer population composition and numbers.

Issue	Average rating of satisfaction for the number and quality of deer				F	*p*
	East Central	Northwest	Southeast	Transition		
(n) range of responses	*734 - 746*	*763 - 776*	*786 - 794*	*821 - 838*		
Satisfied with the number of mature bucks	3.3	3.1	3.2	3.2	2.788	0.039
Satisfied with the quality of buck	3.1	3.0	3.0	3.0	0.909	0.436
Heard about or saw mature bucks	2.9	2.5	2.6	2.7	9.900	<0.001
Satisfied with the number of antlerless deer	2.1	1.9	2.2	1.9	8.554	<0.001
Satisfied with the number of deer	2.6	2.0	2.4	2.3	20.601	<0.001

Notes:
1 – Strongly Agree
2 – Slightly Agree
3 – Neither
4 – Slightly Disagree
5 – Strongly Disagree

Section 3: Support for alternative deer management regulations

Findings

This section of the survey focused on hunter opinion related to management strategies that should increase antlerless harvests and support for specific regulations to achieve that objective. A resulting byproduct of increasing antlerless harvests would be an increase in the proportion of males in the population. Participants were first asked if they supported the concept of more mature bucks and then presented several regulatory packages so as to elucidate the individual level of support for each option.

Study participants were presented baseline information explaining each regulatory alternative and asked to rate their support as: strongly support, moderately support, neither, moderately oppose, or strongly oppose.

Finally, hunters were asked several questions regarding factors they consider important relative to setting deer regulations. Respondents were given several factors to consider and asked if they agreed or disagreed with the importance on a rating of: 1 – Strongly agree, 2 –Agree, 3 – Neutral, 4 – Disagree, and 5 – Strongly disagree.

Support for more antlered bucks

Overall, respondents were very supportive of a regulation that would increase the proportion of antlered bucks in local deer populations. Similar to a recent survey conducted in northwest Minnesota (Fulton et al. 2004) where 60% of respondents indicated support, a majority of respondents in this study were interested in regulations that promoted a proportional increase in antlered bucks (66%) (Table 3-1). Across the study regions, there were no significant differences in the proportion of hunters who would support regulations that promoted proportionately more bucks in deer populations.

We presented seven regulatory alternatives to respondents in order to gauge level of support for each alternative. The regulations were: 1 – Antler point restrictions, 2 – Earn-A-Buck (where the hunter must take an antlerless deer before they can take a buck, 3 – Early antlerless season, 4 – Prohibit party hunting for all deer, 5 – Prohibit party hunting for bucks only, 6 – Buck license lottery, and 7 – Move the deer season out of the rut. Overall, no regulatory option reached 50% support, although the early antlerless season was closest at 49.9%. Support for each option was: antler point restrictions (47%), prohibit buck party hunting (46%), earn-a-buck (37%), buck license lottery and moving the season out of the rut (29%), and prohibit all party hunting (28%) (Table 3-2).

While a minority of hunters neither supported nor opposed the regulation and some simply did not know how they felt, a majority expressed opposition to several regulatory options. For example, the concept of prohibiting all party hunting was opposed by 61% of respondents, while 59% and 55% opposed buck lottery permits and moving the deer season out of the rut, respectively (Table 3-2).

Section 3: Support for alternative deer management regulations

Specific regulatory alternatives

Early antlerless season

This regulation would establish an antlerless-only season before the general firearm opener. The concept is that a hunter, who takes a deer early, may be more selective with filling their buck license and be less inclined to harvest a younger buck. Further, since the early deer season was antlerless-only, this may shift harvest ratios toward females, thereby lowering local deer densities. This regulation is being evaluated on 8 deer permit areas (5 in the northwest area and 3 in the east central).

In our study, nearly 50% of respondents indicated support, 16% neither supported nor opposed, and 32% opposed an early antlerless season. Support for an early antlerless season was the highest observed for any regulatory option. Although there were no regional differences ($\chi 2=23.039$, $p = 0.083$), support ranged from 48% in the transition area to 51% in the southeast (Table 3-3). Interestingly, while less than one-half of all respondents indicated support for the hunt, nearly 57% said they would participate if it were offered in their area. This difference might be attributable to the 16% of respondents who had no opinion (neither supported nor opposed).

Antler-point restriction

Antler-point restriction regulations are designed to protect yearling (1½ year old) bucks by only allowing the harvest of bucks that have a minimum number of antler points on at least 1 side. Typically, the regulation protects at least one-half of the yearling buck population, which roughly translates into a 3-point regulation in the northern part of the state and a 4-point regulation in the south. This regulation is currently being evaluated in 3 Minnesota state parks.

Overall, almost 47% of respondents either strongly (25%) or moderately (22%) supported an antler-point restriction regulation. However, opposition was nearly as strong with 43% either moderately (13%) or strongly (30%) opposing the regulation. Regionally, we detected minor differences with southeast hunters more inclined to support (51%) and northwest hunters least likely to support (43%). Additionally, northwest hunters were the only group to oppose the regulation more often than support it (43% support vs. 45% oppose). Although not strong, support exceeded opposition in all other areas (Table 3-4).

Earn-A-Buck

Earn-a-buck is a regulation that requires a hunter to harvest an antlerless deer before they can legally harvest an antlered buck. During the 2005 Minnesota deer hunting season, 72% of successful hunters killed only 1 deer so the regulation may have the effect of increasing pressure on antlerless deer because a buck cannot be immediately harvested. Once the antlerless deer is taken, a hunter may or may not have an opportunity to harvest a buck, and they may be more inclined to pass on smaller bucks because they have already procured venison. This regulation is currently being evaluated in 4 Minnesota state parks.

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Overall, only 37% of respondents either strongly (14%) or moderately (22%) supported an earn-a-buck regulation. Conversely, the regulation was opposed by 48% of respondents (18% moderately, 30% strongly). We detected no statistical differences in levels of support for this regulation between survey regions and in all areas respondents were much more likely to strongly oppose the regulation than strongly support it (Table 3-5).

Party hunting

In Minnesota, party hunting does not mean the act of hunting in a group. It specifically means while hunting as a group, individuals can shoot and tag deer for each other (henceforth termed *cross-tagging*). For this survey, the question was specifically worded to indicate the intent was not to break up the family and friend-hunting units; rather it was to only allow hunters to shoot and tag their own deer. However, given the deeply entrenched nature of cross-tagging, it was not surprising our study showed little support for the complete elimination of this practice. Overall, only 28% indicated any type of support, while 62% opposed the regulation. Specifically, 46% of respondents strongly opposed eliminating cross-tagging. Regionally, there were no differences between our survey areas (Table 3-6).

As the cross-tagging question had been asked on previous surveys conducted on Minnesota deer hunters and achieved very low support (e.g., Fulton et al. 2004), we opted to ask another question that would only address cross-tagging of bucks. In other words, hunters would only be able to shoot and tag antlerless deer for each other. By preserving the option of cross-tagging antlerless deer, we observed an increase in support, albeit it was still below 50%. In total, 46% of respondents indicated they would support that regulation, while 42% indicated opposition. Similar to the results obtained in the previous question, we did not detect any regional differences in opinion (Table 3-7).

Adjusting season timing

In Minnesota, the firearm deer season is established through administrative rule and opens the Saturday closest to November 6. Data collected from 1983 to 1987 in northern Minnesota estimated that peak conception ranged from November 10 to 14 (Fuller 1990). Consequently, the firearm deer season is timed around the peak of deer breeding, and there is a belief among hunters that a 'rut opener' may increase buck harvest rates because bucks are more vulnerable to being harvested during the rut. However, no studies have been published to support or reject this theory. Moving the season further into November is not currently being evaluated in Minnesota.

In total, only 28% of respondents either strongly (13%) or moderately (15%) supported the concept of moving the deer season out of the rut. Conversely, 55% of respondents opposed the regulation with 36% of those people strongly opposing. Regionally, northwest (59%) and transition (57%) hunters were most likely to oppose the regulation, while southeast hunters were most likely to indicate support (34%) (Table 3-8). For this regulation, regional differences are not surprising as the weather can be highly variable from northern to southern Minnesota during November.

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Buck license lottery

Under this regulation, hunters would apply annually for the opportunity to hunt antlered bucks. Antlerless deer hunting would be permitted through over-the-counter permits and hunters would gain preference in future years if they were unsuccessful in the buck lottery. Using the current allocations of antlerless permits in lottery permit areas, hunters could be expected to draw a buck license every 2-3 years. Currently, this regulation is not being evaluated in Minnesota, although there are data from state park's special hunts to indicate antlerless-only deer hunting is less appealing than providing an opportunity to hunt bucks.

In our study, this regulation received the lowest overall support of any of the options presented. In total, only 29% of respondents supported this regulatory option. In contrast, 59% opposed the regulation with 44% of those indicating strong opposition (Table 3-9). Regionally, we detected no differences of opinion as most hunters were equally opposed to the regulation. We also asked hunters if they would pursue antlerless deer if the regulation was adopted and they failed to obtain a buck license. Overall, most hunters (84%) indicated they would still hunt antlerless deer, although there was significant regional variation. Hunters in southeastern Minnesota, while no more opposed to the regulation in general, were much more likely to indicate they would not hunt at all if they were not successful in obtaining a buck license (23%).

Regulatory preferences among individuals who supported more antlered bucks

For the 66% of respondents who were supportive of a regulation to increase the number of antlered bucks, we examined which regulatory alternative was most supported. In total, antler-point restrictions (60%), eliminating buck party hunting (55%), and an early antlerless season (52%) were supported by more than one-half of this sub-group. Earn-a-buck (43%), buck license lottery (36%), moving the deer season out of the rut (33%), and eliminating all party hunting (32%) were supported by less than one-half of the sub-group (Table 3-10).

Regionally, southeast respondents had the highest support for antler point restrictions (65%), an early antlerless season (47%), moving the season out of the rut (40%), and eliminating all party hunting (35%). Conversely, northwest hunters were most supportive of earn-a-buck (54%) and least supportive of eliminating all party hunting (29%).

Effect of hunting experience

We grouped years of hunting experience into 5 categories: 1-10, 11-20, 21-30, 31-40, and >40 to determine if opinion toward managing for more mature bucks changed based on years of hunting experience. Overall, we found that respondents who had been hunting >40 years were less inclined to support more mature bucks (55%) than hunters in other groups. Hunters in the 11-20 years experience category were most supportive of regulation changes (70%; Table 3-11). These findings may imply that hunters who have more experience hunting under Minnesota's traditional regulations will tend to oppose proposed deer management changes. Alternatively, these findings might be indicative of a more utilitarian philosophy embraced by older-aged hunters. Further analyses may elucidate factors affecting support in various demographic cohorts of Minnesota hunters.

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Important considerations

Regulations that protect the interest of farmers was important to nearly all respondents (85%), and 82% also agreed that regulations should lead to a better image of hunters and hunting (Table 3-12). Reduction of public land crowding (72%) and protection of forested areas from deer damage (70%) also ranked very high. Over one-half of the respondents believed regulations that led to increased opportunity to take a mature buck (65%), increased firearm hunting opportunity (62%), encourage new people to take up hunting (57%), and increase DNR's ability to control the deer population (55%) should also be considered.

A much smaller percentage of respondents believed increasing bowhunter (39%) and muzzleloader (39%) opportunities, along with regulations that do not result in higher antlerless harvests (20%) should be considered when designing new regulations.

Regionally, Bonferroni adjusted ANOVA results indicated significant differences among the survey regions for some of the factors that should be considered important when changing deer regulations. The significant factors were: do not result in an increased doe harvest, increase DNR's ability to control the deer population, increase my own chances of taking an antlered buck, protect areas so that deer do not cause forest and other habitat damages, and reduce crowding of hunters on public lands (Table 3-13).

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Table 3-1. Support for regulations that would increase the number of antlered bucks in local deer populations.

Region	n	Percent indicating support for regulations that increase the proportion of antlered bucks in the deer population					
		Strongly Support	Moderately Support	Neither Support or Oppose	Moderately Oppose	Strongly Oppose	Don't Know
East Central	765	31.6	34.9	19.9	5.8	5.2	2.6
Northwest	805	34.8	28.4	19.1	7.7	7.7	2.2
Southeast	814	38.0	30.8	18.1	5.8	5.3	2.1
Transition	866	33.0	31.3	19.7	6.5	7.9	1.6
Total	3,250	34.4	31.3	19.2	6.4	6.6	2.1
$\chi 2=24.389$, $p= 0.058$							

Table 3-2. Support for each regulatory alternative presented to Minnesota deer hunters.

Regulation option	n	Percent of hunters indicating support for a regulation					
		Strongly Support	Moderately Support	Neither Support or Oppose	Moderately Oppose	Strongly Oppose	Don't Know
Early antlerless season	3,247	23.5	26.4	16.0	10.7	21.3	2.2
Antler Point Restriction	3,230	24.8	22.0	9.5	13.0	29.5	1.2
Prohibit BUCK party hunting (cross-tagging)	3,251	25.3	20.3	10.7	12.4	29.9	1.3
Earn-A-Buck	3,248	14.3	22.4	14.4	17.9	30.0	1.0
Buck lottery	3,228	12.0	17.3	10.4	15.8	43.5	1.1
Move season out of the rut	3,235	13.3	15.2	15.6	18.3	36.2	1.5
Prohibit ALL party hunting (cross-tagging)	3,247	17.4	10.4	9.8	15.7	45.4	1.2

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Table 3-3. Support for an early antlerless season regulation.

Region	n	Percent indicating support for an early antlerless deer season					
		Strongly Support	Moderately Support	Neither	Moderately Oppose	Strongly Oppose	Don't Know
East Central	763	24.5	26.7	14.9	9.6	21.6	2.6
Northwest	807	23.3	26.9	18.3	10.8	19.0	1.7
Southeast	810	23.8	26.8	17.0	9.6	20.0	2.7
Transition	867	22.4	25.3	13.6	12.5	24.6	1.7
Total	3,247	23.5	26.4	16.0	10.7	21.3	2.2
$\chi 2=23.039$, $p = 0.083$							

Table 3-4. Support for an antler point restriction regulation.

Region	n	Percent indicating support for an antler point restriction regulation					
		Strongly Support	Moderately Support	Neither	Moderately Oppose	Strongly Oppose	Don't Know
East Central	761	22.5	24.4	10.4	13.7	28.0	1.1
Northwest	799	23.5	19.9	9.8	13.9	31.3	1.6
Southeast	806	29.3	22.1	9.9	11.0	26.6	1.1
Transition	864	23.7	21.8	8.1	13.3	31.9	1.2
Total	3,230	24.8	22.0	9.5	13.0	29.5	1.2
$\chi 2=25.525$, $p = 0.043$							

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Table 3-5. Percent indicating support for an earn-a-buck regulation.

Region	n	Percent indicating support for earn-a-buck regulations					
		Strongly Support	Moderately Support	Neither	Moderately Oppose	Strongly Oppose	Don't Know
East Central	763	13.0	22.9	16.1	18.7	28.6	0.7
Northwest	808	15.2	24.6	13.6	16.2	29.3	1.0
Southeast	809	15.2	20.9	15.2	18.5	29.0	1.1
Transition	868	13.9	21.2	12.8	18.3	32.7	1.0
Total	3,248	14.3	22.4	14.4	17.9	30.0	1.0
$\chi 2=14.952$, $p = 0.455$							

Table 3-6. Percent indicating support for eliminating all party hunting (cross-tagging).

Region	n	Percent indicating support for eliminating all party hunting					
		Strongly Support	Moderately Support	Neither	Moderately Oppose	Strongly Oppose	Don't Know
East Central	766	16.3	10.3	9.9	17.8	44.8	0.9
Northwest	804	15.8	10.2	9.5	14.3	48.6	1.6
Southeast	810	19.8	10.7	10.9	14.6	42.5	1.6
Transition	867	17.8	10.5	9.0	16.4	45.6	0.8
Total	3,247	17.4	10.4	9.8	15.7	45.4	1.2
$\chi 2=17.280$, $p = 0.302$							

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Table 3-7. Percent indicating support for eliminating buck party hunting (cross-tagging).

Region	n	Percent indicating support for eliminating buck party hunting					
		Strongly Support	Moderately Support	Neither	Moderately Oppose	Strongly Oppose	Don't Know
East Central	767	23.2	22.2	10.7	11.6	30.4	2.0
Northwest	805	23.5	19.8	10.2	13.3	31.9	1.4
Southeast	811	29.6	18.4	11.2	12.2	27.5	1.1
Transition	868	24.9	21.1	10.7	12.6	29.8	0.9
Total	3,251	25.3	20.3	10.7	12.4	29.9	1.3
$\chi 2=19.267$, $p = 0.201$							

Table 3-8. Percent indicating support for moving the firearm deer season out of the rut.

Region	n	Percent indicating support for moving the deer season out of the rut					
		Strongly Support	Moderately Support	Neither	Moderately Oppose	Strongly Oppose	Don't Know
East Central	762	11.5	17.3	15.9	20.5	33.3	1.4
Northwest	799	11.0	14.1	14.6	18.9	39.9	1.4
Southeast	809	18.4	15.8	15.6	16.7	31.8	1.7
Transition	865	12.0	13.6	16.2	17.5	39.3	1.4
Total	3,235	13.3	15.2	15.6	18.3	36.2	1.5
$\chi 2=42.641$, $p < 0.001$							

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Table 3-9. Percent indicating support for implementing a buck lottery.

Region	n	Percent indicating support for a buck license lottery						Would you still hunt antlerless deer?	
		Strongly Support	Moderately Support	Neither	Moderately Oppose	Strongly Oppose	Don't Know	Yes	No
East Central	761	8.9	18.0	12.4	15.9	43.8	1.1	86.1	13.9
Northwest	799	11.5	18.8	9.0	14.0	45.4	1.3	83.7	16.3
Southeast	803	12.2	15.9	10.8	16.9	43.3	0.7	76.9	23.1
Transition	865	14.8	16.4	9.5	16.3	41.7	1.3	88.3	11.7
Total	3,228	12.0	17.3	10.4	15.8	43.5	1.1	83.9	16.1
$\chi 2=24.481$, $p = 0.0573$								$\chi 2=39.313$, $p< 0.001$	

Table 3-10. Support for regulatory alternatives from respondents who supported regulations that would increase the number of antlered bucks.

Region	n	Percent indicating support for each regulatory alternative						
		Eliminate all Party Hunting	Eliminate Buck Party Hunting	Buck Lottery	Antler Point Restriction	Move Season from Rut	Earn-a-Buck	Early Antlerless Season
East Central	508	30.5	52.2	32.3	58.9	32.3	40.2	52.6
Northwest	508	28.5	55.5	37.2	51.4	26.5	46.3	52.2
Southeast	555	34.6	55.7	34.4	64.5	40.0	42.3	54.4
Transition	554	32.3	56.7	39.4	59.7	30.0	41.9	49.8
Total	2,125	31.6	55.1	35.9	59.9	32.9	42.6	52.2

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Table 3-11. Support for mature buck regulations based on years of hunting experience.

Experience (years)	n	Percent indicating support for regulations that increase the proportion of antlered bucks in the deer population					
		Strongly Support	Moderately Support	Neither	Moderately Oppose	Strongly Oppose	Don't Know
1 to 10	624	34.0	31.7	20.0	4.3	5.8	4.2
11 to 20	748	34.9	34.9	17.8	5.3	5.7	1.3
21 to 30	840	34.2	33.0	19.4	6.8	5.2	1.4
31 to 40	561	32.4	34.2	17.3	8.0	6.6	1.4
>40	410	30.5	24.6	24.6	8.3	10.5	1.5
Total	3,183	33.5	32.3	19.4	6.4	6.4	1.9
$\chi 2=63.305$, $p< 0.001$							

Section 3: Support for alternative deer management regulations

Table 3-12. Importance of selected items that should be considered prior to changing deer hunting regulations.

	n	Percent of hunters indicating they agree/disagree this is important when considering changing deer regulations					Mean[1]
		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	
Do **not** result in an increased total buck harvest.	3,147	25.6	31.6	29.6	8.4	4.8	2.35
Do **not** result in an increased doe harvest.	3,136	6.3	13.8	34.9	28.1	16.9	3.36
Increase DNR's ability to control the deer population.	3,176	15.4	39.6	27.0	9.7	8.2	2.56
Increase hunting opportunity for bowhunters.	3,152	17.7	21.1	39.5	11.3	10.4	2.76
Increase hunting opportunity for muzzleloader hunters.	3,159	15.6	23.8	43.0	10.4	7.3	2.70
Increase hunting opportunity for firearm hunters.	3,220	21.3	40.4	29.0	6.4	3.0	2.29
Increase **my own** chances of taking an antlered buck.	3,216	22.5	33.4	36.1	5.7	2.4	2.32
Increase **my own** chances of taking a large antlered buck.	3,211	34.4	31.0	28.5	4.1	2.1	2.09
Increase **my own** chances of taking antlerless deer.	3,212	16.1	33.3	41.9	5.9	2.8	2.46
Encourage new people to take up deer hunting.	3,193	23.3	33.3	32.9	6.2	4.3	2.35
Lead to a better public image of hunters and hunting.	3,186	43.4	38.5	15.4	1.6	1.1	1.79
Protect the interests of farmers and other landowners.	3,218	47.6	37.3	11.6	2.3	1.2	1.72
Protect areas so that deer do not cause forest and other habitat damages	3,208	25.5	44.5	23.3	4.2	2.4	2.14
Reduce crowding of hunters on public lands.	3,147	36.8	35.4	23.7	2.9	1.2	1.96

[1]Notes:
1 – Strongly Agree
2 – Agree
3 – Neutral
4 – Disagree
5 – Strongly Disagree

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Table 3-13. Importance of selected items that should be considered prior to changing deer hunting regulations, by region.

Issue	Average rating of importance when considering changing deer hunting regulations[1] East Central	Northwest	Southeast	Transition	F	*p*
(n) range of responses	*734 - 757*	*776 - 802*	*773 - 802*	*842 - 863*		
Do **not** result in an increased total buck harvest.	2.39	2.32	2.35	2.31	1.17	n.s.
Do **not** result in an increased doe harvest.	3.19	3.47	3.45	3.34	9.94	< 0.001
Increase DNR's ability to control the deer population.	2.42	2.72	2.46	2.54	12.83	< 0.001
Increase hunting opportunity for bowhunters.	2.76	2.77	2.66	2.80	1.77	n.s.
Increase hunting opportunity for muzzleloader hunters.	2.70	2.63	2.77	2.72	2.25	n.s.
Increase hunting opportunity for firearm hunters.	2.28	2.29	2.27	2.31	0.82	n.s.
Increase **my own** chances of taking an antlered buck.	2.26	2.42	2.26	2.35	4.93	0.002
Increase **my own** chances of taking a large antlered buck.	2.05	2.11	2.00	2.13	1.64	n.s.
Increase **my own** chances of taking antlerless deer.	2.45	2.53	2.45	2.40	2.58	n.s.
Encourage new people to take up deer hunting.	2.40	2.28	2.32	2.35	3.00	0.029
Lead to a better public image of hunters and hunting.	1.82	1.80	1.70	1.82	2.18	n.s.
Protect the interests of farmers and other landowners.	1.70	1.79	1.63	1.77	4.11	0.006
Protect areas so that deer do not cause forest and other habitat damages	2.11	2.22	1.99	2.15	8.46	< 0.001
Reduce crowding of hunters on public lands.	1.87	2.00	1.96	2.01	5.03	0.002

[1]Notes: 1 – Strongly Agree, 2 – Agree, 3 – Neutral, 4 – Disagree, 5 – Strongly Disagree

Section 4: Choice scenarios

Findings

This portion of the survey was not designed to gauge hunter support on an issue; rather it was designed to elucidate a rank-ordering of preferences for management alternatives in response to a specific scenario. As presented in Section 3, while most hunters would prefer to see more antlered bucks in the deer population, there is no majority opinion on how to achieve that preference. Consequently, we developed 5 scenarios and asked hunters to rank their preferences for regulation change. The scenarios were:

1. The deer population is stable and within population goals. It is currently being managed so that either-sex licenses are available over the counter and hunters can also buy additional antlerless permits. Based on requests from some hunters, this area will be managed in the future for more mature bucks.

2. The deer population is currently 25% above the management goal. The current strategy of allowing 5 deer per hunter has not been effective in lowering the deer population. A new strategy needs to be developed that lowers the deer population to goal levels within 3 to 5 years.

3. The deer population is currently 50% above the management goal. The current strategy of allocating 5 deer per hunter has not been effective in lowering the deer population. A new strategy needs to be developed that lowers the deer population to goal levels within 3 to 5 years.

4. The deer population is stable or below the population goal and the harvest rate on 1½ year-old bucks is high. Consequently, a low percentage of the buck population lives beyond 1½ years. Currently, buck licenses are available over the counter, either-sex permits are available through the lottery, and hunters can only kill one deer. Based on requests from hunters, this area may be managed in the future to protect young bucks and allow them to get to the next age class.

5. Antler point restriction regulations are currently being used by several states to encourage antlerless harvest and protect 1½-year-old bucks. The number of hunters and sporting organizations interested in antler-point restriction regulations seems to be increasing in Minnesota. While the harvest rate of bucks varies in Minnesota, the majority of the bucks killed during the firearm season are 1½ years old. Typically, 50 to 75% of the 1½ year-old buck population is harvested during the firearm season.

There were 7 choices in each scenario and hunters were randomly presented 3 of those choices and asked to rank them as 1, 2, or 3. The entire suite of choices is presented in Appendix B. Choices were designed so they would be representative of regulations that might be adopted for that scenario. For example, earn-a-buck regulations have the potential to decrease deer populations; therefore earn-a-buck was not a choice in the scenarios where the deer population was stable and/or within goal range. Also, the choice of moving the deer season out of the rut was not presented in the scenarios where the deer population was 25% or 50% above goal density because that regulation likely would not lower deer populations appreciably.

Conversely, moving the season was presented as a choice when the scenario suggested the deer population was within goal levels and the desire was to manage for more mature bucks.

We analyzed the choice data at two levels. First, we consolidated choices into seven 'packages' (e.g., all possible antler point restriction regulation choices) and looked at the grand mean for each package. Second, we used the mean of the ranks to distinguish between preferred choices by scenario and survey area. We did not include scenario 5 in the consolidation because it was a scenario that included only antler point restriction regulations and we observed a difference in means between scenarios 1 through 4 and scenario 5 ($t = -5.28$, $p < 0.001$).

Using this analytical approach, we were able to identify both the specifically preferred choice (e.g., antler point restriction with party hunting vs. antler point restriction without party hunting) and preferences for major regulatory changes (e.g., antler point restrictions vs. earn-a-buck). A mean close to 1 implies a preferred choice while a mean approaching 3 indicates a non-preferred choice.

Consolidation of choices

Overall, hunters indicated a clear preference for going hunting, even though they may not agree with changing regulations. In our sample, the option of not hunting in an area if regulations were adopted consistently ranked below all other options. The early antlerless season ranked highest (mean = 1.63), followed by antler point restrictions (mean = 1.76), earn-a-buck (mean = 1.77), move the deer season (mean = 1.80), continue to hunt despite objecting to regulations (mean = 2.00), buck license lottery (mean = 2.20), and will not hunt in the area if regulations are implemented (mean = 2.63).

Regionally, we observed differences in choices between survey areas for moving the deer season, hunting despite the regulations, and won't hunt the area. For moving the deer season, east central hunters were most likely to choose the regulation (mean = 1.73) and southeast hunters were least likely to make the choice (mean = 1.88). Disliking regulation changes but continuing to hunt was ranked highest by northwest hunters (mean = 1.90) and lowest by southeast hunters (mean = 2.09). Northwest hunters were also more likely to choose not to hunt (mean = 2.57) than other hunters (Table 4-1).

Scenario 1 – Deer population within goal levels and antlerless permits are available over the counter

This scenario exists in many Minnesota permit areas, most notably in the southeast and northern portions of the state. These permit areas are termed 'managed permit areas' and allow the taking of either-sex deer with a regular license and one antlerless deer with a bonus permit. In Minnesota, this management designation is intermediate between "lottery", which is most restrictive, and "intensive", which allows for the additional taking of 5 antlerless deer.

In total, we observed distinct trends in that hunters seemed willing to accept regulation changes so long as they were able to continue hunting every year. In this scenario, the least restrictive antler point regulation ranked highest, followed by moving the season out of the rut and then the

most restrictive antler point regulation. Buck license lotteries and changing hunting locations if regulations were enacted ranked very low overall. Consequently, in this scenario, it appeared hunters would be accepting of some regulation change so long as they were able to pursue bucks every year. When faced with the choice of a buck license lottery, which would mean a hunter would not obtain an annual buck license annually; hunters tended to rank this option lower than the others (Table 4-2).

Overall, the following regulatory options were ranked as follows:

1. Antler point restriction to protect 50% of the yearling buck population and no buck party hunting (mean = 1.68).
2. Antler point restriction to protect 75% of the yearling buck population and party hunting legal (mean = 1.76).
3. Move the deer season out of the rut (mean = 1.82).
4. Antler point restriction to protect 75% of the yearling buck population and no buck party hunting (mean = 1.87).
5. Buck license lottery, party hunting legal, fewer buck licenses (mean = 2.11).
6. Buck license lottery, party hunting not legal, more buck licenses (mean = 2.16).
7. Would not hunt the area if the regulations were changed (mean = 2.57).

Regionally, we observed differences in the most restrictive antler point regulation (choice 5) and changing hunting location if regulations were enacted (choice 7). Hunters in the southeast were most inclined to favor restrictive antler point regulations (mean = 1.80), while hunters in the northwest ranked that option lower then the other survey areas (mean = 1.91). For changing locations, northwest hunters indicated they would (mean = 2.48), while east central hunters would be least inclined to change locations (mean = 2.67).

Scenario 2 – Deer population is 25% above goal level and needs to be reduced within 5 years

This scenario is probably the most common current condition in northwestern, central, east-central, and the southeastern corner of Minnesota. Deer areas in these locations are typically managed as intensive permit areas, where hunters can take up to 5 deer of which only 1 can be antlered. Since the inception of antlerless-only permits in the mid 1990's, multiple permits have been available to individual hunters and deer populations have continued to rise. During a goal setting process to evaluate deer populations throughout northern Minnesota in 2006, stakeholders identified numerous areas where populations should be reduced 25%. As the current system of over-the-counter antlerless permits has not decreased populations, the notion of providing hunters a choice between regulations that go beyond 'more permits' will be critically important to the success of the statewide deer management program.

In total, hunters generally ranked their choices from the least intrusive (early antlerless season) to the most restrictive (buck license lottery). The option of changing hunting location again ranked consistently low and the motivational trends appeared similar to scenario 1 in that hunters want the option of pursuing bucks every year. They may be forced to take a certain type of buck (antler point restriction) or take a doe first (earn-a-buck), but they seem to want the ability to at least have a chance to take a buck (Table 4-3).

Overall, the following regulatory options were ranked as follows:

1. Early antlerless season (mean = 1.65).
2. Antler point restriction to protect 50% of the yearling buck population and no buck party hunting (mean = 1.79).
3. Antler point restriction to protect 75% of the yearling buck population and buck party hunting legal (mean = 1.81).
3. Earn-a-buck (mean = 1.81).
5. Buck license lottery, party hunting not legal, more buck licenses (mean = 2.14).
6. Buck license lottery, party hunting legal, fewer buck licenses (mean = 2.20).
7. Would not hunt the area if the regulations were changed (mean = 2.61).

The patterns of choice selection did not vary across survey areas.

Scenario 3 – Deer population is 50% above goal level and needs to be reduced within 5 years

This scenario rarely exists in Minnesota and would most likely be associated with deer areas containing large urban locations, some state parks, and other lightly hunted refuges. While presumed to be rare, the scenario was added because there is a chance the deer population goal setting project may identify some local areas that would require this level of deer reduction. Hence, it was added but the choices were the same as scenario 2 (25% reduction). The presumption on our part was that hunters would be more inclined to select more aggressive regulatory alternatives as compared to the scenario 2.

In total, hunters again ranked the early antlerless season highest; however, they were more inclined to choose the regulatory packages that might lead to more dramatic deer population reductions as compared to scenario 2. For example, in scenario 2, a less restrictive antler point regulation ranked higher than earn-a-buck while in scenario 3, earn-a-buck ranked higher than all regulations besides the early antlerless season. Once again, the option of not being able to pursue bucks annually and moving hunt location ranked lowest overall (Table 4-4). With the exception of the early antlerless season (it would result in the least hunting pattern change), these results indicate hunters had the ability to discern which regulations may have the largest effect and ranked them accordingly.

Overall, the following regulatory options were ranked as follows:

1. Early antlerless season (mean = 1.61).
2. Earn-a-buck (mean = 1.78).
3. Antler point restriction to protect 75% of the yearling buck population and party hunting legal (mean = 1.79).
4. Antler point restriction to protect 50% of the yearling buck population and no buck party hunting (mean = 1.80).
5. Buck license lottery, party hunting not legal, more buck licenses (mean = 2.16)
6. Buck license lottery, party hunting legal, fewer buck licenses (mean = 2.17).
7. Would not hunt the area if the regulations were changed (mean = 2.71).

Similar to scenario 2, the patterns of choice selection did not vary across survey areas.

Section 4: Choice scenarios

Scenario 4 – Population at or below goal, high buck harvest rates, limited antlerless permits

This scenario exists throughout the farmland region of Minnesota and is most typified by lottery permit areas where people can hunt with over-the-counter licenses but must apply for a limited number of antlerless permits. Specific locations are the southwest farmland areas and major wildlife management areas where hunting pressure is high.

The choices in this scenario ranged from moving the deer season out of the rut to limiting the number of buck licenses that would be allocated. Earn-a-buck and early antlerless seasons were not offered as choices because the scenario did not involve lowering deer densities. Overall, hunters displayed a clear interest in having buck hunting opportunity every year as the lottery option ranked lowest again. In this scenario, an antler point restriction that allowed youth hunters to kill any buck ranked highest, followed by an antler point restriction that allowed party hunting, an antler point restriction that did not allow party hunting bucks, moving the deer season out of the rut, deer license lotteries, and finally moving to a new area if regulations were adopted (Table 4-5).

Overall, the following regulatory options were ranked as follows:

1. Antler point restriction to protect 75% of the yearling buck population, party hunting legal, youth can take any buck (mean = 1.70).
2. Antler point restriction to protect 75% of the yearling buck population, party hunting legal, youth must abide by regulation (mean = 1.72).
3. Antler point restriction to protect 50% of the yearling buck population, no buck party hunting, youth must abide by regulation (mean = 1.76).
4. Move the deer season out of the rut (mean = 1.79).
5. All licenses lottery (buck and antlerless), party hunting legal (mean = 2.23).
6. All licenses lottery (buck and antlerless), party hunting not legal (mean = 2.32).
7. Would not hunt the area if the regulations were changed (mean = 2.52).

Regionally, we observed differences within the survey area for moving the deer season out of the rut. East central hunters were most inclined to choose this as regulatory option (mean = 1.70), while northwest hunters were least likely to make the choice (mean = 1.89). Again, it is not surprising that northwest hunters were least likely to want to move the deer season because they are the most likely to have the overall season impacted by severe weather.

Scenario 5 – Various antler point restriction regulations

Large-scale antler point restriction regulations have been implemented in several states (e.g., Missouri, Pennsylvania). In those states, extensive public input has been sought regarding support/opposition to the regulations. In Minnesota, antler point restriction regulations were used on 3 Minnesota state parks in order to test the biological effect of the regulation. Concurrently, the sociological effect will be assessed by surveying hunt participants. To that end, this scenario attempted to address which variants of antler point restriction regulations would be most acceptable if they were adopted in a deer permit area. Choices were also offered to assess how hunters felt about the regulations in general, and whether or not they would change locations if implemented.

Section 4: Choice scenarios

Overall, hunters displayed a preference for a regulatory package that allowed youth hunters to shoot any buck, and preference was most strong for a regulation that protected 75% of the yearling buck population but still allowed party hunting (mean = 1.70). Regulations that were increasingly restrictive and did not provide for the youth any deer option were least preferred. In fact, the choice of 'not liking antler point regulations but would hunt anyway' ranked higher than the most restrictive antler point regulation (protect 75%, no party hunting, youth abide). As in the other 4 scenarios, the option of changing hunt location if regulations were adopted ranked lowest (mean = 2.67) (Table 4-6).

Overall, the following antler point restriction regulation options were ranked as follows:

1. Protect 75% of the yearling buck population, party hunting legal, youth can take any deer (mean = 1.70).
2. Protect 50% of the yearling buck population, buck party hunting not legal, youth can take any deer (mean = 1.85).
3. Protect 50% of the yearling buck population, buck party hunting not legal, youth must abide by the regulation (mean = 1.86).
4. Protect 75% of the yearling buck population, party hunting legal, youth must abide by the regulation (mean = 1.89).
5. Opposed to antler point restriction regulations but would still hunt the area (mean = 2.00).
6. Protect 75% of the yearling buck population, buck party hunting not legal, youth must abide by the regulation (mean = 2.02).
7. Would not hunt the area if the regulations were changed (mean = 2.67).

Regionally, we observed differences in above items 3, 5, and 6. Respondents in the transition area were most likely to indicate a preference for protecting a lower percentage of the buck population and making youth hunters abide (choice 3, mean = 1.82), while respondents in the southeast were least likely to make that choice (mean = 1.92). Additionally, northwest respondents were least likely to indicate they dislike regulations but would continue to hunt (choice 5, mean = 1.90) and southeast respondents were most likely (mean = 2.09). Finally, the most restrictive antler point regulation (choice 7) was favored more often by southeast respondents (mean = 1.89) and least often by east central respondents (mean = 2.06).

Choice summary

When faced with the choice of hunting under less than desirable regulations or not hunting in their traditional areas, Minnesota deer hunters will choose to hunt. Our results indicated a high fidelity to traditional hunting locations (90%) and unwillingness to move, even if they disagreed with the regulations (mean = 2.63/3.00). Which regulations they chose; however, depended on the scenario and an individual's perception of its effectiveness. For example, when faced with scenarios that called for a 25% and 50% reduction in the deer populations, respondents were more likely to choose more liberal regulations under the 50% scenario.

There were two issues that stood out in this survey. First, moving the deer season out of the rut has been noted by individuals as an acceptable and 'easy' change that would lead to more mature bucks. However, in the choice portion of this study, it was clear that respondents believed moving the deer season was less attractive than antler point restrictions. Indeed, when asked in section 3 if they supported or opposed moving the season, the regulation garnered less support

(28%) than a buck license lottery (29%), which ranked lowest in all the choice scenarios. Most notably, southeast respondents who are closest to Iowa where the deer season is in December were least likely to choose moving the deer season. Second, antler point restrictions have been proposed for northwestern Minnesota and work has been done by local hunters to garner support for the regulation. However, in our survey, respondents in northwest Minnesota were not inclined to choose antler point restriction regulations. In scenario 5, where we asked specifically about antler point regulations, northwest respondents were more likely to choose the option of "not agreeing with the regulations but would hunt anyway", than any other group.

Finally, respondents clearly wanted an opportunity to hunt bucks every year. In all cases, the buck license lottery choice ranked lower than all other regulatory alternatives. The only choice that ranked lower than a buck license lottery was moving to another hunting location if the regulations were implemented. Clearly, if a buck license lottery were implemented, DNR would experience at best dissention among a majority of hunters and at worst, a movement of hunters to other areas of the state.

Section 4: Choice scenarios

Table 4-1. Combined mean scores for choices presented to deer survey participants

Regulatory Option	Mean score of combined regulatory options: East Central	Northwest	Southeast	Transition	Overall Mean[1]	F	*p*
Buck license lottery	2.23	2.21	2.20	2.18	2.20	1.37	n.s.
Antler point restriction[2]	1.74	1.77	1.73	1.78	1.76	1.89	n.s.
Earn-a-buck	1.76	1.78	1.82	1.75	1.77	1.00	n.s.
Early antlerless season	1.64	1.60	1.64	1.63	1.63	0.24	n.s.
Move the deer season	1.73	1.86	1.88	1.80	1.80	3.28	0.020
Don't like regulations but will still hunt	2.00	1.90	2.09	2.00	2.00	2.73	0.043
Move location if regulations are implemented	2.65	2.57	2.64	2.62	2.63	2.69	0.045

[1]Weighted

[2]Does not include Scenario 5 (Antler Point Restriction scenario)

Section 4: Choice scenarios

Table 4-2. Mean scores for choices presented to hunters for scenario 1.

Regulation	Mean score of regulatory option					F	*p*
	East Central	Northwest	Southeast	Transition	Total		
(n) range of responses	*282 - 308*	*283 - 318*	*291 - 335*	*315 - 347*	*1209 - 1266*		
Buck license lottery, party hunting legal	2.12	2.15	2.16	2.07	2.11	0.891	n.s.
Buck license lottery, no party hunting	2.18	2.26	2.16	2.12	2.16	1.738	n.s.
Antler point restriction to protect 50%, no buck party hunting	1.63	1.75	1.72	1.68	1.68	1.604	n.s.
Antler point restriction to protect 75%, party hunting legal	1.70	1.68	1.73	1.86	1.76	3.543	0.014
Antler point restriction to protect 75%, no buck party hunting	1.88	1.91	1.80	1.88	1.87	1.381	n.s.
Move deer season out of rut	1.80	1.78	1.88	1.82	1.82	0.888	n.s.
Would not hunt the area if regulations were changed	2.67	2.48	2.56	2.51	2.57	3.608	0.013

Scenario:

The deer population is stable and within population goals. It is currently being managed so that either-sex licenses are available over the counter and hunters can also buy additional antlerless permits. Based on requests from some hunters, this area will be managed in the future for more mature bucks.

Section 4: Choice scenarios

Table 4-3. Mean scores for choice presented to hunters for scenario 2.

Regulation	Mean score of regulatory option					F	*p*
	East Central	Northwest	Southeast	Transition	Total		
(n) range of responses	*282 - 308*	*283 - 318*	*291 - 335*	*315 - 347*	*1220 - 1266*		
Buck license lottery, party hunting legal	2.23	2.16	2.24	2.16	2.20	1.040	n.s.
Buck license lottery, no party hunting	2.19	2.22	2.14	2.07	2.14	2.420	n.s.
Antler point restriction to protect 50%, no buck party hunting	1.75	1.84	1.77	1.82	1.79	1.002	n.s.
Antler point restriction to protect 75%, party hunting legal	1.80	1.81	1.75	1.83	1.81	0.654	n.s.
Earn-a-buck	1.77	1.82	1.85	1.82	1.81	0.566	n.s.
Early antlerless season	1.63	1.66	1.67	1.64	1.65	0.142	n.s.
Would not hunt the area if regulations were changed	2.67	2.54	2.64	2.58	2.61	1.948	n.s.

Scenario:

The deer population is currently **25%** above the management goal. The current strategy of allowing five deer per hunter has not been effective in lowering the deer population. A new strategy needs to be developed that lowers the deer population to goal levels within 3 to 5 years.

Section 4: Choice scenarios

Table 4-4. Mean scores for choice presented to hunters for scenario 3.

Regulation	Mean score of regulatory option					F	*p*
	East Central	Northwest	Southeast	Transition	Total		
(n) range of responses	*276 - 303*	*283 - 325*	*300 - 339*	*317 - 351*	*1219 - 1267*		
Buck license lottery, party hunting legal	2.16	2.16	2.17	2.19	2.17	0.091	n.s.
Buck license lottery, no party hunting	2.19	2.17	2.14	2.14	2.16	0.351	n.s.
Antler point restriction to protect 50%, no buck party hunting	1.80	1.83	1.74	1.83	1.80	1.007	n.s.
Antler point restriction to protect 75%, party hunting legal	1.77	1.83	1.76	1.81	1.79	0.530	n.s.
Earn-a-buck	1.82	1.75	1.83	1.74	1.78	1.064	n.s.
Early antlerless season	1.65	1.54	1.60	1.61	1.61	0.916	n.s.
Would not hunt the area if regulations were changed	2.70	2.67	2.71	2.74	2.71	0.748	n.s.

Scenario:

The deer population is currently **50%** above the management goal. The current strategy of allocating five deer per hunter has not been effective in lowering the deer population. A new strategy needs to be developed that lowers the deer population to goal levels within 3 to 5 years.

Section 4: Choice scenarios

Table 4-5. Mean scores for choice presented to hunters for scenario 4.

Regulation	Mean score of regulatory option					F	*p*
	East Central	Northwest	Southeast	Transition	Total		
(n) range of responses	*271 - 295*	*273 - 308*	*281 - 322*	*306 - 339*	*1186 - 1235*		
All licenses in lottery, party hunting legal (fewer permits)	2.36	2.25	2.26	2.32	2.32	1.397	n.s.
All licenses in lottery, party hunting not legal (more permits)	2.29	2.21	2.20	2.21	2.23	0.790	n.s.
Antler point restriction to protect 50%, no buck party hunting	1.70	1.75	1.72	1.82	1.76	1.586	n.s.
Antler point restriction to protect 75%, party hunting legal	1.79	1.70	1.68	1.67	1.72	1.400	n.s.
Antler point restriction to protect 75%, youth can take anything, party hunting legal	1.68	1.75	1.75	1.69	1.70	0.803	n.s.
Move deer season out of rut	1.70	1.89	1.86	1.79	1.79	3.160	0.024
Would not hunt the area if regulations were changed	2.51	2.49	2.57	2.51	2.52	0.381	n.s.

Scenario:

The deer population is stable or below population goal and the harvest rate on 1½ year-old bucks is high. Consequently, a low percentage of the buck population lives beyond 1½ years. Currently, buck licenses are available over the counter, either-sex permits are available through the lottery, and hunters can only kill one deer. Based on requests from hunters, this area may be managed in the future to protect young bucks and allow them to get to the next age class.

Section 4: Choice scenarios

Table 4-6. Mean scores for choice presented to hunters for scenario 5.

Regulation	Mean score of regulatory option					F	*p*
	East Central	Northwest	Southeast	Transition	Total		
(n) range of responses	*275 - 298*	*286 - 318*	*283 - 320*	*313 - 348*	1178 - 1246		
Protect 50%, no buck party hunting, youth abide by regulations	1.85	1.91	1.92	1.82	1.86	1.362	n.s.
Protect 75%, youth abide, party hunting legal	1.83	1.89	1.90	1.94	1.89	0.928	n.s.
Protect 50%, no buck party hunting, youth can take any deer	1.82	1.98	1.79	1.87	1.85	3.326	0.019
Protect 75%, party hunting legal, youth can take any deer	1.73	1.71	1.71	1.68	1.70	0.242	n.s.
Protect 75%, no buck party hunting, youth abide	2.06	2.02	1.89	2.03	2.02	2.674	0.046
Opposed to any antler point regulations, but would still hunt the area	2.00	1.90	2.09	2.00	2.00	2.727	0.043
Would not hunt the area if regulations were changed	2.72	2.62	2.68	2.64	2.67	1.159	n.s.

Scenario:

Antler point restriction regulations are currently being used by several states to encourage antlerless harvest and protect 1½ year old bucks. The number of hunters and sporting organizations interested in antler-point restriction regulations is increasing in Minnesota. While the harvest rate of bucks varies in Minnesota, the majority of the bucks killed during the firearm season are 1½ years old. Typically, 50 to 75% of the 1½ year old buck population is harvested during the firearm season.

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Appendix A: Survey Instrument Without Choices

2005 DEER HUNTER SATISFACTION AND PREFERENCES FOR REGULATION CHANGES IN MINNESOTA

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

Your help on this study is greatly appreciated!

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

Minnesota Cooperative Fish and Wildlife Research Unit,
Department of Fisheries, Wildlife, and Conservation Biology
University of Minnesota
St. Paul, Minnesota 55108-6124

Appendix A: Survey Instrument Without Choices

Section A. Minnesota Deer Hunting Experiences

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

1. Would you say you know A GREAT DEAL, A MODERATE AMOUNT, A LITTLE, OR NOTHING about DNR's deer management program? (Check one).

   - ❑ A GREAT DEAL – I read most of the hunting handbook, DNR news releases, and follow the outdoor media
   - ❑ A MODERATE AMOUNT - I read parts of the handbook and occasionally follow the outdoor media
   - ❑ A LITTLE – I only read the parts of the handbook that pertain to me and otherwise don't follow the outdoor media
   - ❑ NOTHING – I buy my license just before the season and follow the advice of my friends
   - ❑ DON'T KNOW

2. In your opinion, should the deer population in the same area you hunt most often be increased, remain the same, or be decreased? (Check one).

   - ❑ INCREASED
   - ❑ REMAIN THE SAME
   - ❑ DECREASED
   - ❑ DON'T KNOW

3. Did you hunt deer during the 2004 firearm season? (Check one).

   - ❑ YES
   - ❑ NO → **SKIP TO QUESTION 8**

4. How much of your deer hunting did you do on each of the following types of land during the 2004 deer hunting season? (Circle one number for each item)

	None	Some	Most	All	Don't Know
Land that I own	1	2	3	4	9
Private land that I do **not** own	1	2	3	4	9
Public land	1	2	3	4	9

Appendix A: Survey Instrument Without Choices

5. Overall, were you satisfied or dissatisfied with your Minnesota deer hunting experiences during the 2004 season? (Check one).

   - ❑ VERY SATISFIED
   - ❑ SOMEWHAT SATISFIED
   - ❑ NEITHER SATISFIED NOR DISSATISFIED
   - ❑ SOMEWHAT DISSATISFIED
   - ❑ VERY DISSATISFIED
   - ❑ DON'T KNOW

6. Please indicate how satisfied or dissatisfied you were with the following issues related to your Minnesota deer hunting experiences in 2004. (Circle one number for each item)

	Very Satisfied	Somewhat Satisfied	Neither	Somewhat Dissatisfied	Very Dissatisfied	Don't Know
Ability to understand the deer hunting regulations	1	2	3	4	5	9
Amount of PUBLIC land for deer hunting	1	2	3	4	5	9
Amount of PRIVATE land for deer hunting	1	2	3	4	5	9
Number of other hunters	1	2	3	4	5	9
Scenic beauty of hunting areas	1	2	3	4	5	9
Experiences with family and friends	1	2	3	4	5	9
Success in killing a deer	1	2	3	4	5	9
Weather conditions	1	2	3	4	5	9

Appendix A: Survey Instrument Without Choices

7. Please indicate whether you agree or disagree with the following statements about the area you hunted most often in 2004. Please circle one number for each question. (Circle one number for each item)

	Strongly Agree	Slightly Agree	Neither	Slightly Disagree	Strongly Disagree	Don't Know
I am satisfied with the number of mature bucks	1	2	3	4	5	9
I am satisfied with the quality of bucks	1	2	3	4	5	9
I heard about or saw mature bucks while hunting	1	2	3	4	5	9
I am satisfied with the number of antlerless deer	1	2	3	4	5	9
I am satisfied with the number of deer I see while hunting	1	2	3	4	5	9

8. Which **ONE** of the following best describes how you deer hunt in Minnesota? Would you say you: (Check only one).

- ❑ HUNT FOR LARGE ANTLERED BUCKS DURING ENTIRE SEASON
- ❑ HUNT FOR LARGE ANTLERED BUCKS EARLY SEASON AND SHOOT ANY LEGAL DEER LATER
- ❑ SHOOT ANY ANTLERED BUCK
- ❑ SHOOT THE FIRST LEGAL DEER (ANTLERED OR ANTLERLESS) THAT I CAN
- ❑ HUNT FOR AN ANTLERLESS DEER FOR THE FREEZER, THEN WAIT FOR A MATURE BUCK
- ❑ SHOOT ONLY ANTLERLESS DEER

Appendix A: Survey Instrument Without Choices

Section B. Deer Management in Minnesota

We are interested in understanding how you feel about deer management strategies and goals in Minnesota. The following questions will ask you how much you support a variety of deer management options.

9. In general, would you support or oppose a regulation that would increase the proportion of antlered bucks in the deer population you hunt most often? (Check one).

   - ❑ STRONGLY SUPPORT
   - ❑ MODERATELY SUPPORT
   - ❑ NEITHER SUPPORT NOR OPPOSE
   - ❑ MODERATELY OPPOSE
   - ❑ STRONGLY OPPOSE
   - ❑ DON'T KNOW

10. Currently, Minnesota is one of only a few states that allow hunters to shoot deer for each other. Because hunters can kill multiple bucks per year, the cross-tagging provision might contribute to higher buck harvest rates in Minnesota than in other states. The following two questions assess your level of support for allowing hunters to kill deer for each other.

    In the area you hunt most often, would you support or oppose a regulation that would allow hunters to continue to hunt together as a party, but would prohibit hunters from shooting deer for each other (both antlered bucks and antlerless deer)? (Check one).

    - ❑ STRONGLY SUPPORT
    - ❑ MODERATELY SUPPORT
    - ❑ NEITHER SUPPORT NOR OPPOSE
    - ❑ MODERATELY OPPOSE
    - ❑ STRONGLY OPPOSE
    - ❑ DON'T KNOW

11. In the area you hunt most often, would you support or oppose a regulation that would allow hunters to continue to hunt together as a party but would prohibit shooting antlered bucks for each other? You would still be able to shoot antlerless deer for each other (Check one).

    - ❑ STRONGLY SUPPORT
    - ❑ MODERATELY SUPPORT
    - ❑ NEITHER SUPPORT NOR OPPOSE
    - ❑ MODERATELY OPPOSE
    - ❑ STRONGLY OPPOSE
    - ❑ DON'T KNOW

Appendix A: Survey Instrument Without Choices

Currently, in areas that are above population goals, hunters are encouraged to kill antlerless deer. If hunters selectively kill antlerless deer, the proportion of antlered bucks surviving the hunting season might increase.

The next series of questions addresses specific methods of increasing the harvest of antlerless deer and possibly increasing the proportion of antlered bucks in the deer population.

Please indicate the degree to which you support or oppose each method in the area you hunt most often.

12. The first method would limit the number of buck licenses available to hunters during the firearm season. Under this scenario, the standard firearm license would be valid for **antlerless** deer only.
    - Hunters interested in killing antlered bucks would need to apply for a permit through a lottery system.
    - Only lottery winners would be eligible to hunt antlered deer.
    - Unsuccessful applicants would be restricted to hunting antlerless deer during the current year, but would gain preference points in the lottery which would improve their chance of getting drawn for a buck license in future years.
    - A hunter would likely win a buck permit every 2-3 years depending on hunting pressure.

    Would you support or oppose a regulation that would limit the number of buck licenses available to hunters during the firearm season in the area you hunt most often. (Check one).

    - ❑ STRONGLY SUPPORT
    - ❑ MODERATELY SUPPORT
    - ❑ NEITHER SUPPORT NOR OPPOSE
    - ❑ MODERATELY OPPOSE
    - ❑ STRONGLY OPPOSE
    - ❑ DON'T KNOW

13. In the area you hunt most often, would you continue to hunt antlerless deer if you were not able to obtain a buck license through the lottery? (Check one).

    - ❑ YES
    - ❑ NO
    - ❑ DON'T KNOW

14. The second method would protect bucks with less than 3 or 4 antler points on at least one side. The protection level would be designed to protect at least half of all 1½ year old bucks in the population.

    - Under this scenario, buck hunters could only kill adult males that met the established legal definition.
    - Hunters would first have to identify the animal as a legal buck before shooting the deer.
    - As a result of this regulation, harvest rates on antlerless deer should increase. Also, a greater proportion of 1 1/2 year old males should survive to the 2 1/2 year age-class and would be available to hunters the next hunting season.

    Would you support or oppose an antler point restriction regulation in the area you hunt most often? (Check one).

    - ❑ STRONGLY SUPPORT
    - ❑ MODERATELY SUPPORT
    - ❑ NEITHER SUPPORT NOR OPPOSE
    - ❑ MODERATELY OPPOSE
    - ❑ STRONGLY OPPOSE
    - ❑ DON'T KNOW

15. A third method would move the firearm deer season outside of the rut. Under this scenario, the regular firearm season would begin no earlier than mid-November. As a result of this regulation, bucks may be less vulnerable and buck harvest rates may be reduced.

    Would you support or oppose this type of regulation that would move the firearm season date outside of the rut in the area you hunt most often? (Check one).

    - ❑ STRONGLY SUPPORT
    - ❑ MODERATELY SUPPORT
    - ❑ NEITHER SUPPORT NOR OPPOSE
    - ❑ MODERATELY OPPOSE
    - ❑ STRONGLY OPPOSE
    - ❑ DON'T KNOW

16. A fourth method would require all deer hunters to kill an antlerless deer before killing an antlered buck. This is typically called earn-a-buck. Under this scenario, hunters cannot shoot a buck until they first killed an antlerless deer. As a result of this regulation, harvest rates on antlerless deer should increase. Also, harvest rates on antlered deer should decrease, resulting in a greater proportion of antlered bucks that survive to the next hunting season.

    Would you support or oppose this type of regulation that would require hunters to kill an antlerless deer before killing an antlered deer in the area you hunt most often? (Check one).

    - ❑ STRONGLY SUPPORT
    - ❑ MODERATELY SUPPORT
    - ❑ NEITHER SUPPORT NOR OPPOSE
    - ❑ MODERATELY OPPOSE
    - ❑ STRONGLY OPPOSE
    - ❑ DON'T KNOW

17. Suppose an antlerless-only season was offered in addition to the regular firearm deer season that you normally hunt. The season would not last more than a week (most likely a single weekend in mid-October) and killing an antlerless deer during this new season would not affect your regular firearms licenses. The season would be timed to minimize conflicts with peak archery harvest and would not occur during that period known as the 'pre-rut'.

    Would you support or oppose this type of regulation? (Check one).

    - ❑ STRONGLY SUPPORT
    - ❑ MODERATELY SUPPORT
    - ❑ NEITHER SUPPORT NOR OPPOSE
    - ❑ MODERATELY OPPOSE
    - ❑ STRONGLY OPPOSE
    - ❑ DON'T KNOW

    Would you participate in an antlerless-only season before the regular firearm season ? (Check one).

    - ❑ YES
    - ❑ NO

18. If the MnDNR were to adopt new deer management regulations, would you prefer to see them applied…..? (Check one).

    - ❑ STATEWIDE
    - ❑ THE ZONE AND PERMIT AREA YOU HUNT
    - ❑ THE ZONE YOU HUNT BUT ONLY IN A PERMIT AREA YOU DON'T HUNT
    - ❑ ONLY IN A ZONE YOU DON'T HUNT
    - ❑ NOT AT ALL

Appendix A: Survey Instrument Without Choices

19. Overall, people have different reasons for supporting or opposing new hunting regulations. Please tell us how important to you each of the following reasons is for supporting or opposing new hunting regulations.

When I consider proposed hunting regulation changes, it is important to me that these factors are considered: (Please circle one number for each item)

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Don't Know
Do **not** result in an increased total buck harvest.	1	2	3	4	5	9
Do **not** result in an increased doe harvest.	1	2	3	4	5	9
Increase DNR's ability to control the deer population.	1	2	3	4	5	9
Increase hunting opportunity for bowhunters.	1	2	3	4	5	9
Increase hunting opportunity for muzzleloader hunters.	1	2	3	4	5	9
Increase hunting opportunity for firearm hunters.	1	2	3	4	5	9
Increase **my own** chances of taking an antlered buck.	1	2	3	4	5	9
Increase **my own** chances of taking a large antlered buck.	1	2	3	4	5	9
Increase **my own** chances of taking antlerless deer.	1	2	3	4	5	9
Encourage new people to take up deer hunting.	1	2	3	4	5	9
Lead to a better public image of hunters and hunting.	1	2	3	4	5	9
Protect the interests of farmers and other landowners.	1	2	3	4	5	9
Protect areas so that deer do not cause forest and other habitat damages	1	2	3	4	5	9
Reduce crowding of hunters on public lands.	1	2	3	4	5	9

Appendix A: Survey Instrument Without Choices

Section C. Past Hunting Experience

20. Including last year, how many years have you hunted deer in Minnesota? _____ Years

21. What hunting method do you primarily use? (check one)

- ❑ DEER DRIVE WITH LESS THAN 5 PEOPLE
- ❑ DEER DRIVE WITH 5 OR MORE PEOPLE
- ❑ TREE STAND
- ❑ GROUND BLIND
- ❑ STILL HUNTING OR STALKING
- ❑ OTHER (PLEASE LIST):

_____

22. Which statement best characterizes where you hunt? (check one)

- ❑ I ALMOST NEVER HUNT THE SAME AREA EVERY YEAR
- ❑ I CHANGE MY HUNTING LOCATION EVERY 1 TO 2 YEARS
- ❑ I CHANGE MY HUNTING LOCATION EVERY 3 TO 5 YEARS
- ❑ I TYPICALLY HUNT THE SAME AREA EVERY YEAR

Section D. Preferences for Deer Season Options

We will now present you with 5 deer management scenarios that are occurring in various permit areas throughout Minnesota. These are current issues that will need to be addressed in the coming years. Within each scenario, you will be presented 3 management options. These 3 options represent only a subset of all possible management options. Some hunters will receive surveys with the same options, while others will receive surveys with different options. The options presented to you have been randomly selected from the total set of choices. In the end, when all the surveys are combined, we will be able to create a ranked list of management options.

In all cases, the scenarios are real and the management response is possible. To the best of your ability, please read the scenarios and choices very carefully and answer the following questions as if the scenario exists in the area you hunt most often.

Appendix A: Survey Instrument Without Choices

Comments: We are interested in your views about deer hunting in Minnesota. Please write additional comments below. The results of this survey will be available next year on the Minnesota Department of Natural Resources Web site, www.dnr.state.mn.us.

THANK YOU FOR YOUR HELP!

Please return the completed questionnaire in the enclosed self-addressed, stamped envelope

Appendix B: Scenarios and Choices

Scenario 1: The deer population is stable and within population goals. It is currently being managed so that either-sex licenses are available over the counter and hunters can also buy additional antlerless permits. Based on requests from some hunters, this area will be managed in the future for more mature bucks.

Please read the following deer season options and rank them from your most preferred to least preferred. Write a "1" by your most preferred, a "2" by your next most preferred, and a "3" by your least preferred option among the three.

Choice (S1C1) _____

- **Buck** licenses would be available **through a lottery**
- **Antlerless** licenses would be available **over the counter**
- Shooting **bucks** and **antlerless deer** for another hunter would be **legal**
- There would be **fewer buck licenses** available because hunters **could shoot bucks** for each other
- Hunters who failed to draw a buck license could hunt antlerless deer and would gain "buck" preference for future years
- Hunters could expect to draw a buck license every 2 to 3 years

Choice (S1C2) _____

- **Buck** licenses would be available **through a lottery**
- **Antlerless** licenses would be available **over the counter**
- Shooting **bucks** for another hunter would be **illegal**
- There would be **more buck licenses** available because hunters **could not shoot bucks** for each other
- Hunters who failed to draw a buck license could hunt antlerless deer and would gain "buck" preference for future years
- Hunters could expect to draw a buck license every 1 to 2 years

Choice (S1C3) _____

- **Either-sex and antlerless licenses** would be available **over the counter**
- Only bucks that had at least **one three point antler** would be legal to harvest
- The antler point regulation would protect 50% of the 1½ year old buck population
- Shooting a buck for another hunter would be **illegal** because a lower percentage of 1½ year old bucks would be protected
- Hunters could still shoot antlerless deer for each other

Choice (S1C4) _____

- **Either-sex and antlerless licenses** would be available **over the counter**
- Only bucks that had at least **one four point antler** would be legal to harvest
- The antler point regulation would protect 75% of the 1½ year old buck population
- Shooting a bucks and antlerless deer for another hunter would be **legal** because a higher percentage of 1½ year-old bucks would be protected

Choice (S1C5) _____

- **Either-sex and antlerless licenses** would be available **over the counter**
- Only bucks that had at least **one four point antler** would be legal to harvest

- The antler point regulation would protect 75% of the 1½ year old buck population
- Shooting a buck for another hunter would be **illegal** so that the **maximum number of bucks could be protected**
- Hunters could still shoot antlerless deer for each other

Choice (S1C6) _____

- **Either-sex and antlerless licenses** would be available **over the counter**
- The season length would be comparable to previous years
- The firearm season would begin in mid-November, which is one week later than the current framework
- Shooting a buck for another hunter would **illegal** so more bucks could be protected

Choice (S1C7) _____

- I would not hunt deer in the area if the regulations were changed

Appendix B: Scenarios and Choices

Scenario 2: The deer population is currently **25%** above the management goal. The current strategy of allowing five deer per hunter has not been effective in lowering the deer population. A new strategy needs to be developed that lowers the deer population to goal levels within 3 to 5 years.

Please read the following deer season options and rank them from your most preferred to least preferred. Write a "1" by your most preferred, a "2" by your next most preferred, and a "3" by your least preferred option among the three.

Choice (S2C1) _____

- **Antlerless** licenses would be available over the counter
- **Buck** licenses would be available through a lottery
- Shooting **bucks** and **antlerless deer** for another hunter would be **legal**
- There would be **fewer buck licenses** available because hunters could shoot bucks and antlerless deer for each other
- Hunters who failed to draw a buck license could hunt antlerless deer and would gain "buck" preference for future years
- Hunters could expect to draw **a buck license every 2 to 3 years**

Choice (S2C2) _____

- **Antlerless** licenses would be available over the counter
- **Buck** licenses would be available through a lottery
- Shooting **bucks** for another hunter would be **illegal** but hunters could shoot antlerless deer for each other
- There would be **more buck licenses** available because hunters could not shoot bucks for each other
- Hunters who failed to draw a buck license could hunt antlerless deer and would gain "buck" preference for future years
- Hunters could expect to **draw a buck license every 1 to 2 years**

Choice (S2C3) _____

- **Either-sex and antlerless licenses** would be available over the counter
- Only bucks that had at least **one three point antler** would be legal to harvest
- The antler point regulation would protect 50% of the 1½ year old buck population
- Shooting a buck for another hunter would be **illegal** because a lower percentage of 1½ year old bucks would be protected
- Hunters could still shoot antlerless deer for each other

Choice (S2C4) _____

- **Either-sex and antlerless licenses** would be available over the counter
- Only bucks that had at least **one four point antler** would be legal to harvest
- The antler point regulation would protect 75% of the 1½ year old buck population
- Shooting bucks for another hunter would be **legal** because a higher percentage of 1½ year-old bucks would be protected
- Hunters could shoot antlerless deer for each other

Choice (S2C5) _____

- **Either-sex and antlerless licenses** are available over the counter
- The area will be managed as "Earn-A-Buck"
- You must tag an antlerless deer prior to tagging a buck
- The antlerless deer can be taken in any deer season so long as it is killed first

Choice (S2C6) _____

- **Either-sex and antlerless licenses** are available over the counter
- The length of the deer season would be comparable to previous years
- There would be an antlerless only firearms season for 2 days in mid-October

Choice (S2C7) _____

- I would not hunt deer in the area if the regulations were changed

Appendix B: Scenarios and Choices

Scenario 3: The deer population is currently **50%** above the management goal. The current strategy of allocating five deer per hunter has not been effective in lowering the deer population. A new strategy needs to be developed that lowers the deer population to goal levels within 3 to 5 years. Please look at the following panel and choose one of the available options.

Please read the following deer season options and rank them from your most preferred to least preferred. Write a "1" by your most preferred, a "2" by your next most preferred, and a "3" by your least preferred option among the three.

Choice (S3C1) _____

- **Buck** licenses would be available through a lottery
- **Antlerless** licenses would be available over the counter
- Shooting **bucks** and antlerless deer for another hunter would be **legal**
- There would be fewer buck licenses available because hunters could shoot deer for each other
- Hunters who failed to draw a buck license could hunt antlerless deer and would gain "buck" preference for future years
- Hunters could expect to **draw a buck license every 2 to 3 years**

Choice 2 (S3C2) _____

- **Buck** licenses would be available through a lottery
- **Antlerless** licenses would be available over the counter
- Shooting **bucks** for another hunter would be **illegal**
- There would be more buck permits available because hunters could not shoot deer for each other
- Hunters who failed to draw a buck license could hunt antlerless deer and would gain "buck" preference for future years
- Hunters could expect to **draw a buck license every 1 to 2 years**

Choice (S3C3) _____

- **Either-sex and antlerless licenses** would be available over the counter
- Only bucks that had at least **one three point antler** would be legal to harvest
- The antler point regulation would protect 50% of the 1½ year old buck population
- Shooting a buck for another hunter would be **illegal** because a lower percentage of 1½ year old bucks would be protected
- Hunters could still shoot antlerless deer for each other

Choice (S3C4) _____

- **Either-sex and antlerless licenses** would be available over the counter
- Only bucks that had at least **one four point antler** would be legal to harvest
- The antler point regulation would protect 75% of the 1½ year old buck population
- Shooting a buck for another hunter would be **legal** because a higher percentage of 1½ year-old bucks would be protected
- Hunters could still shoot antlerless deer for each other

Choice (S3C5) _____

- **Either-sex and antlerless licenses** are available over the counter
- The area will be managed as "Earn-A-Buck"
- You must tag an antlerless deer prior to tagging a buck
- The antlerless deer can be taken in any deer season so long as it is killed first

Choice (S3C6) _____

- **Either-sex and antlerless licenses** are available over the counter
- The length of the deer season would be comparable to previous years
- There would be an antlerless only firearm season for 2 days in mid-October

Choice (S3C7) _____

- I would not hunt deer in the area if the regulations were changed

Appendix B: Scenarios and Choices

Scenario 4: The deer population is stable or below population goal and the harvest rate on 1½ year-old bucks is high. Consequently, a low percentage of the buck population lives beyond 1½ years. Currently, buck licenses are available over the counter, either-sex permits are available through the lottery, and hunters can only kill one deer. Based on requests from hunters, this area may be managed in the future to protect young bucks and allow them to get to the next age class.

Please read the following deer season options and rank them from your most preferred to least preferred. Write a "1" by your most preferred, a "2" by your next most preferred, and a "3" by your least preferred option among the three.

Choice (S4C1) _____

- **Buck and antlerless** licenses would be available through **a lottery**
- Shooting bucks and antlerless deer for another hunter would be **legal**
- There would be **fewer** buck permits available because hunters could shoot bucks for each other
- Hunters who failed to draw a buck or antlerless license would not be able to hunt but would gain preference for future years
- Hunters could expect to draw a buck license every 2 to 3 years

Choice (S4C2) _____

- **Buck and antlerless** licenses would be available through **a lottery**
- Shooting bucks for another hunter would be **illegal**
- There would be **more** buck permits available because hunters could not shoot bucks for each other
- Hunters who failed to draw a buck or antlerless license would not be able to hunt but would gain preference for future years
- Hunters could expect to draw a buck license every 1 to 2 years

Choice (S4C3) _____

- **Buck** licenses would be available **over the counter**
- **Antlerless licenses** would be available through **a lottery**
- Only bucks that had at least **one three point antler** would be legal to harvest
- The antler point regulation would protect 50% of the 1½ year old buck population
- Youth hunters must abide by the antler point regulation but could take an antlerless deer without making application
- Shooting a buck for another hunter would be **illegal** because a lower percentage of 1½ year old bucks would be protected

Choice (S4C4) _____

- **Buck** licenses would be available **over the counter**
- **Antlerless licenses** would be available through **a lottery**
- Only bucks that had at least **one four point antler** would be legal to harvest
- The antler point regulation would protect 75% of the 1½ year old buck population
- Youth hunters must abide by the antler point regulation but could take an antlerless deer without making application

- Shooting a buck for another hunter would be **legal** because a higher percentage of 1½ year-old bucks would be protected

Choice (S4C5) _____

- **Buck** licenses would be available **over the counter**
- **Antlerless licenses** would be available through **a lottery**
- Only bucks that had at least **one four point antler** would be legal to harvest
- The antler point regulation would protect 75% of the 1½ year old buck population
- Youth hunters could shoot sub-legal bucks
- Shooting a buck for another hunter would be **legal** because a high percentage of 1½ year old bucks are protected, **except sub-legal bucks could not be killed for a youth hunter**

Choice (S4C6) _____

- **Buck** licenses would be available **over the counter**
- **Antlerless licenses** would be available through **a lottery**
- The season length would be comparable to previous years
- The firearm season would begin in mid-November, which is one week later than the current framework
- Shooting a buck for another hunter would **illegal** so more bucks could be protected

Choice (S4C7) _____

- I would not hunt deer in the area if the regulations were changed

Appendix B: Scenarios and Choices

Scenario 5: Antler point restriction regulations are currently being used by several states to encourage antlerless harvest and protect 1½ year old bucks. The number of hunters and sporting organizations interested in antler-point restriction regulations is increasing in Minnesota. While the harvest rate of bucks varies in Minnesota, the majority of the bucks killed during the firearm season are 1½ years old. Typically, 50 to 75% of the 1½ year old buck population is harvested during the firearm season.

Please read the following deer season options and rank them from your most preferred to least preferred. Write a "1" by your most preferred, a "2" by your next most preferred, and a "3" by your least preferred option among the three.

Choice (S5C1) _____

- **Either-sex and antlerless licenses** would be available **over the counter**
- Only bucks that had at least **one three point antler** would be legal to harvest
- The antler point regulation would protect 50% of the 1½ year old buck population
- Youth hunters would have to abide by the same antler restriction regulation
- Shooting a buck for another hunter would be **illegal** because a lower percentage of 1½ year old bucks would be protected
- Hunters could still shoot antlerless deer for each other

Choice (S5C2) _____

- **Either-sex and antlerless licenses** would be available **over the counter**
- Only bucks that had at least **one four point antler** would be legal to harvest
- The antler point regulation would protect 75% of the 1½ year old buck population
- Youth hunters would have to abide by the same antler restriction regulation
- Shooting a buck for another hunter would be **legal** because a high percentage of 1½ year old bucks are protected

Choice (S5C3) _____

- **Either-sex and antlerless licenses** would be available **over the counter**
- Only bucks that had at least **one three point antler** would be legal to harvest
- The antler point regulation would protect 50% of the 1½ year old buck population
- Youth hunters could shoot any antlered buck
- Shooting a buck for another hunter would be **illegal** because fewer bucks are protected and hunters **could not shoot sub-legal bucks for youth hunters**
- Hunters could still shoot antlerless deer for each other

Choice (S5C4) _____

- **Either-sex and antlerless licenses** would be available **over the counter**
- Only bucks that met a minimum antler point would be legal to harvest (either 3 or 4 points on one side)
- The antler point regulation would protect 75% of the 1½ year old buck population
- Youth hunters could shoot any antlered buck
- Shooting a buck for another hunter would be **legal** because a high percentage of 1½ year old bucks are protected, **except sub-legal bucks could not be killed for a youth hunter**
- Hunters could still shoot antlerless deer for each other

Choice (S5C5) _____

- **Either-sex and antlerless licenses** would be available **over the counter**
- Only bucks that had at least **one four point antler** would be legal to harvest
- The antler point regulation would protect 75% of the 1½ year old buck population
- Youth hunters would have to abide by the same antler restriction regulation
- Shooting a buck for another hunter would be **illegal** but hunters could shoot antlerless deer for each other

Choice (S5C6) _____

- While I am generally opposed to antler point restriction regulations, I would still hunt the same area if they were enacted

Choice (S5C7) _____

- I would not hunt deer in the area if the regulations were changed