

Kansas Department of Wildlife, Parks, and Tourism Survey of Landowners on Opinions About Deer Populations in Kansas



December 2017



Docking Institute of Public Affairs
600 Park Street
Fort Hays State University
Hays, Kansas 67601

785-628-4197
www.fhsu.edu/docking

Michael S. Walker
Director

Jian Sun, Ph.D.
Assistant Director

Luis Montelongo, M.B.A.
Research Coordinator

Lynette Ottley
Administrative Specialist

Brett Zollinger, Ph.D.
Senior Policy Fellow

The staff of the **Docking Institute of Public Affairs** and its
University Center for Survey Research are dedicated to
serving the people of Kansas and surrounding states.

Please do not hesitate to contact our staff with questions, comments or for assistance.

**Kansas Department of Wildlife, Parks, and Tourism
Survey of Landowners on Opinions
About Deer Populations in Kansas**

Report Prepared by

**Brett Zollinger, Ph.D.
Senior Policy Fellow**

**Docking Institute of Public Affairs
Fort Hays State University
(785) 628-4197
www.fhsu.edu/docking**

**Copyright © December 2017
All Rights Reserved**

This publication was prepared by the Docking Institute of Public Affairs. The statements, findings, conclusions, and recommendations are those of the authors and do not necessarily reflect the views of the Kansas Department of Wildlife, Parks and Tourism.

List of Contents

Executive Summary	1
Methods.....	7
Survey Instrument.....	8
Trend Analysis	9
Regional Analysis	15
Appendix 1: Survey Questionnaire	36
Appendix 2: Comparison of key sociodemographic characteristics in the 2006 and the 2017 final samples	50

List of Tables

Table 1. End of questionnaire open-ended comments coded into themes	14
Table 2. Responses by deer management unit (DMU) and categorization of regional response.....	16
Table 3. Mean deer density (expressed as individuals/100 square miles) reported by land operators for Kansas farm and ranch operations in 2016. Estimates are evaluated by region and reported damage by deer.....	17
Table 4. Mean deer density (expressed as individuals/100 square miles) reported by land operators for Kansas farm and ranch operations in 2016. Estimates are evaluated by region and status of deer hunting on land	18
Table 5. Mean density of antlerless deer harvested (expressed as individuals harvested/100 square miles) reported by land operators for Kansas farm and ranch operations in 2016. Estimates are evaluated by region and reported damage by deer.....	19
Table 6. Perceived three-year change (2014-16) in area deer population by region and damage status (% of respondents).....	21
Table 7. Perceived three-year change (2014-16) in area deer population by region and hunting status (% of respondents).....	21
Table 8. Perceived one-year change in area deer population by region and damage status (% of respondents).	23
Table 9. Perceived one-year change in area deer population by region and hunting status (% of respondents).	23
Table 10. Quantity of deer wanted on farm or ranch by region and damage status (% of respondents).	24
Table 11. Quantity of deer wanted on farm or ranch by region and hunting status (% of respondents).	25
Table 12. General attitude toward presence of deer in area by region and damage status (% of respondents).	26
Table 13. General attitude toward presence of deer in area by region and hunting status (% of respondents).	26

List of Figures

Figure 1. Percentage of respondents who indicated deer caused damage on their land (1964 through 2017)	9
Figure 2. Land operator perception of the severity of crop damage caused by deer (2000 to 2017 surveys).....	10
Figure 3. Trend in quantity of deer wanted in the future (1964 to 2017)	11
Figure 4. Trends in quantity of deer wanted in the future among those reporting deer damage to operation and those reporting no damage from 1996 to 2017.....	12
Figure 5. Engage in deer habitat enhancements among those reporting deer damage and those reporting no damage	13
Figure 6. Map of Kansas with the associated Deer Management Units	15
Figure 7. Percent reporting deer damage by region.....	17
Figure 8. Percent reporting deer hunting occurred on their land last season by region.....	18
Figure 9. Perceived three year change in deer population (2014-2016) by region.....	20
Figure 10. Perceived one-year change in deer population by region.....	22
Figure 11. Quantity of deer wanted on farm or ranch by region	24
Figure 12. General attitudes about having deer on and around property by region.....	25
Figure 13. Among those who allow hunting, type of people allowed to hunt by region...28	
Figure 14. Percent of respondents reporting that deer hunters caused problems on land last deer season by region	29
Figure 16. Engage in deer habitat enhancements by region	30
Figure 17. Perception that mule deer populations in Kansas are declining by region of respondent	31
Figure 18. Perception that accidental killing of mule deer on a white-tailed deer permit is a common occurrence by region of respondent	32
Figure 19. Perception that intentional killing of mule deer without the appropriate permit is a common occurrence by region of respondent	33

Figure 20. Perception that fewer permits allowing the take of mule deer should be issued by region of respondent34

Figure 21. If additional protection for mule deer means less opportunity to take white-tailed deer, would still support additional protection by region of respondent35

**Kansas Department of Wildlife, Parks, and Tourism
Survey of Landowners on Opinions
About Deer Populations in Kansas**

**Survey Administered
May 2017 through June 2017**

Executive Summary

All univariate results reported in this executive summary can be found in detail in Appendix 1, which contains all questionnaire items and the relative frequency (percentage) distributions on discrete items and measures of central tendency for all continuous items. Trend analysis results reported in the executive summary are detailed in the body of the report with associated charts and discussion. Results by region outlined in this executive summary also are detailed in the body of the report with associated charts, tables, and discussion.

The primary objectives of this survey for the Kansas Department of Wildlife, Parks, and Tourism were to:

- Categorize landowners' perceptions of changes in deer populations
- Assess landowners' attitudes toward deer populations
- Obtain estimates of deer populations and the hunter harvest of deer on lands owned or operated by the survey respondent
- Assess perceived destructiveness of deer, and types and levels of damage incurred
- Assess landowners' knowledge and use of damage control and abatement techniques
- Determine landowners' support of deer hunting and deer population management
- Determine landowners' preference for species of deer and structure of population
- Assess prevalence of hunting leases, species leased for, and residency of hunters who lease

From analyses of survey results, we find that:

- There was a general trend of increasing damage reported by land operators from 1964 to 2000. However, this trend reached a plateau in 2000. Of particular interest is the considerable decrease in reported deer damage in 2003; nearly 10% less than the previous reporting period of 2000. The deer damage reported in 2006 (49.5%) was similar to that

reported in 2003 (50.0%), and the estimate of deer damage has moved slightly upward since then, with 53% reporting damage in 2017.

- Among the 53% of 2017 survey respondents who reported experiencing damage on their land caused by deer, 53% report light damage, and 28% report moderate damage. Compared to the early 2000s survey years, the percentage reporting substantial and moderate damage has declined, with a corresponding increase in the percentage reporting only light damage in 2017.
- Overall, a trend of more respondents wanting fewer deer is evident from 1964 to 1997. However, the 20-year trend finds increasing percentages of respondents wanting more deer, from 1997 to 2017. Respondent's desire for deer between 2003 and 2006 appears relatively unchanged. Still, among those wanting at least some deer, the single largest percentage, about 50%, in 2017, want the deer population to stay the same.
- Analyzing data from 1996 to 2017, it is clear that respondents reporting damage by deer expressed a greater desire to have fewer deer than those respondents who did not experience damage. Similarly, in every year over that time period respondents who did not report damage by deer had a greater desire for the same amount of deer around their area than those respondents who reported damage. Another trend to note is a slight but steady increase over those years in desire for more deer among both respondents who reported damage and those not reporting damage by deer.
- Not surprisingly, those who report no deer damage are more likely to engage in each of the five forms of habitat management enhancement queried about in the survey. Interestingly, among those who do report damage from deer, some portion also engage in habitat enhancements ranging from as high as about 32% placing feeders out for deer to as low as 5% participating in deer management cooperation with neighbors.
- Regardless of the presence of damage reported by respondents, mean deer density estimates were greater for the eastern region than the western region.
- Throughout the state, mean deer density estimates were slightly greater among respondents who did not receive damage by deer than those who reported damage, but a t-test finds no statistically significant difference ($t = -1.37, p = 0.17$). Mean deer density estimates in the eastern region are very similar among respondents who did not indicate damage from deer and those respondents who reported damage. In the western region, mean deer density estimates are somewhat higher among respondents who reported damage than those who did not indicate damage, but this difference was not significant ($t = -1.25, p = 0.21$).
- Statewide, 73% report that deer hunting occurred on their land during last deer season. The percentage in the east was slightly higher, 76%, while it was slightly lower in the west, 69%.

- Mean deer density estimates were analyzed by region and whether respondents reported that deer hunting occurred on their property. Throughout the state, mean deer density estimates were somewhat higher for respondents who operated land where deer hunting occurred than among those operating land where deer hunting did not occur, but this difference is not statistically significant ($t = .815, p = 0.416$). The same pattern holds within the eastern and the western regions.
- The mean density of antlerless deer harvested was higher in the east than in the west.
- Throughout the state, the mean density of antlerless deer harvested was similar among respondents who did not receive damage by deer and those who reported damage ($t = 0.79, p = 0.94$). The mean density of antlerless deer harvested from the eastern region also was similar among respondents who did not indicate damage by deer and those who reported damage ($t = 0.73, p = 0.47$), and the same is the case in the western region ($t = -0.076, p = 0.94$).
- A slightly higher percentage of those in the east report that deer population stayed the same over the most recent three years of 2014-2016 (34%) than those in the west (29%), whereas, a higher percentage of respondents in the west report an increase in population (30%) than in the east (24%).
- Throughout the state, 36.5% of respondents who reported damage by deer reported that the deer population in their area had increased over the three years 2014-2016. Of those who did not report damage by deer, only 14.9% reported an increase in the deer population over the past three years. This pattern is also present within the eastern and western regions. Those who experienced damage by deer clearly are more likely to perceive a three-year increase in population while those who did not experience damage are more likely to perceive stability in the deer population.
- Throughout the state, 28.6% of respondents who reported deer hunting occurred on their land reported that the deer population has increased over the past three years. Over one-third (36.9%) of respondents reporting that deer hunting did not occur on their land reported that the deer population in their area has remained the same. Both the eastern region and the western region shared this pattern at 37.8% and 37.0%, respectively. Overall, those operating land on which hunting occurs are more likely to perceive a three-year increase in population than those who report no hunting occurs, while the latter group has a much higher percentage than the former answering “don’t know” when asked whether deer populations have increased, remained the same, or decreased.
- By far, the single largest percentage in the east (51%) and the west (48%) perceive that the population remains the same when asked to assess change over the past year only. A slightly lower percentage of those in the east report that population increased (17%) than those in the west (21%).

- Those who experienced damage tend to perceive a stable to increased deer population compared to a year ago, while those not experiencing damage tend to perceive a stable to decreased deer population.
- Throughout the state, the single largest percentage, 46.6%, who reported damage by deer report that the population has remained the same over the last year, and this is very similar to the percentage who report no damage and that the population has remained the same, 52.0%. This pattern holds in the eastern region and western regions, with the largest difference in the western region, where 43.8% of those with damage report a population that has remained the same compared to 53.9% who report no damage.
- Regardless of region and whether or not deer hunting is allowed on the land, the most frequent response was that the deer population had remained the same over the past year.
- The single largest percentage in both the east (43%) and the west (39%) prefer to have the same quantity of deer on their land in the future. In the east, slightly more prefer to have more deer (23%) than fewer deer (19%), while percentages of these two preferences in the west are essentially equally divided, with 21% wanting more and 22% wanting fewer.
- Throughout the state, among those who report damage effectively the same percentage want the same (32.7%) or fewer (31.4%) deer on their property, while the single largest percentage (49.4%) of those who report no damage want the same quantity of deer that they now have on their land. The same patterns exist within the east and the west regions.
- Throughout the state and in both east and west regions, the most frequent response was that respondents wanted the same amount of deer regardless of whether hunting occurred on the land. One-fourth of those who allow hunting want more deer, and when compared to those who report no hunting, this desire for more is about 10% higher in the east and about 13% higher in the west. Also, both in the east and the west among those who report no hunting when compared to those who do have hunting, there are uniformly higher percentages reporting they want no deer on their property or reporting “don’t know.”
- The single largest percentage of those in the east (49%) report enjoying deer on their land, while the single largest percentage in the west (40%) chose the answer option “I enjoy deer, but they cause problems at the same time.”
- Throughout the state, almost half (47.3%) of respondents who reported damage by deer also reported that they enjoy deer, but feel that deer cause problems at times. Of those who did not report damage by deer, well over half (61.0%) indicated that they enjoy having deer around. However, among those reporting no damage, there is a higher percentage in the east who enjoy having deer (67.7%) than in the west (52.6%). In both the eastern and western regions, almost half (46.8% and 48.6%, respectively) of respondents reporting that they experienced damage by deer also indicated that they enjoy deer, but feel deer cause problems at times.

- Throughout the state, the most frequent response was that respondents enjoy deer regardless of whether hunting occurred on the land. There are differences by region, with about 10% more in the east reporting they enjoy deer than in the west, and this difference is uniformly higher for both landowners who report hunting on their land (50.5% versus 40.4%, respectively) and those who report no hunting (45.7% versus 35.5%, respectively).
- From a series of questions assessing levels of particular types of deer damage, there are two types of damage that differ slightly by region, with 1) *damage to temporary electric fences* slightly more likely to be perceived as a small or large problem in the west than the east, and 2) *damage to windbreaks or shelter-belt trees* moderately more likely in the west than the east.
- Of a series of questions pertaining to particular ways landowners try to limit deer damage to property, there is slightly higher use of *KDWPT out of season control permits* in the west than in the east, and there is slightly higher use of *Walk in Hunting Area enrollment* in the west than in the east.
- Of a series of questions asking whether certain non-lethal means to reduce deer damage are used, there is only one difference by region, with *use of high fences* slightly higher in the west than in the east.
- The types of people allowed to hunt most frequently in both regions and statewide were immediate family members and invited friends/relatives. Compared to those in the east, about 13% more of those in the west allow hunting by “some who ask,” and about 10% more in the west allow “all who ask.” The groups allowed to hunt least frequently in both regions and statewide were hunting lessees and “others who pay.” Statewide, only 59 respondents use leased hunting or other paid hunting, which is about 8% (59/730) of the entire sample of landowners.
- Statewide only about 15% or 107 respondents report that deer hunters caused problems on their land. A slightly higher percentage in the west (17%) than in the east (12%) reported problems from deer hunters last season.
- Clearly those in the east are more likely to engage in every form of habitat management in the list, substantially so in the case of leaving salt or mineral licks for deer and with regard to placing feeders out for deer.
- A series of items asked about attitudes toward mule deer populations specifically (see the question 26 series in Appendix 1). The single largest percentage of landowners in both the east and the west regions answered “don’t know.” However, the “don’t know” response is more than double in the east (72%) of the level in west (34%). In addition, in the west there is substantially more who strongly agree or agree than in the east. In both regions, agreement is much higher than disagreement.

- Majority response in both the east (82%) and west (57%) is “don’t know” when asked whether accidental killing of mule deer on a white-tailed permit is a common occurrence. There is more agreement in the west than in the east, and more agreement than disagreement in both regions.
- Response by region to the statement “Intentional killing of mule deer without the appropriate permit is a common occurrence” is majority “don’t know” in both the east (82%) and west (55%). There is much higher agreement in the west than east, and there is more agreement than disagreement in both regions.
- 72% of those in the east answered “don’t know” when asked whether fewer permits allowing the take of mule deer should be issued, while only 40% in the west answered this way. Agreement is higher in the west than in the east.
- The final item in the Q26 series stated, “If additional protection for mule deer meant less opportunities to hunt white-tailed deer, I would support that additional protection.” A majority (59%) in the east answer “don’t know,” which, though much smaller, is also the single most frequent answer offered in the west (33%). Agreement is higher in the west than in the east, and agreement and disagreement are evenly distributed in the west.

Methods

Between early May 2017 and the third week in June 2017, the Docking Institute's Center for Survey Research conducted a survey of 3,497 randomly selected landowners in Kansas from lists maintained by the Kansas Department of Wildlife, Parks, and Tourism. Though initially planning on two waves of surveying, the Institute conducted a third wave in an attempt to boost response. The self-administered mail survey included return postage to the Docking Institute paid by the Docking Institute. The first copy of the survey was mailed with a cover letter briefly explaining the survey. Targeted respondents were offered an incentive of viewing the survey results posted online once the report is complete. Representatives of both the KDWP and the Docking Institute appeared on the cover letters, with an invitation to targeted respondents to contact either representative with any questions or concerns. Second and third follow-up waves were sent only to those who had not yet responded to a previous wave. Of 3,497 randomly selected landowners, 730 returned usable questionnaires, providing a response rate of 21%. Non-respondent bias was not assessed. Wave 1 yielded about 64% of the final response. Wave 2 yielded about 30% of the response, with wave 3 yielding the final 6% of response.

The 2017 deer survey sampling frame and administration process described above differed somewhat from the frame and administration process for this survey when administered in 2000, 2003, and 2006 (surveying continued into early 2007, but since the bulk of response was from 2006, that year will be used throughout to refer to that survey period). The first year in which the Docking Institute assisted KDWP in carrying out the deer survey was 2000; methodology used in surveys prior to 2000 is unknown -- but likely is accessible from KDWP records. In 2000, 2003, and 2006 survey years, a list of agricultural operators maintained by the Kansas Agricultural Statistics Service (KAS) was used as the sampling frame. Two or three waves (depending on year) of a self-administered mail survey were mailed from the offices of KAS on behalf of the Docking Institute's Center for Survey Research to a sample of land operators from all counties in Kansas. The number of land operators sampled from each county was proportionate to the total number of land operators in the county according to KAS lists. Signatures of both the assistant secretary of the Kansas Department of Wildlife and Parks (KDWP) and the director of the Docking Institute appeared on the cover letters.

Because there is a desire to conduct trend analysis with this 2017 deer survey as the most recent data point, it is important to assess how similar the different sampling frames and administration processes were in reaching the same profile of landowner. Appendix 2 shows that the samples from 2006 year and the 2017 are very comparable on three sociodemographic characteristics of the final samples in those two survey years. The 2006 sample was compared to the 2017 sample on these three items: number of years owned/operated the land in question on the survey, approximate percentage of households net income derived from the agricultural products produced from this land, and type of location where the respondent resides.

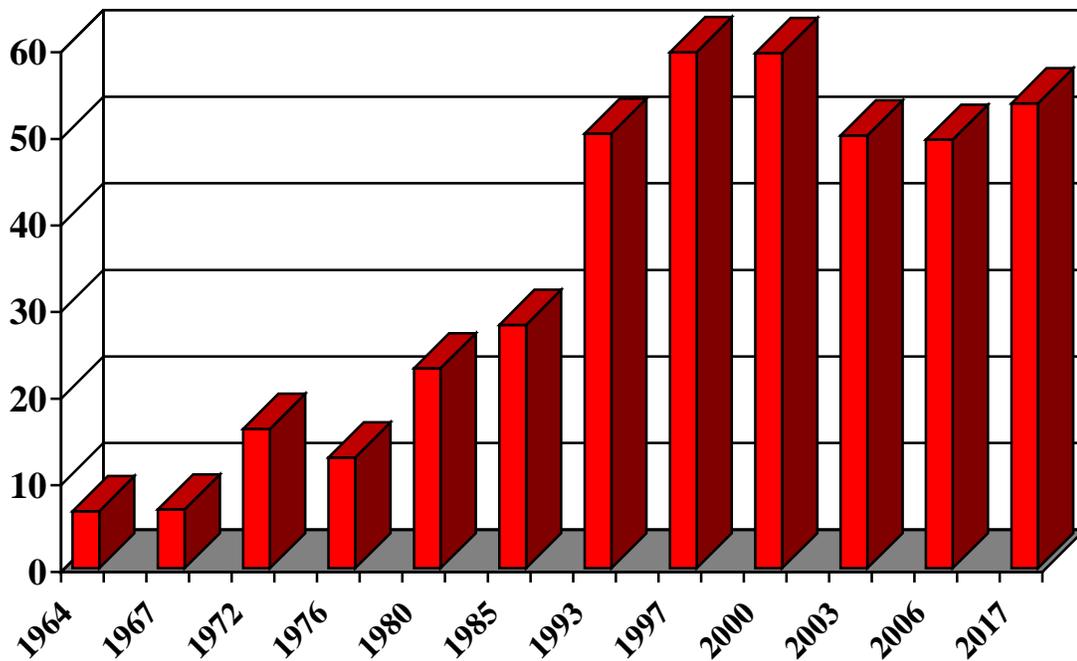
Survey Instrument

The Docking Institute and the KDWPT agreed on the survey items used. There were substantial revisions and additions to the 2017 survey compared to the survey years 2000, 2003, and 2006. It was the responsibility of KDWPT to identify information areas and objectives of the survey. It was the responsibility of the Docking Institute to develop survey items that were technically correct and without bias. Question wording and the design of the survey instrument are the joint property of the Docking Institute and KDWPT and are not to be used for additional surveys unless written permission is granted by both entities. Appendix 1 contains the questionnaire and either percentages or measures of central tendency of overall response.

Trend Analyses

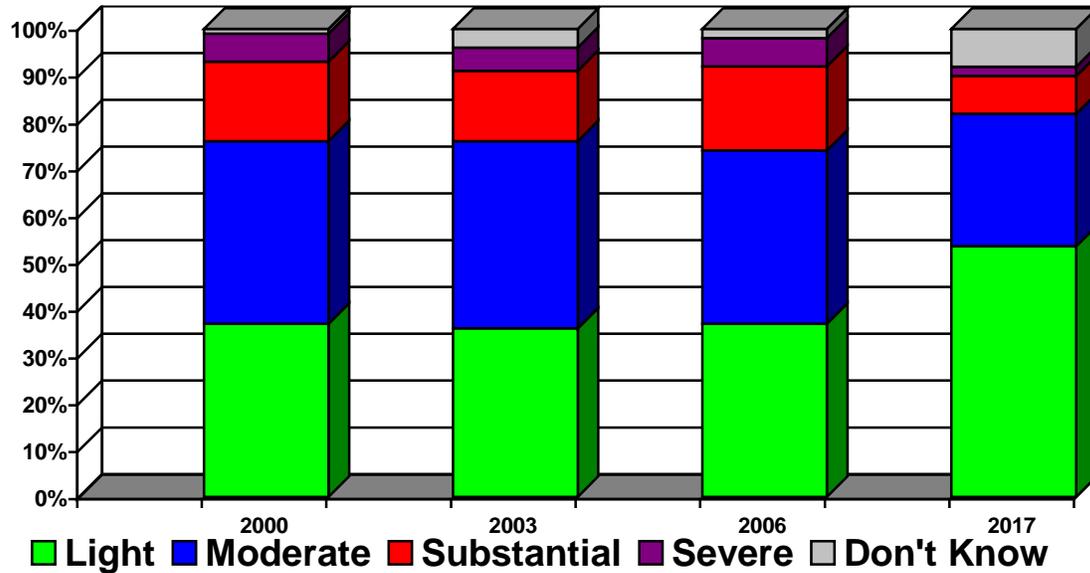
KDWPT has conducted a survey on land operator opinions about deer for several years, and was interested in comparing the results of items from the present survey to past results. An item of substantial interest is trends in deer damage experienced by land operators (see question 5 in Appendix 1). Figure 1 demonstrates a general trend of increasing damage reported by land operators from 1964 to 2000. However, this trend reached a plateau near 2000. Of particular interest is the considerable decrease in reported deer damage in 2003; nearly 10% less than the previous reporting period of 2000. The deer damage reported in 2006 (49.5%) was similar to that reported in 2003 (50.0%), and the estimate of deer damage has moved upward since then, with the 53% reporting damage in 2017.

Figure 1. Percentage of respondents who indicated deer caused damage on their land (1964 through 2017)



Of those 2017 survey respondents who reported experiencing damage on their land caused by deer, 53% report light damage, and 28% report moderate damage (see question 7 in Appendix 1). Compared to the early 2000s survey years, the percentages reporting substantial and moderate damage have declined, with a corresponding increase in the percentage reporting only light damage, as the 2017 survey year of Figure 2 shows. Results on this item from 2001, 2003, and 2006 were quite similar to one another. Thus, reports of substantial and severe damage were relatively high in the early 2000s, and remained fairly constant from 2000 to 2006.

Figure 2. Land operator perception of the severity of crop damage caused by deer (2000 to 2017 surveys)



Among those wanting at least some deer on their land, trends in *quantity of deer wanted in the future* since 1964 appear in Figure 3. The 2017 survey again asked respondents this question (see question 3 in Appendix 1). Overall, a trend of more respondents wanting fewer deer is evident from 1964 to 1997. However, the 20-year trend finds increasing percentages of respondents wanting more deer, from 1997 to 2017. Respondent's desire for deer between 2003 and 2006 appears relatively unchanged. Still, among those wanting at least some deer, the single largest percentage, about 50%, in 2017 want the deer population to stay the same.

Figure 3. Trend in quantity of deer wanted in the future (1964 to 2017)

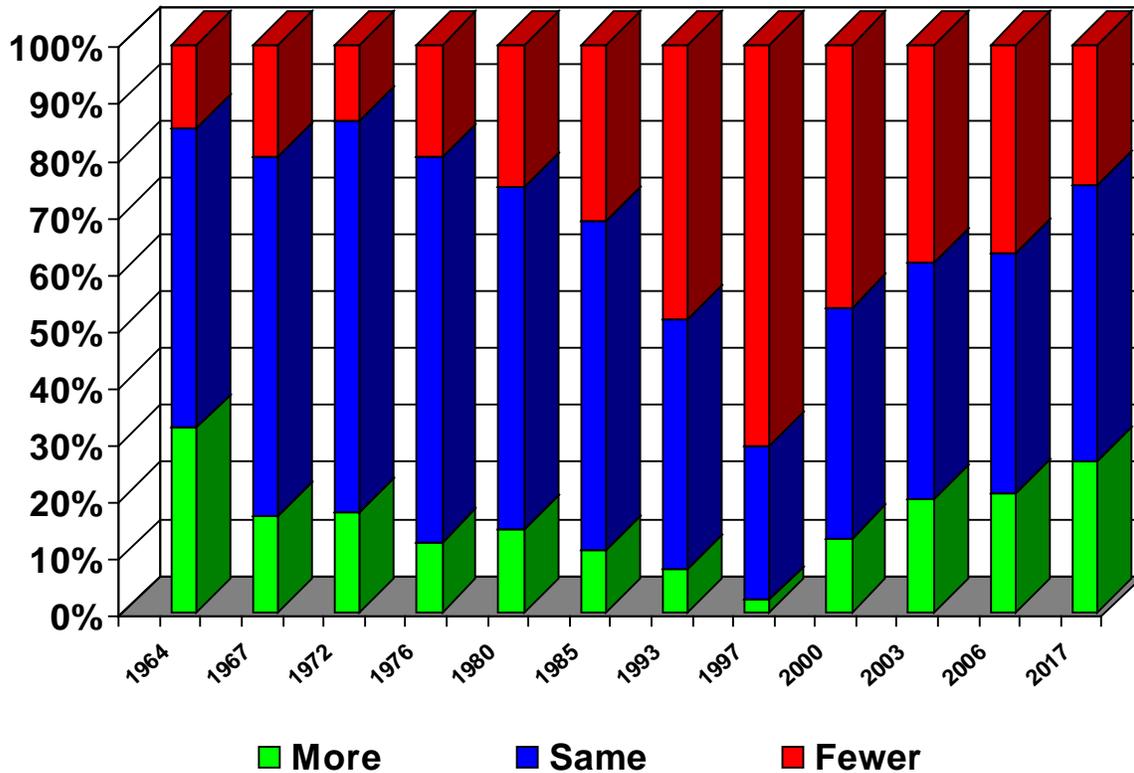
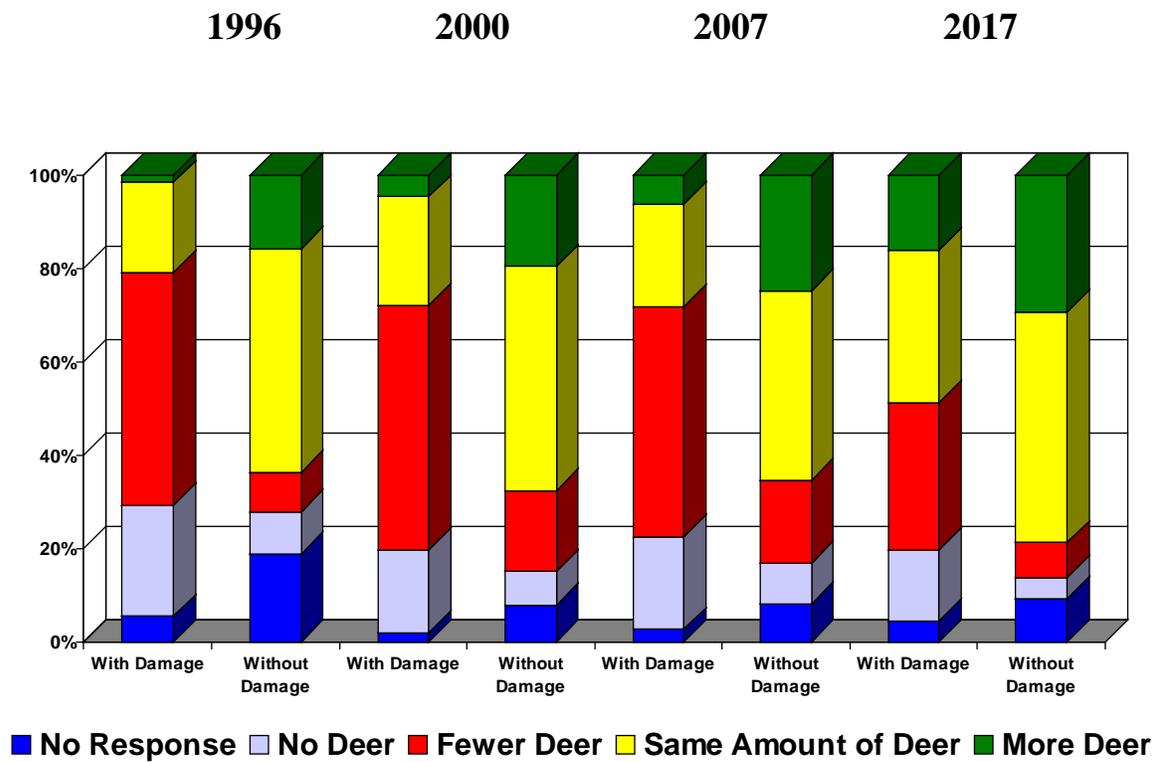


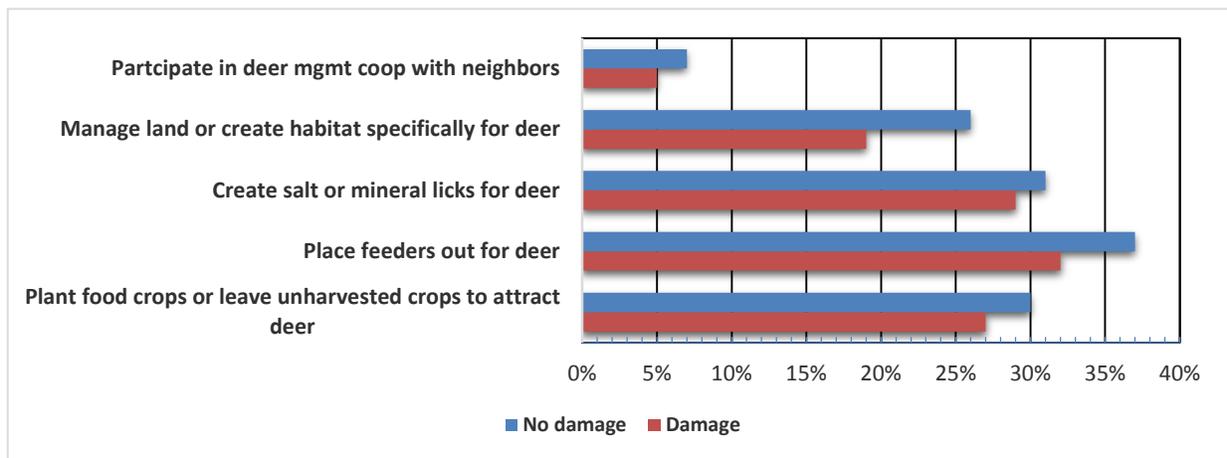
Figure 4 shows trends between 1996 and 2017, comparing the quantity of deer wanted on the property between respondents who reported damage and those who did not report damage. In all years, it is clear that respondents reporting damage by deer expressed a greater desire to have fewer deer than those respondents who did not experience damage. Similarly, in every year, respondents who did not report damage by deer had a greater desire for the same amount of deer around their area than those respondents who reported damage. Another trend to note is a slight but steady increase over the years in the desire for more deer among both respondents who reported damage and those not reporting damage by deer. Finally, those wanting the same amount of deer among respondents who reported damage appear to be slightly increasing throughout the years.

Figure 4. Trends in quantity of deer wanted in the future among those reporting deer damage to operation and those reporting no damage from 1996 to 2017



It is interesting to know whether landowners tend to engage in certain habitat management enhancements that may result in higher presence of deer. Five particular forms of habitat management enhancement were presented to respondents, and they were asked to indicate whether on their land: 1) I do this, 2) someone else does this, or 3) no one does this (see the question 22 series in Appendix 1). Figure 5 shows those particular forms of habitat management offered to respondents. The combined percentage of those who answered, “I do this” or “someone else does this” is shown in Figure 5. Further, this combined percentage of affirmative response is graphed for those who do not report damage and those who do report deer damage to their land. Not surprisingly, those who report no deer damage are more likely to engage in each of the forms of habitat management enhancement mentioned. Interestingly, among those who do report damage from deer, some portion also engage in habitat enhancements ranging from as high as about 32% placing feeders out for deer to as low as 5% participating in deer management cooperation with neighbors.

Figure 5. Engage in deer habitat enhancements among those reporting deer damage and those reporting no damage



Before turning to region-level analyses, Table 1 shows results from all respondents when offered an open-ended question at the very end of the questionnaire (see Q39), which stated “Please provide any additional comments you have about deer-related issues here.” Table 1 includes results from this item when responses are coded into thematic areas. The “Percent” column should be used as a measure of how many of the entire set of respondents offered a comment. The “Valid Percent” column is relative frequency of types of comments received among those who did offer a comment. Not surprisingly, certain themes to some extent contradict other themes. For example, there is both a theme of encouraging more out of state hunters, and there is a theme of limiting out of state hunters. The most often occurring theme (valid percent of 21.1) is needing more game wardens and hunting restrictions along with comments about the need to reduce poaching and enforce no hunting access.

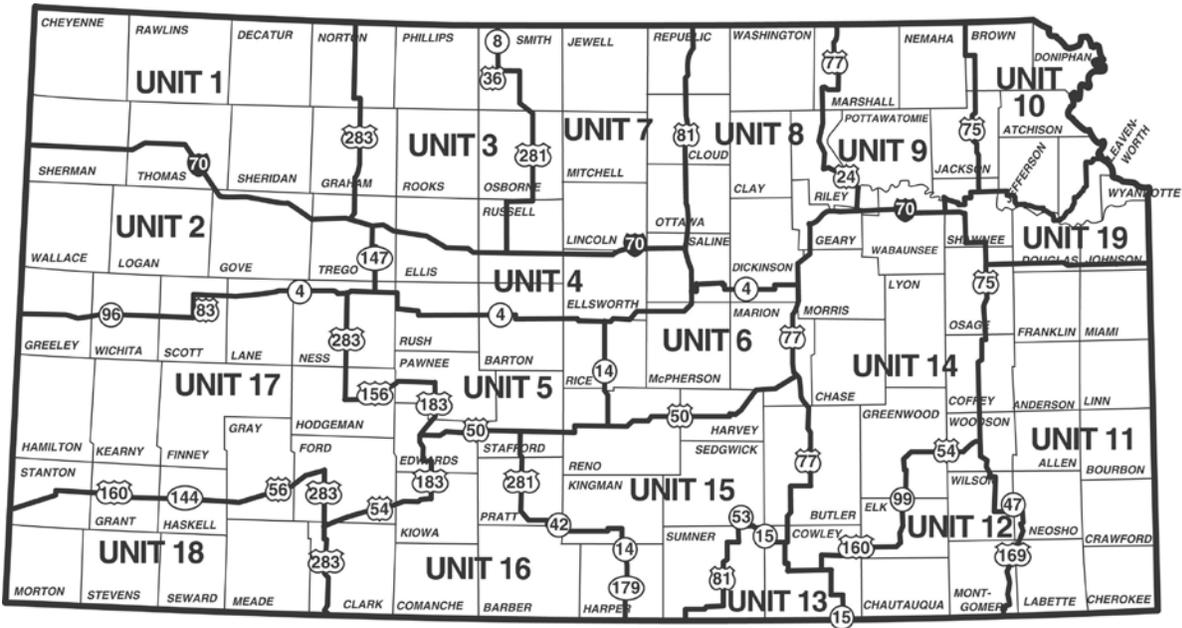
Table 1. End of questionnaire open-ended comments coded into themes

	n	%	Valid %
Have fewer permit restrictions, cheaper permits	25	3.4	11.2
Encourage out of state hunting and make rifle season longer to reduce deer population	17	2.3	7.6
Reduce vehicle accidents from deer	30	4.1	13.5
Need more game wardens and hunting restrictions/ reduce poaching, no hunting on land	47	6.4	21.1
Limiting out of state tags, raising prices, outfitters are overhunting	27	3.7	12.1
More regulations on permits issued, more expensive permits/deer population has decreased	31	4.2	13.9
Landowners should be compensated for property damage	6	0.8	2.7
Wildlife damage to property, attract mountain lions	27	3.7	12.1
Not sure of deer population on their land	4	0.5	1.8
Other	9	1.2	4.0
TOTAL	223	30.5	100

Regional Analyses

The following section reports on responses relative to specific regions of Kansas. Regions were classified as east and west, and respondents were assigned to a region based upon the deer management unit (DMU) their land was located (Table 2 – next page). Beginning in 2017, KDWPT preferred to draw random samples of equal size (n=185 per DMU) for targeting from each of the 19 Department DMUs. Importantly, with final DMU sample sizes ranging from 25 to 51 in 2017, the sampling margins of error at the DMU level range from +/-14% (n=25) to +/-20% (n=51). With such large margins of error around DMU-level sample estimates, regional analyses are emphasized in this report over DMU-level comparisons.

Figure 6. Map of Kansas with the associated Deer Management Units



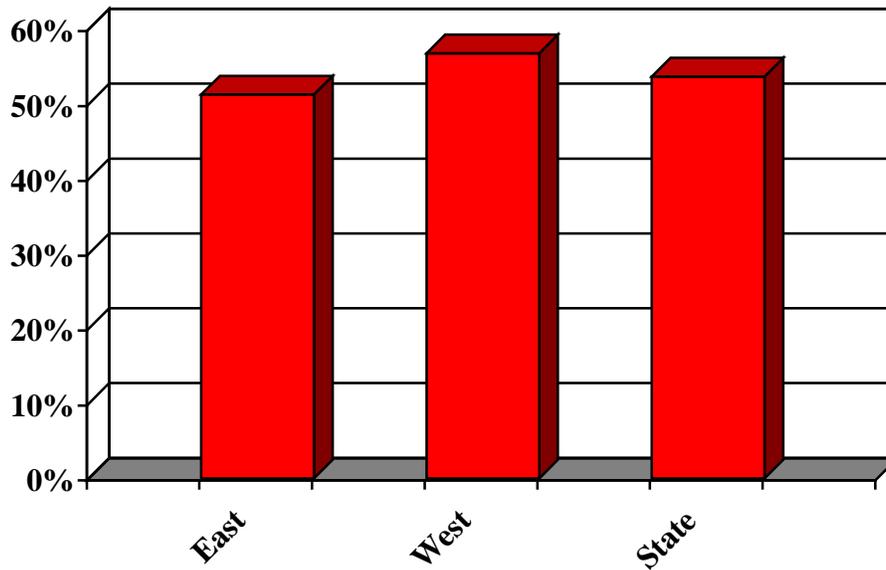
The 2017 study follows the same classification of DMUs into an east and a west region of the state as used in previous years of the KDWPT’s deer survey.

Table 2. Responses by deer management unit (DMU) and categorization of regional response

DMU	Region	<i>n</i>	Percent
1	West	40	5.7
2	West	25	3.5
3	West	34	4.8
4	West	39	5.5
5	West	45	6.4
6	East	31	4.4
7	West	35	5.0
8	East	34	4.8
9	East	41	5.8
10	East	41	5.8
11	East	45	6.4
12	East	51	7.2
13	East	39	5.5
14	East	42	5.9
15	East	42	5.9
16	West	25	3.5
17	West	41	5.8
18	West	26	3.7
19	East	30	4.2
East		396	56.1
West		310	43.9
Total		706	100

Figure 7 graphs reported deer damage in 2016 by region. Statewide, 54% reported deer damage within the past year to their property. A slightly higher percentage, 57%, of respondents from the west report damage, and a slightly lower percentage, 51%, from the east report damage on their land from deer in the past year.

Figure 7. Percent reporting deer damage by region



Respondents were asked to report the average number deer generally on their land in 2016 (see question 2a in Appendix 1). The mean number of deer reported was combined with total land area owned or operated by the respondent. The initial mean deer density (individuals/acre) was converted to large scale mean deer density value (individuals/100 square miles) to provide an overall value of mean deer density. Estimates of mean deer density were then evaluated by region as well as reported damage by deer and the status of deer hunting upon the land operated by the respondent.

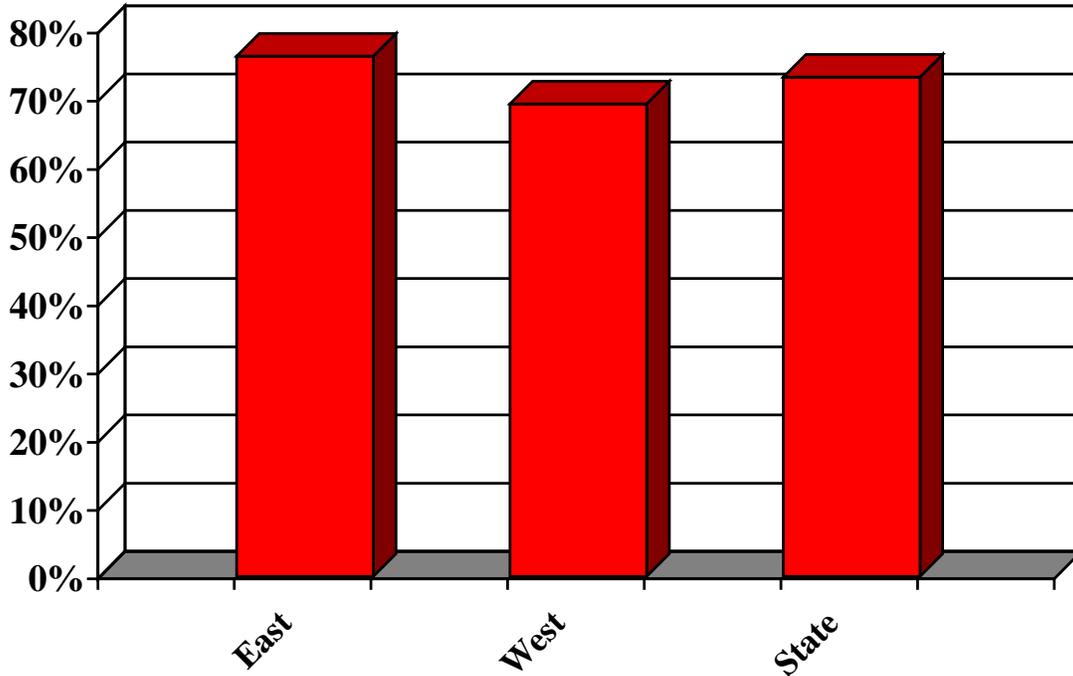
Mean deer density estimates were analyzed by region and reported presence of damage by deer. Throughout the state, mean deer density estimates were greater among respondents who did not receive damage by deer than those who reported damage, but a t-test finds no statistically significant difference ($t = -1.37, p = 0.17$). Mean deer density estimates in the eastern region are very similar among respondents who did not indicate damage from deer and those respondents who reported damage. In the western region, mean deer density estimates are higher among respondents who reported damage than those who did not indicate damage, but this difference was not significant ($t = -1.25, p = 0.21$). Regardless of the presence of damage reported by respondents, mean deer density estimates were greater for the eastern region than the western region.

Table 3. Mean deer density (expressed as individuals/100 square miles) reported by land operators for Kansas farm and ranch operations in 2016. Estimates are evaluated by region and reported damage by deer.

Region	Damage			No Damage		
	<i>x</i>	<i>n</i>	Std Error	<i>X</i>	<i>n</i>	Std Error
East	3,525	140	388	3,775	142	382
West	1,579	129	185	2,017	100	298
Statewide	2,592	269	228	3,048	242	262

Figure 8 shows the percentages who report that deer hunting occurred on their land during the last deer season (see question 18 in Appendix 1). Statewide, 73% report that deer hunting occurred on their land during last deer season. The percentage in the east was slightly higher, 76%, while it was slightly lower in the west, 69%.

Figure 8. Percent reporting deer hunting occurred on their land last season by region



Mean deer density estimates were analyzed by region and whether respondents reported that deer hunting occurred on their property. Throughout the state, mean deer density estimates were somewhat higher for respondents who operated land where deer hunting occurred than among those operating land where deer hunting did not occur, but this difference is not statistically significant ($t = .815, p = 0.416$). The same pattern holds within the eastern and the western regions.

Table 4. Mean deer density (expressed as individuals/100 square miles) reported by land operators for Kansas farm and ranch operations in 2016. Estimates are evaluated by region and status of deer hunting on land.

Region	Hunting			No Hunting		
	<i>x</i>	<i>n</i>	Std Error	<i>x</i>	<i>n</i>	Std Error
East	3,693	214	258	3,565	66	810
West	1,895	158	222	1,496	65	235
Statewide	2,929	372	209.4	2,539	131	432

Respondents were asked to report the number of antlerless deer harvested on their land in 2016 (see question 2c in Appendix 1). The number of antlerless deer harvested was combined with total land area owned or operated by the respondent. The initial mean density of antlerless deer harvested (individuals/acre) was converted to large scale mean density of antlerless deer harvested (individuals/100 square miles) to provide an overall value of mean density of antlerless deer harvested. Estimates for mean density of antlerless deer harvested were then evaluated by region as well as reported damage by deer and the status of deer hunting upon the land operated by the respondent.

The estimates for mean density of antlerless deer harvested were analyzed by region and reported presence of damage by deer. Throughout the state, the mean density of antlerless deer harvested was similar among respondents who did not receive damage by deer and those who reported damage ($t = 0.79, p = 0.94$). The mean density of antlerless deer harvested from the eastern region also was similar among respondents who did not indicate damage by deer and those who reported damage ($t = 0.73, p = 0.47$), and the same is the case in the western region ($t = -0.076, p = 0.94$). Regardless of the presence of damage reported by respondents, the mean density of antlerless deer harvested was greater for the eastern region than the western region.

Table 5. Mean density of antlerless deer harvested (expressed as individuals harvested/100 square miles) reported by land operators for Kansas farm and ranch operations in 2016. Estimates are evaluated by region and reported damage by deer.

Region	Damage			No Damage		
	<i>x</i>	<i>n</i>	Std Error	<i>x</i>	<i>n</i>	Std Error
East	195	143	34	164	162	26
West	110	128	21	113	94	49
Statewide	155	271	21	145	256	25

Figure 9 graphs response to a question about whether the deer population on the respondent's land has decreased, remained the same, or increased over the past three years, 2014-2016 (see question 1b in Appendix 1). A slightly higher percentage of those in the east report that population stayed the same (34%) than those in the west (29%), whereas, a higher percentage of respondents in the west report an increase in population (30%) than in the east (24%).

Figure 9. Perceived three year change in deer population (2014-2016) by region

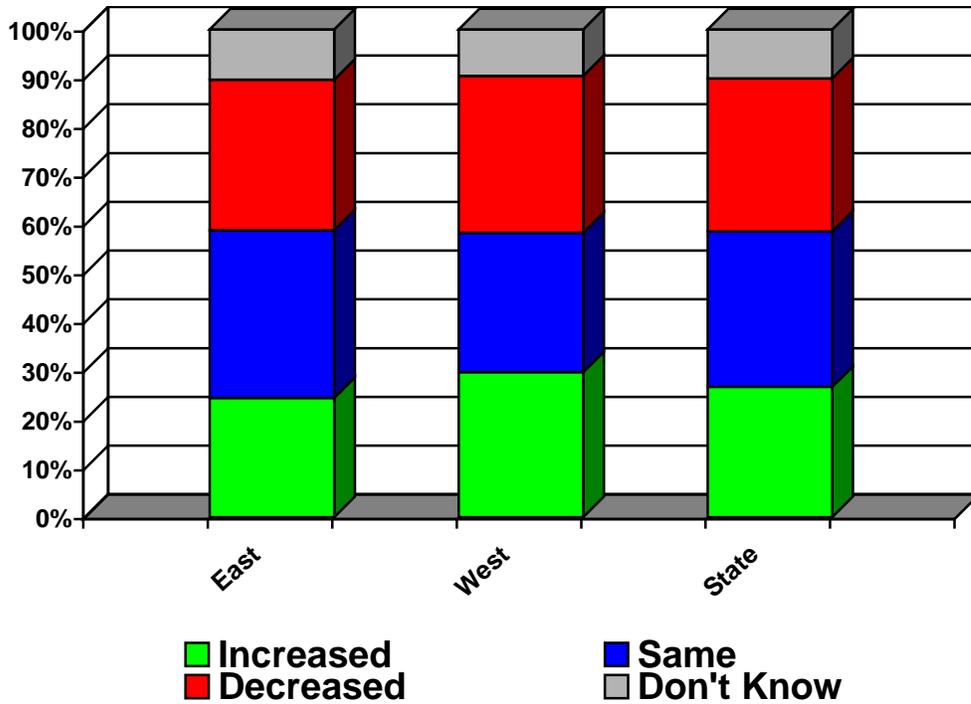


Table 6 shows the perceived three-year change in deer populations between regions and the presence of damage by deer. Throughout the state, 36.5% of respondents who reported damage by deer reported that the deer population in their area had increased over the past three years. Of those who did not report damage by deer, only 14.9% reported an increase in the deer population over the past three years. This pattern is also present within the eastern and western regions. Those who experienced damage by deer clearly are more likely to perceive a three-year increase in population, while those who did not experience damage are more likely to perceive stability in the deer population.

Table 6. Perceived three-year change (2014-16) in area deer population by region and damage status (% of respondents).

	East		West		Statewide	
	Damage	No	Damage	No	Damage	No
Increased	34.4	13.8	39.0	16.8	36.5	14.9
Same	30.1	39.1	25.0	33.6	28.1	36.3
Decreased	25.8	36.2	30.5	34.5	27.9	35.0
Don't know	9.7	10.9	5.5	15.1	7.5	13.9

Table 7 shows the perceived three-year change in the deer population between regions and presence of deer hunting upon the land. Throughout the state, 28.6% of respondents who reported deer hunting occurred on their land reported that the deer population has increased over the past three years. Over one-third (36.9%) of respondents reporting that deer hunting did not occur on their land reported that the deer population in their area has remained the same. Both the eastern region and the western region shared this pattern at 37.8% and 37.0%, respectively. Overall, those operating land on which hunting occurs are more likely to perceive a three-year increase in population than those who report no hunting occurs, while the latter group has a much higher percentages than the former answering “don't know” when asked whether deer populations have increased, remained the same, or decreased.

Table 7. Perceived three-year change (2014-16) in area deer population by region and hunting status (% of respondents).

	East		West		Statewide	
	Hunting	No	Hunting	No	Hunting	No
Increased	26.2	19.5	32.8	22.2	28.6	20.8
Same	33.8	37.8	25.1	37.0	30.5	36.9
Decreased	33.1	23.2	37.9	17.3	34.6	20.2
Don't know	6.9	19.5	4.1	23.5	6.2	22.0

Figure 10 graphs response to a question about whether the deer population on the respondent's land has decreased, remained the same, or increased since this time last year (see question 1a in Appendix 1). By far the single largest percentage in the east (51%) and the west (48%) perceive that the population remains the same. A slightly lower percentage of those in the east report that population increased (17%) than those in the west (21%).

Figure 10. Perceived one-year change in deer population by region

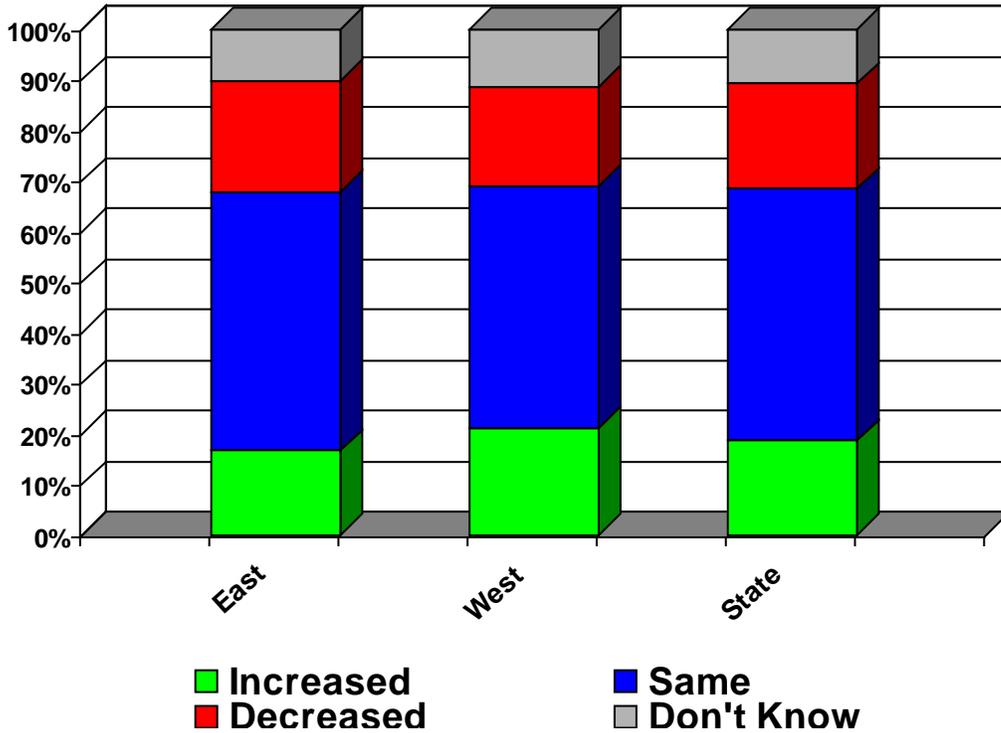


Table 8 demonstrates the perceived one-year change in the deer population between regions and the presence of damage by deer. Throughout the state, the single largest percentage, 46.6%, who reported damage by deer report that the population has remained the same over the last year, and this is very similar to the percent who report no damage and that the population has remained the same, 52.0%. This pattern holds in the eastern region and western region, with the largest difference in the western region, where 43.8% of those with damage report a population that has remained the same compared to 53.9% who report no damage. Those who experienced damage tend to perceive a stable to increased population compared to a year ago, while those not experiencing damage tend to perceive a stable to decreased deer population.

Table 8. Perceived one-year change in area deer population by region and damage status (% of respondents).

	East		West		Statewide	
	Damage	No	Damage	No	Damage	No
Increased	25.6	7.4	30.7	7.8	28.6	7.6
Same	50.3	52.1	43.8	53.9	46.6	52.0
Decreased	15.4	28.7	18.2	21.1	16.9	25.4
Don't know	8.7	11.7	7.4	17.2	7.8	15.0

Table 9 demonstrates the perceived one-year change in the deer population between regions and presence of deer hunting upon the land. Regardless of region and reported hunting status of the land, the most frequent response was that the deer population had remained the same over the past year.

Table 9. Perceived one-year change in area deer population by region and hunting status (% of respondents).

	East		West		Statewide	
	Hunting	No	Hunting	No	Hunting	No
Increased	18.3	12.4	23.1	16.7	20.5	15.1
Same	52.8	47.2	50.5	42.2	51.3	43.8
Decreased	22.4	20.2	21.6	14.4	22.0	17.3
Don't know	6.6	20.2	4.8	26.7	6.2	23.8

Figure 11 shows response to a question asking how many deer a respondent would like to have on their farm/ranch area (see question 3 in Appendix 1). Response is very comparable by region. The single largest percentage in both the east (43%) and the west (39%) prefer to have the same quantity of deer on their land in the future. In the east, slightly more prefer to have more deer (23%) than fewer deer (19%), while percentages of these two preferences in the west are essentially equally divided on this, with 21% wanting more and 22% wanting fewer.

Figure 11. Quantity of deer wanted on farm or ranch by region

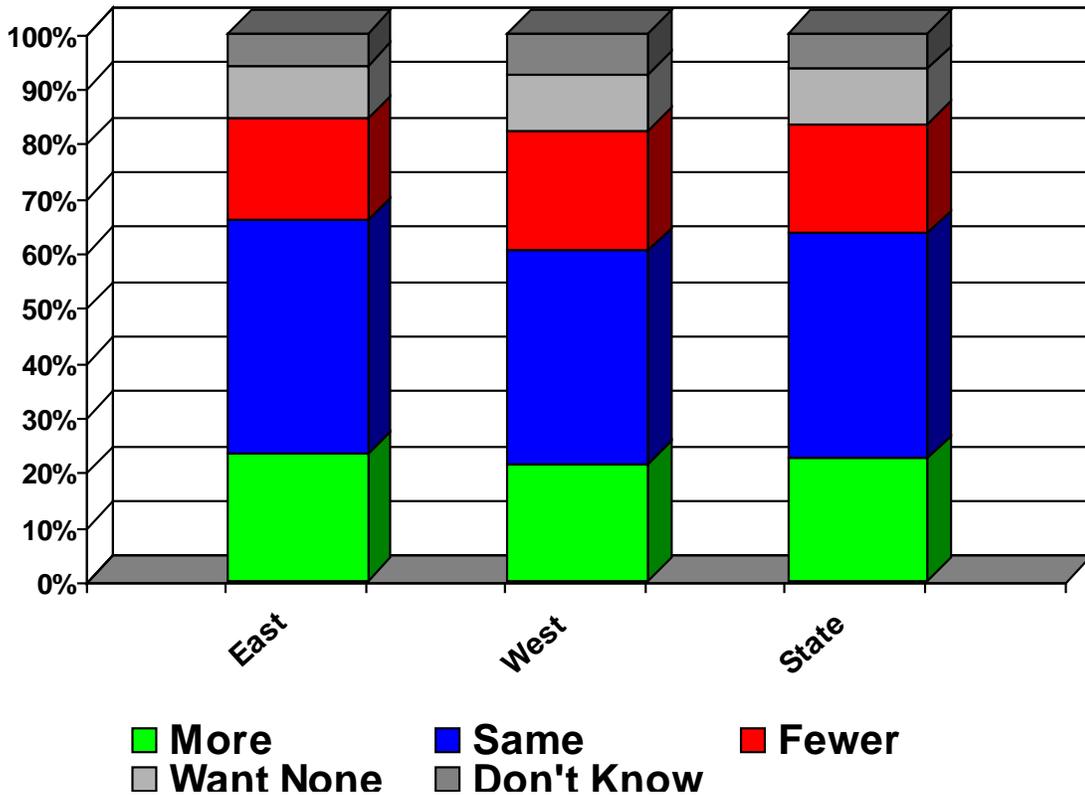


Table 10 demonstrates the desire by respondents for deer between regions and the presence of damage by deer. Throughout the state, among those who report damage, effectively the same percentage want the same (32.7%) or fewer (31.4%) deer on their property, while the single largest percentage (49.4%) of those who report no damage want the same quantity of deer that they now have on their land. The same patterns exist within the east and the west regions.

Table 10. Quantity of deer wanted on farm or ranch by region and damage status (% of respondents).

	East		West		Statewide	
	Damage	No	Damage	No	Damage	No
More	16.5	30.1	16.0	28.5	16.0	29.2
Same	34.0	51.8	33.1	46.9	32.7	49.4
Fewer	30.0	6.7	32.0	8.5	31.4	7.5
None	15.0	4.1	13.7	5.4	15.2	4.5
Don't know	4.5	7.3	5.1	4.6	4.6	9.3

Table 11 demonstrates the desire for deer on a farm or ranch between regions and presence of deer hunting upon the land. Throughout the state and in both regions, the most frequent response was that respondents wanted the same amount of deer regardless of whether hunting occurred on the land. One-fourth of those who allow hunting want more deer, and when compared to those who report no hunting, this desire for more is about 10% higher in the east and about 13% higher in the west. Also, both in the east and the west among those who report no hunting when compared to those who do have hunting, there are uniformly higher percentages reporting they want no deer on their property or reporting “don’t know.”

Table 11. Quantity of deer wanted on farm or ranch by region and hunting status (% of respondents).

	East		West		Statewide	
	Hunting	No	Hunting	No	Hunting	No
More	25.3	15.1	25.2	12.0	25.0	13.6
Same	43.2	43.0	36.9	44.6	40.0	42.9
Fewer	19.6	15.1	23.8	16.3	21.9	15.7
None	8.4	12.9	8.7	14.1	8.7	13.6
Don’t know	3.4	14.0	5.3	13.0	4.3	14.1

Figure 12 graphs respondents’ general feelings about having deer on and around their property (see question 4 in Appendix 1). The single largest percentage of those in the east (49%) report enjoying deer on their land, while the single largest percentage in the west (40%) chose the answer option “I enjoy deer, but they cause problems at the same time.”

Figure 12. General attitudes about having deer on and around property by region

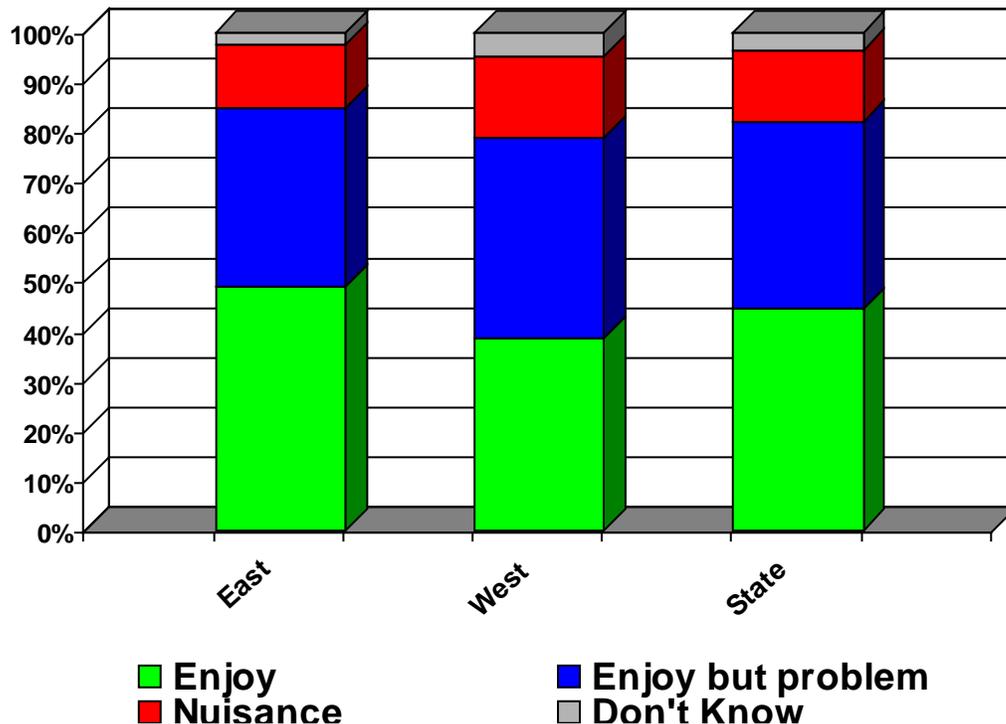


Table 12 demonstrates the attitude of respondents for deer around their area between regions and the presence of damage by deer. Throughout the state, almost half (47.3%) of respondents who reported damage by deer also reported that they enjoy deer, but feel that deer cause problems at times. Of those who did not report damage by deer, well over half (61.0%) indicated that they enjoy having deer around. However, among those reporting no damage, there is a higher percentage in the east who enjoy having deer (67.7%) than in the west (52.6%). In both the eastern and western regions, almost half (46.8% and 48.6%, respectively) of respondents reporting that they experienced damage by deer also indicated that they enjoy deer, but feel deer cause problems at times.

Table 12. General attitude toward presence of deer in area by region and damage status (% of respondents).

	East		West		Statewide	
	Damage	No	Damage	No	Damage	No
Enjoy deer around	31.3	67.7	28.0	52.6	29.0	61.0
Enjoy but problematic	46.8	24.0	48.6	29.3	47.3	26.5
Deer are nuisance	20.4	4.7	21.1	9.8	21.9	6.5
Don't know	0.8	3.6	2.3	8.3	1.8	6.0

Table 13 demonstrates the general attitude for deer on a farm or ranch between regions and presence of deer hunting upon the land. Throughout the state, the most frequent response was that respondents enjoy deer regardless of whether hunting occurred on the land. There is a difference by region, with about 10% more in the east reporting they enjoy deer than in the west, and this difference is uniformly higher for both landowners who report hunting on their land (50.5% versus 40.4%, respectively) and those who report no hunting (45.7% versus 35.5%, respectively).

Table 13. General attitude toward presence of deer in area by region and hunting status (% of respondents).

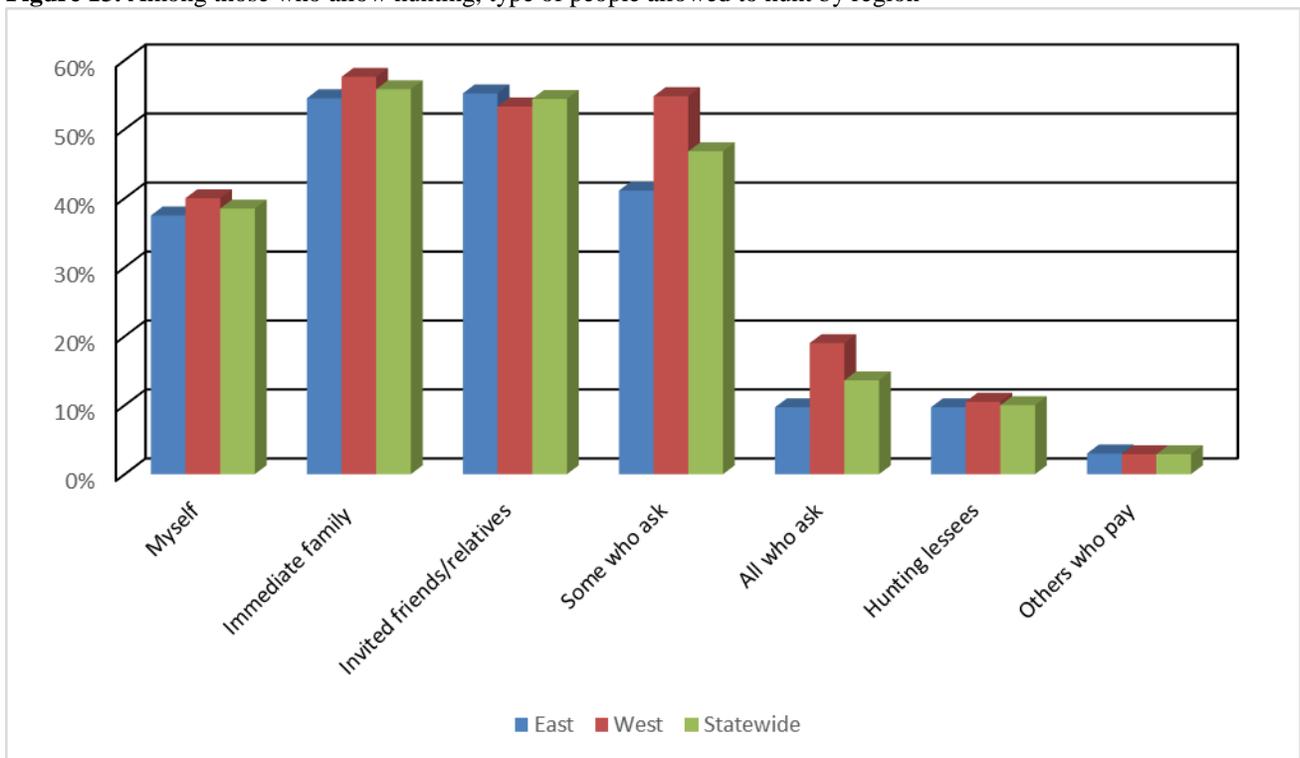
	East		West		Statewide	
	Hunting	No	Hunting	No	Hunting	No
Enjoy deer around	50.5	45.7	40.4	35.5	46.0	39.8
Enjoy but problematic	36.4	32.6	42.3	34.4	38.5	34.0
Deer are nuisance	12.5	13.0	14.9	19.4	14.0	16.2
Don't know	0.7	8.7	2.4	10.8	1.5	9.9

The 53% of respondents who reported deer damage last year (see Figure 1 above) were asked a series of follow-up questions regarding overall extent of damage (see Figure 2 above), extent of damage by type (Q8 series Appendix 1), use of means to limit damage (Q9 series Appendix 1), use of non-lethal means to reduce damage (Q10 series Appendix 1), and perception of overall effectiveness at limiting deer damage (Q12 Appendix 1). An analysis of statistically significant differences on these items by region was conducted. Statistical analysis suggests the following:

- There is no difference in the overall extent of damage by region, with extent of damage in the east and the west being very similar (again, see Figure 2 for results).
- In terms of the Q8 series of questions assessing levels of particular types of damage, there are two types of damage that differ slightly by region, with *damage to temporary electric fences* slightly more likely to be a small or large problem in the west than the east (Spearman's rho = -.117, p=.040) and *damage to windbreaks or shelter-belt trees* moderately more likely in the west than the east (Spearman's rho = -.294, p=.000).
- Analyzing the Q9 series of questions by region, there is slightly higher use (Pearson's r = .133, p=.016) of *KDWPT out of season control permits* in the west than in the east, and there is slightly higher use (Pearson's r=.156, p=.005) of *Walk in Hunting Area enrollment* in the west than in the east.
- Analyzing the Q10 series of questions by region, there is only one statistically significant difference by region in the various non-lethal attempts to reduce deer damage in this series, with *use of high fences* slightly higher (Pearson's r = .127, p=.018) in the west than in the east.
- Finally, a Spearman's rho bivariate correlation finds no statistically significant difference between the west and east on perceived overall effectiveness at limiting deer damage in the previous year (see Q12 Appendix 1).

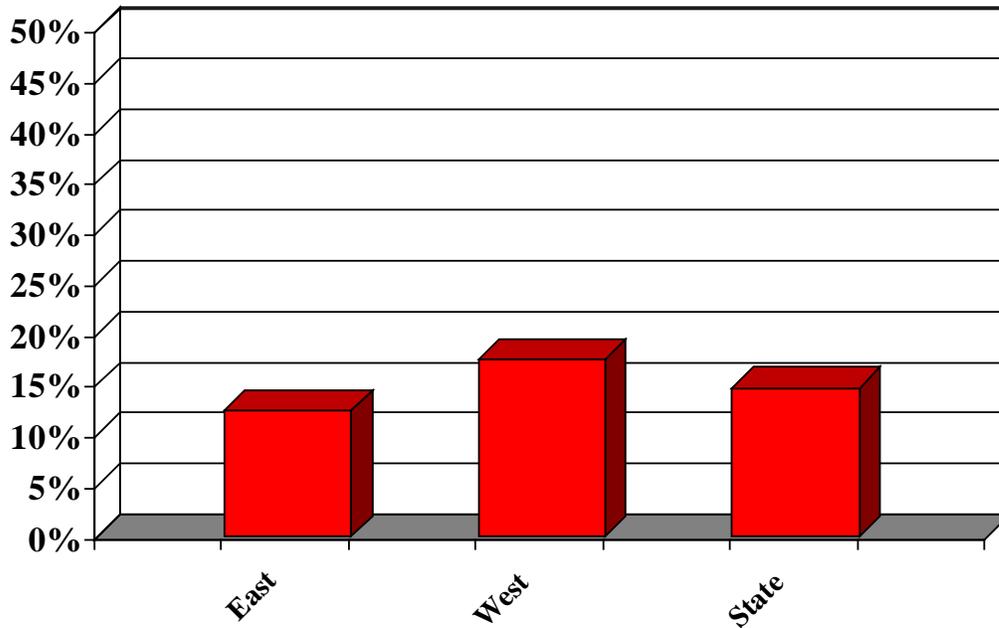
The 73% of respondents who indicated that someone hunts deer on the land they operate were asked about the type of people they have allowed to hunt on their land during the last deer season. Figure 13 shows the types of people allowed to hunt most frequently in both regions and statewide were immediate family members and invited friends/relatives. Compared to those in the east, about 13% more of those in the west allow hunting by “some who ask,” and about 10% more in the west allow “all who ask.” The groups allowed to hunt least frequently in both regions and statewide were hunting lessees and others who pay. Questions later in the survey (see question 30 and 31) were used to validate the percentages reporting that they allow leased hunting and/or other paid hunting (crosstabular analysis not shown). Only 59 respondents use leased hunting or other paid hunting, which is about 8% (730/59) of the entire sample of landowners.

Figure 13. Among those who allow hunting, type of people allowed to hunt by region



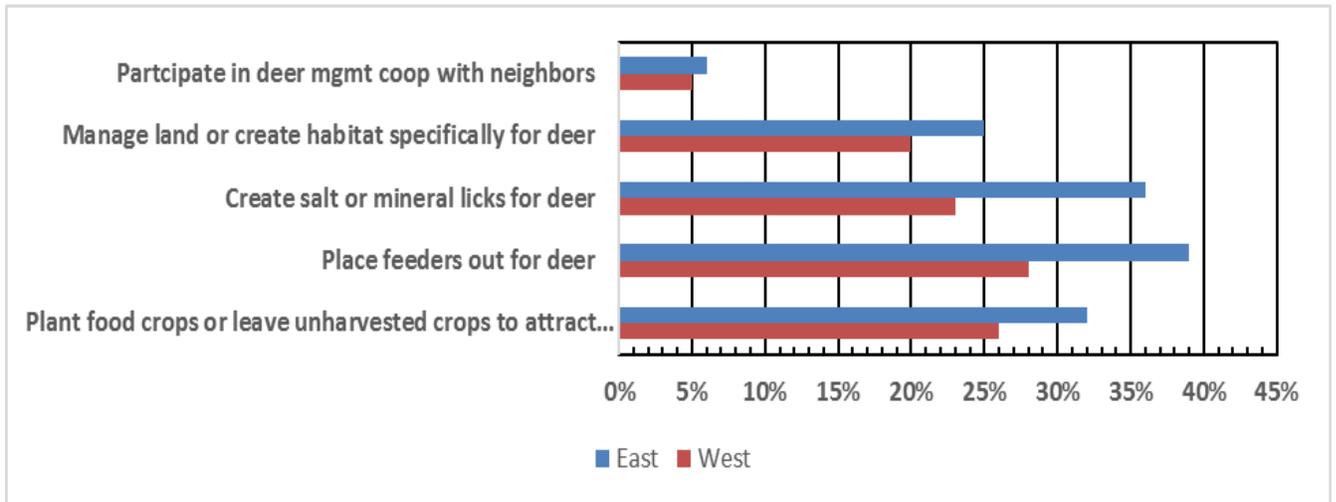
All respondents were asked whether deer hunters caused problems on their land last deer season. Figure 14 shows that statewide only about 15% or 107 respondents report that deer hunters caused problems on their land. A slightly higher percentage in the west (17%) than in the east (12%) reported problems from deer hunters last season.

Figure 14. Percent of respondents reporting that deer hunters caused problems on land last deer season by region



Returning to the series of items assessing whether landowners tend to engage in certain habitat management enhancements that may result in higher presence of deer, Figure 16 shows response by region. Five particular forms of habitat management enhancement were presented to respondents, and they were asked to indicate whether on their land: 1) I do this, 2) someone else does this, or 3) no one does this (see the question 22 series in Appendix 1). The combined percentage of those who answered, “I do this” or “someone else does this” is graphed by region. Clearly those in the east are more likely to engage in every form of habitat management in the list, substantially so in the case of leaving salt or mineral licks for deer and with regard to placing feeders out for deer.

Figure 16. Engage in deer habitat enhancements by region



A series of items asked about attitudes toward mule deer populations specifically is shown below (see the question 26 series in Appendix 1). Figure 17 illustrates that the single largest percentage of landowners in both the east and the west regions answered “don’t know.” However, the “don’t know” response is almost double in the east (72%) of the level in west (34%). In addition, in the west there is substantially more who strongly agree or agree than in the east. In both regions, agreement is much higher than disagreement.

Figure 17. Perception that mule deer populations in Kansas are declining by region of respondent

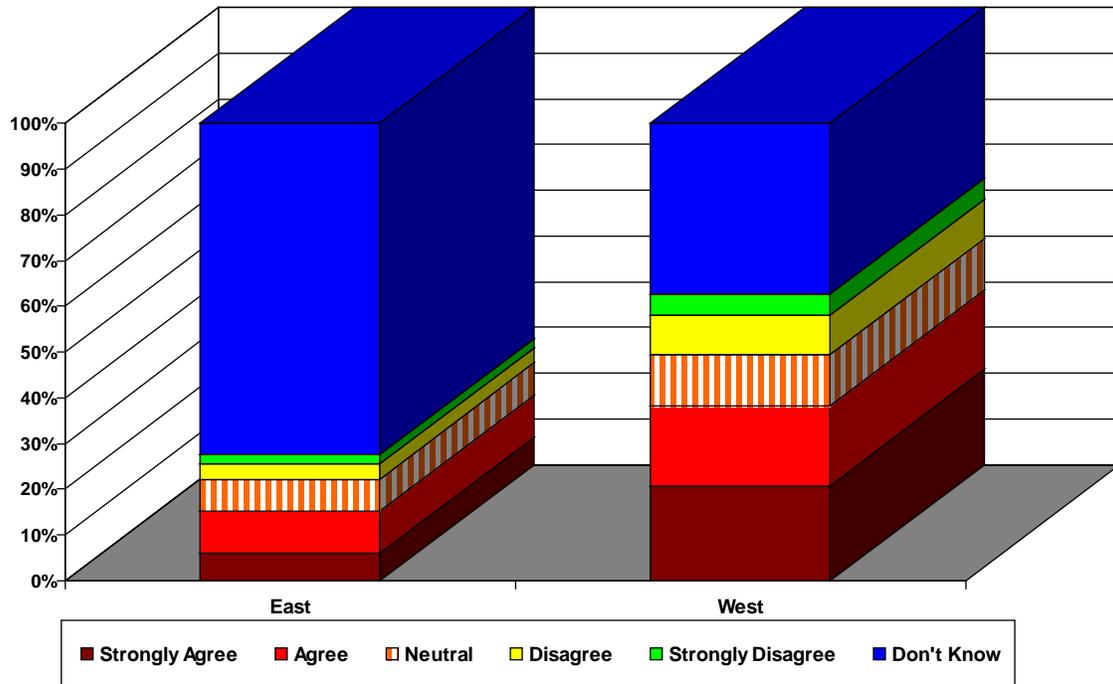


Figure 18 shows that majority response in both the east (82%) and west (57%) is “don’t know” when asked whether accidental killing of mule deer on a white-tailed permit is a common occurrence. Clearly, there is more agreement in the west than in the east, and more agreement than disagreement in both regions.

Figure 18. Perception that accidental killing of mule deer on a white-tailed deer permit is a common occurrence by region of respondent

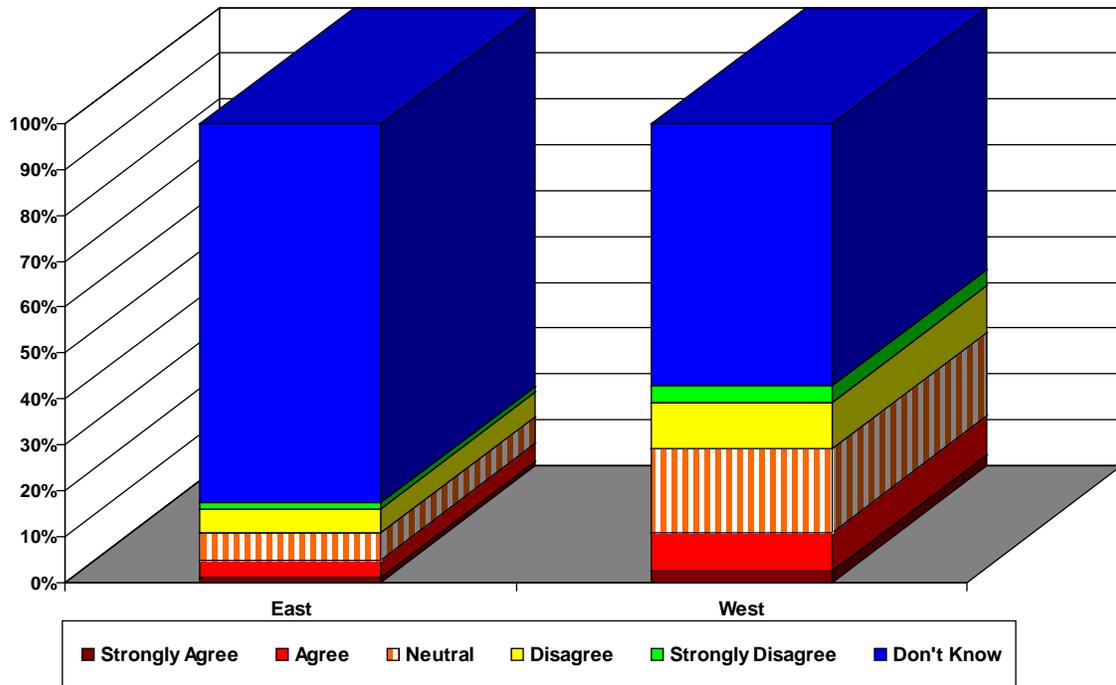


Figure 19 shows response by region to the statement “Intentional killing of mule deer without the appropriate permit is a common occurrence.” The “don’t know” majority response by region is very similar to that found in the previous graph, with the east at 82% and the west at 55%. Again, there is much higher agreement in the west than east, and there is more agreement than disagreement in both regions.

Figure 19. Perception that intentional killing of mule deer without the appropriate permit is a common occurrence by region of respondent

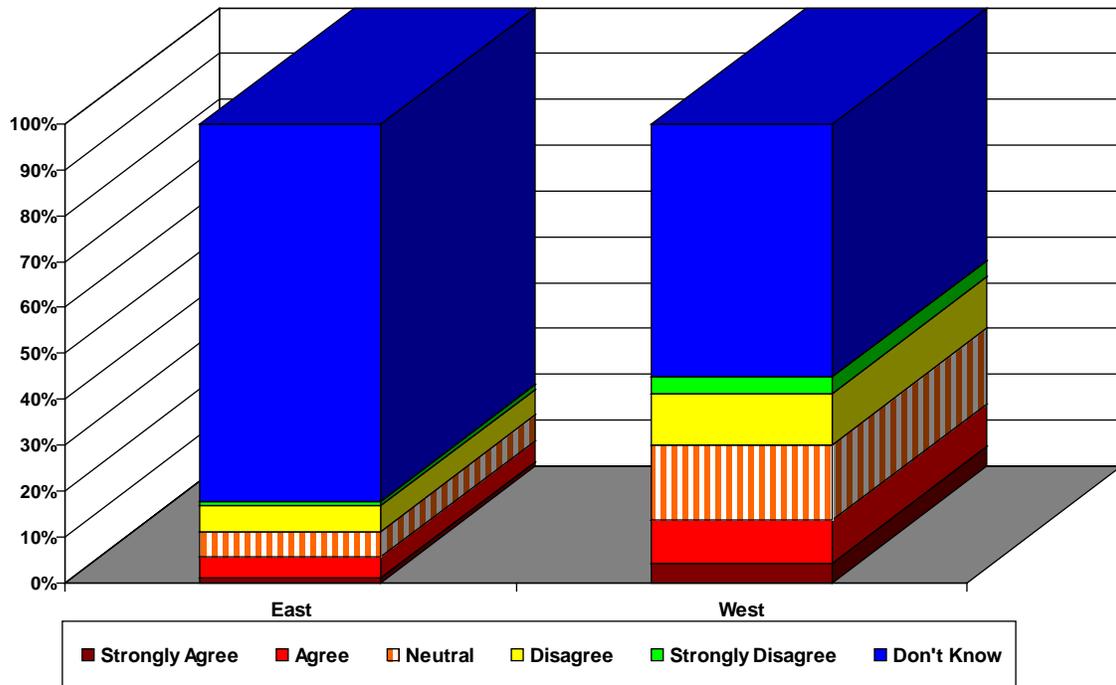
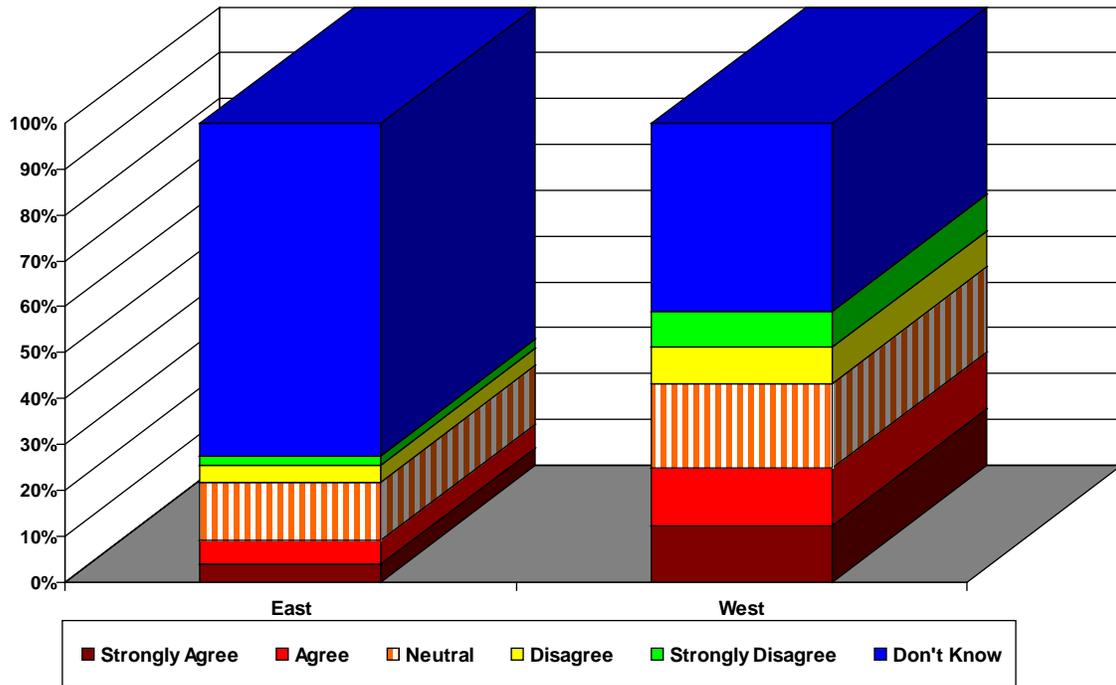


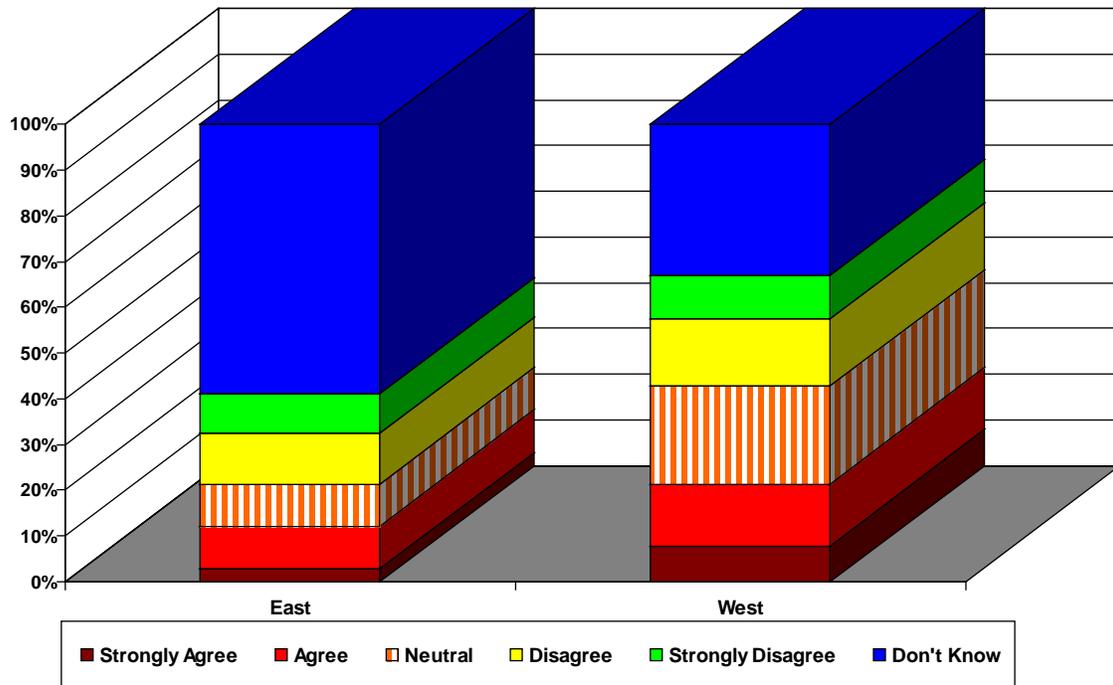
Figure 20 shows that 72% of those in the east answered “don’t know” when asked whether fewer permits allowing the take of mule deer should be issued, while only 40% in the west answered this way. Agreement is higher in the west than in the east.

Figure 20. Perception that fewer permits allowing the take of mule deer should be issued by region of respondent



The final item in the Q26 series stated, “If additional protection for mule deer meant less opportunities to hunt white-tailed deer, I would support that additional protection.” Figure 21 shows that a majority (59%) in the east answered “don’t know,” which, though much smaller, is also the single most frequent answer offered in the west (33%). Agreement is higher in the west than in the east, and agreement and disagreement are evenly distributed in the west.

Figure 21. If additional protection for mule deer means less opportunity to take white-tailed deer, would still support additional protection by region of respondent



Appendix 1

Survey questionnaire with overall responses associated with survey items.

Percentage of overall response is presented for items that provided the respondent with a categorical response matrix. Items which requested a numerical response are presented with the corresponding mean and standard deviation of all respondents.

**2017 Kansas Landowner Opinion Survey
on Deer and Hunting Leases**



[Inside front cover of booklet]

Thank you for taking the time to review this survey booklet.

The Kansas Department of Wildlife Parks and Tourism (KDWPT) is interested in your experience and opinions regarding deer in Kansas.

This survey is being administered by the Docking Institute of Public Affairs at Fort Hays State University. Your participation is crucial to a successful assessment of deer-related issues in Kansas. The survey will take only a few minutes to read and complete. We ask that you return your questionnaire within five working days.

In order to provide the most accurate representation of land owners in Kansas, it is important that each questionnaire be filled out and returned. Every questionnaire is important for achieving a valid study.

You are assured complete confidentiality. The Docking Institute will collect and analyze grouped data only, and deliver a report of the findings to the KDWPT.

After you have completed the survey, simply tape the booklet closed and drop it in any US Postal Service mail box. Postage is pre-paid and the booklet is pre-addressed.

For questions or concerns, please contact:

Matt Peek, KDWPT Emporia Research Office at (620) 342-0658 or
Mike Walker, Docking Institute, Fort Hays State University at (785) 628-5563.

The survey results will be posted online at <http://ksoutdoors.com/Hunting/Big-Game-Information/Deer> and <http://fhsu.edu/docking/reports> when completed.

Q1 Thinking about the number of deer on your land, how would you say the population has changed...

Since this time last year?

- Decreased.....20.8
- Remained the same...49.1
- Increased.....19.0
- Don't Know.....11.1

Over the past 3 years (2014-2016)?

- Decreased.....31.1
- Remained the Same...31.9
- Increased.....26.6
- Don't Know.....10.4

Q2 What are your best estimates for the numbers requested below?

	MEAN	MEDIAN	STD DEV.
Average <i>number of deer</i> generally on your property last year (2016).....	25.7	12.0	51.7
Total <i>number of antlered bucks killed by hunters</i> on your property last year	1.24	1.0	2.11
Total <i>number of antlerless deer killed by hunters</i> on your property last year.....	1.29	0.0	2.9

Q3 How many deer would you like to have on your farm/ranch?

- More than I have now.....22.1
- Same as I have now.....40.4
- Fewer than I have now.....20.4
- I do not want deer on my land.....10.3
- Don't Know..... 6.8

Q4 How do you feel about having deer on and around your property?

- I enjoy having deer around.....43.9
- I enjoy deer, but they cause problems at the same time.....37.7
- I generally regard deer as a nuisance.....14.8
- Don't Know..... 3.7

Q5 Did deer cause damage to your land in 2016?

- Yes.....53.7
- No (*Please skip to Q13, page 3*)46.3

Q6 If you answered "Yes" to Q5:

	Yes	No
Have you changed the traditional management of your land because of the potential for deer damage?	14.1	85.9
Did the activities of your neighbor(s) cause deer damage on your land?	14.9	85.1
Did you attempt to control deer numbers on your property to reduce their potential to interfere with your farm and ranch operation?	21.4	78.6

Q7 How would you describe the level of the damage caused by deer to your crops or property within the past 12 months?

- Light damage.....53.4
- Moderate damage.....28.0
- Substantial damage..... 8.3
- Severe damage..... 2.0
- Don't Know..... 8.3

Q8 Please indicate how much of a problem each of the following items was for you.

	Not a Problem	Small Problem	Large Problem	No Opinion
Deer damage to crops	24.9	53.3	16.6	5.2
Deer competition with livestock for forage	60.3	26.8	3.4	9.6
Deer transmitting disease	47.0	17.1	6.7	29.3
Damage to temporary electric fences	35.2	31.0	23.9	9.9
Damage to permanent fences	38.4	42.3	11.2	8.1
Deer/Vehicle accidents	28.6	31.7	35.6	4.2
Damage to garden/ornamental plants	46.8	30.1	13.6	9.5
Deer damage to windbreaks or shelter-belt trees	56.9	23.2	7.6	12.3

Q9 Which of the following means did you use on your property to limit deer damage?

	Yes	No
Increased deer hunting pressure during regular seasons	32.0	68.0
Increased deer hunting pressure during antlerless-only seasons	26.4	73.6
Required deer hunters to take does	12.5	87.5
Contacted KDWPT for deer control permit (outside hunting seasons)	2.4	97.6
Requested list of potential deer hunters from KDWPT	0.9	99.1
Contacted K-State Research & Extension for assistance	1.8	98.2
Leased your land to KDWPT as a Walk-In Hunting Area (WIHA)	5.3	94.7
Leased your land to someone besides KDWPT for deer hunting	15.2	84.8

Q10 Did you use non-lethal methods to reduce deer damage?

	Yes	No
High fence to exclude deer	4.5	95.5
Electric fence to exclude deer	5.4	94.6
Scare devices (sound, motion, or image)	5.9	94.1
Guard dogs	7.9	92.1
Repellents	6.8	93.2
Unpalatable plants	2.8	97.2
Other	3.2	96.8

Q11 If you answered "Other" on Q10, please describe what non-lethal methods you used to reduce deer damage: _____

Q12 How would you rate your overall effectiveness at limiting deer damage on your property in 2016?

- Highly Effective..... 5.0
- Moderately Effective.....10.2
- Slightly Effective.....13.9
- Ineffective.....34.7
- Don't Know..... 36.2

Q13 Did you experience damage from any of the listed species of wildlife in 2016?

Species	Yes	No	Species	Yes	No
Antelope/Pronghorn	3.7	96.3	Bats	0.4	99.6
Beaver	21.3	78.7	Blackbirds	16.9	83.1
Bobcat	7.1	92.9	Coyote	34.5	65.5
Ducks/Geese	8.9	91.9	Elk	0.7	99.3
Fox	4.5	95.5	Gophers/Moles	43.0	57.0
Hawks/Owls	15.3	84.7	Prairie Dogs	12.1	87.9
Rabbits/Hares	16.9	83.1	Raccoon	36.5	63.5
Rats/Mice	47.3	52.7	Skunk	20.2	79.8
Squirrel	10.1	89.9	Turkey	17.1	82.9
Other	15.2	84.8			

Q14 If you answered "Other" on Q13, please describe what other species caused damage to your land in 2016: _____

Q15 Which of the following recreational activities occur on your land?

Activity	Yes	No	Activity	Yes	No
Hunting upland game	69.1	30.9	Hunting deer/big game	77.5	22.5
Hunting other species	53.4	46.6	Hunting for shed antlers	57.9	42.1
Fishing	48.5	51.5	Trapping	26.9	73.1
Bicycling	8.7	91.3	Photographing wildlife	38.0	62.0
Watching wildlife	64.2	35.8	Camping	17.9	82.1
Riding ATV	50.3	49.7	Hiking/Backpacking	15.6	84.4
Boating/Swimming	12.3	87.7	Horseback Riding	22.1	77.9
Other outdoor activities	9.1	90.9			

Q16 If there are other outdoor recreational activities you consider important on your land, please list them here: _____

Q17 How would you describe your level of concern about the following factors when people use your property for recreation?

	None	Slight	Moderate	Substantial	Don't Know
Liability concerns	11.0	15.5	28.9	41.5	3.1
Problems with hunters	17.3	27.8	27.9	23.6	3.3
Privacy concerns	21.4	25.2	22.6	26.4	4.4

Q18 Did anyone hunt deer on your land last deer season?

- Yes.....73.2 (n=524)
- No (*Please skip to Q21, below*).....26.8

Q19 Who hunted deer on your land last deer season?

	Yes	No
Myself	38.2	61.8
Immediate family member(s)	55.2	44.8
Invited friends or relatives	54.6	45.4
Some people who asked permission	46.8	53.2
Anyone who asked to hunt	13.2	86.8
People who lease the land for hunting	10.1	89.9
Others who paid to hunt	2.9	97.1
People who were given permission to hunt by others	9.0	91.0

Q20 Please estimate the total number of people who hunted deer on your land last deer season: _____

MEAN = 4.98

MEDIAN = 4.00

STD DEV = 4.34

Q21 Which of the following harvest management activities generally occur on your land?

	I do this	Someone else does this	No one does this
Require hunters to take antlerless deer for population control	12.0	7.3	80.7
Restrict the species of deer that may be taken (whitetail or mule deer)	8.8	5.7	85.5
Restrict buck harvest to promote older bucks	17.5	6.4	76.1
Restrict deer harvest to promote more deer	13.0	4.2	82.8

Q22 Which of the following habitat management activities generally occur on your land?

	I do this	Someone else does this	No one does this
Plant food plots or leave crops unharvested to attract deer	21.8	6.8	71.4
Place feeders out for deer	17.5	16.8	65.8
Create salt or mineral licks for deer	20.0	9.8	70.3
Manage land or create habitat specifically for deer	18.9	3.4	77.8
Participate in a deer management cooperative with neighbors	4.1	1.8	94.1

Q23 Did deer hunters cause problems on your land last deer season?

- Yes.....14.9 (n= 107)
 No (*Please skip to Q26, below*)..... 85.1

Q24 If you answered "Yes" on Q23: What problems did they cause?

	Yes	No
Damaged your crops, livestock, or property.	50.5	49.5
Created inconveniences or disrupted your farm or ranch operation.	55.1	44.9
Took deer that you or your family wished to hunt.	33.6	66.4
Failed to take antlerless deer.	16.8	83.2
Failed to follow instructions.	49.5	50.5
Caused other problems.	57.0	43.0

Q25 If deer hunters caused other problems on your land in 2016, please describe: _____

Q26 How strongly do you agree or disagree with the following statements?

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Don't Know
Mule deer populations in Kansas are declining.	12.0	12.8	8.8	5.4	3.1	57.9
<u>Accidental</u> killing of mule deer on a white-tailed deer permit is a common occurrence.	1.4	5.7	11.2	7.3	2.2	72.2
<u>Intentional</u> killing of mule deer without the appropriate permit is a common occurrence.	2.4	6.6	10.2	7.8	2.0	71.1
Fewer permits allowing the take of mule deer should be issued.	7.4	8.1	14.8	5.4	4.6	59.7
If additional protection for mule deer meant less opportunities to hunt white-tailed deer, I would support that additional protection.	5.0	11.0	14.1	12.1	8.9	48.8

Q27 How important is it for KDWPT to take the following deer management actions?

	Extremely Important	Very Important	Moderately Important	Slightly Important	Not at all Important
Simplify deer regulations	14.4	20.6	31.1	13.8	20.2
Allow more days of deer hunting	13.3	15.2	22.5	15.8	33.1
Allow more nonresident deer permits	8.7	7.1	16.1	15.5	52.5
Provide more law enforcement	11.8	14.3	26.2	22.2	25.5
Lease more Walk-In Hunting Areas	5.7	11.1	25.7	22.0	35.4
Provide more information to landowners on deer management	9.5	17.5	29.6	21.2	22.2

Q28 How many acres of land in Kansas do you own, lease or manage for agricultural purposes?
 _____ number of acres. *[NOTE: through a combination of this question and the Q29 series when this question left blank, the new variable “acres” was created. The mean, median, and standard deviation for the new ACRES variable is reported here.]*

MEAN = 1,310
MEDIAN = 486
STD DEV = 2,269

Q29 Of the number of acres provide in Q28, approximately how many acres of your farm or ranch are in the following types of uses:

Land Use	Acres	Land Use	Acres
Cropland	MEAN =781 MEDIAN =240 STD DEV = 1,576	Rangeland/Pasture	MEAN =599 MEDIAN =200 STD DEV =1,128
Alfalfa/Hay	MEAN =67 MEDIAN =30 STD DEV =108	Orchard	MEAN =18 MEDIAN =0 STD DEV =213
Nursery	MEAN =4 MEDIAN =0 STD DEV =56	Garden Crop	MEAN =0.3 MEDIAN =0 STD DEV =0.8
Pond/Wetland	MEAN =13 MEDIAN =3 STD DEV =34	CRP/Idle	MEAN =134 MEDIAN =18 STD DEV =573
Other	MEAN =148 MEDIAN =15 STD DEV =815		

Q30 Of the number of acres provide in Q28, approximately how many acres did you control the hunting rights for in 2016? This is referring to land you owned, managed or rented for agriculture on which you had initial authority to allow hunting, lease out or charge a fee for hunting, etc.? This is not referring to land that you have leased for hunting or obtained permission from others for hunting.
 _____acres. *If none, please indicate “0” and skip to Q34.*

[NOTE: per note with Q28 above, the variable ACRES is used in place of Q28 for purposes of selecting only those for whom measures of central tendency should be calculated on Q30.]

MEAN = 943
MEDIAN = 320
STD DEV = 1,594

Q31 Of the acres you controlled from Question 30, how many total acres did you lease out or charge a daily access or other fee for hunting in 2016? _____acres. *If none, please indicate “0” and skip to Q34.*

MEAN = 92
MEDIAN = 0
STD DEV = 601

Importantly, 88.5% of the 515 eligible respondents to this question answered zero (0) acres.

NOTE: The Q32 and 33 question series below were added to the deer survey for its 2017 administration. Only 59 total respondents permit leased or another form of paid hunting. See break-out summary response and selected operation use characteristics in tables immediately following this one. The “n” count in first column denotes number of respondents in the row who report at least 1 acre of land in said form of lease.

32. How many acres did you lease out for hunting to each of the following in 2016:	Acreage: (write '0' if none)	The individuals hunting on the lease were <u>primarily</u> : (check one)	Please <u>check</u> which species could be hunted under the lease: (or just check "All Wildlife" if applicable)			In which species was the lessee most interested?
a. Private individuals (n=46)	[see next page]	<input type="checkbox"/> local KS residents <input type="checkbox"/> non-local KS residents <input type="checkbox"/> non-residents (state:_)	<input type="checkbox"/> All Wildlife <input type="checkbox"/> Deer <input type="checkbox"/> Waterfowl	<input type="checkbox"/> Quail/Pheasant <input type="checkbox"/> Rabbit/Squirrel <input type="checkbox"/> Other (specify): _____	<input type="checkbox"/> Turkey <input type="checkbox"/> Dove	← Circle one species for which the land was primarily leased to hunt.
b. Guides and outfitters (Including your land on which you guide hunters) (n=13)	[see next page]	<input type="checkbox"/> local KS residents <input type="checkbox"/> non-local KS residents <input type="checkbox"/> non-residents (state:_)	<input type="checkbox"/> All Wildlife <input type="checkbox"/> Deer <input type="checkbox"/> Waterfowl	<input type="checkbox"/> Quail/Pheasant <input type="checkbox"/> Rabbit/Squirrel <input type="checkbox"/> Other (specify): _____	<input type="checkbox"/> Turkey <input type="checkbox"/> Dove	← Circle one species for which the land was primarily leased to hunt.
c. Controlled Shooting Operation (Including your land on which you operate a C.S.O.) (n=3)	[see next page]	<input type="checkbox"/> local KS residents <input type="checkbox"/> non-local KS residents <input type="checkbox"/> non-residents (state:_)	<input type="checkbox"/> All Wildlife <input type="checkbox"/> Deer <input type="checkbox"/> Waterfowl	<input type="checkbox"/> Quail/Pheasant <input type="checkbox"/> Rabbit/Squirrel <input type="checkbox"/> Other (specify): _____	<input type="checkbox"/> Turkey <input type="checkbox"/> Dove	← Circle one species for which the land was primarily leased to hunt.
d. Hunting/sportsman's Club (n=0)	[see next page]	<input type="checkbox"/> local KS residents <input type="checkbox"/> non-local KS residents <input type="checkbox"/> non-residents (state:_)	<input type="checkbox"/> All Wildlife <input type="checkbox"/> Deer <input type="checkbox"/> Waterfowl	<input type="checkbox"/> Quail/Pheasant <input type="checkbox"/> Rabbit/Squirrel <input type="checkbox"/> Other (specify): _____	<input type="checkbox"/> Turkey <input type="checkbox"/> Dove	← Circle one species for which the land was primarily leased to hunt.
e. KDWPT (Walk-In Hunting Areas - WIHA) (n=23)	[see next page]	N/a	Fall Lease (All Wildlife) BOTH Fall and Spring Lease (Turkey Only)			N/a
f. Other (please specify): (n=4) _____	[see next page]	<input type="checkbox"/> local KS residents <input type="checkbox"/> non-local KS residents <input type="checkbox"/> non-residents (state:_)	<input type="checkbox"/> All Wildlife <input type="checkbox"/> Deer <input type="checkbox"/> Waterfowl	<input type="checkbox"/> Quail/Pheasant <input type="checkbox"/> Rabbit/Squirrel <input type="checkbox"/> Other (specify): _____	<input type="checkbox"/> Turkey <input type="checkbox"/> Dove	← Circle one species for which the land was primarily leased to hunt.
33. On how many acres did you charge a daily access or other fee in 2016? This does NOT include leased land from Q32 above. (n=4)	[see next page]	<input type="checkbox"/> local KS residents <input type="checkbox"/> non-local KS residents <input type="checkbox"/> non-residents (state:_)	<input type="checkbox"/> All Wildlife <input type="checkbox"/> Deer <input type="checkbox"/> Waterfowl	<input type="checkbox"/> Quail/Pheasant <input type="checkbox"/> Rabbit/Squirrel <input type="checkbox"/> Other (specify): _____	<input type="checkbox"/> Turkey <input type="checkbox"/> Dove	← Circle one species for which the land was primarily leased to hunt.

From the Q32 and Q33 series above, summary response along and selected operation use characteristics

Only 59 total respondents permit leased or another form of paid hunting. All summary statistics in this table are merely suggestive – not taken as representative – due to very small numbers of cases on which they are based. The “n” count in first column denotes number of respondents in the row who report at least 1 acre of land in said form of lease.

	n*	Mean acres Per lease	Mean acres controlled By lessee (from derived Variable ACRES)	% of land controlled leased out	Primarily hunted by <u>local</u> KS resident (%)	Primarily hunted by Non-local KS resident (%)	Primarily hunted by Non-resident (%)
Private individuals	46	932	1,451	64%	54%	9%	37%
Guides and outfitters	13	1,800	2,310	78%	20%	30%	50%
Controlled shooting	3	310	310	100%	100%	0%	0%
Hunting/sportsman Club	0	n/a	n/a	n/a	n/a	n/a	n/a
KDWPT (WIHA)	23	390	1,317	30%	n/a	n/a	n/a
Other	4	1,090	1,460	75%	100%	0%	0%
Per gun or daily access fee	4	1,520	2,385	64%	33%	67%	0%

* Some respondents leased land to more than one type of lease.

(continued elaboration of Q32 and q33 series from previous page)

	n	All Wildlife* (n)	Quail/Pheasant (n)	Turkey (n)	Deer (n)	Rabbit/Squirrel (n)	Dove (n)	Waterfowl (n)	Other (n)
Private individuals	46	9	6	12	27	1	3	3	0
Guides and outfitters	13	1	2	8	11	0	0	0	0
Controlled shooting	3	0	1	0	3	0	0	0	0
Hunting/sportsman Club	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
KDWPT (WIHA)	23**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Other	4	0	1	3	3	1	2	1	0
Per gun or daily access fee	4	2	1	1	1	0	0	0	0

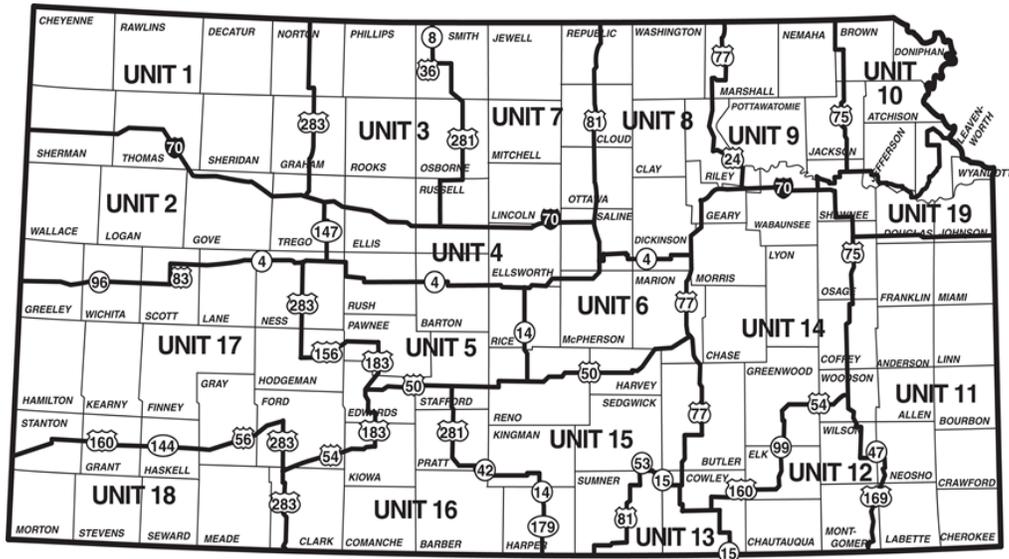
* Respondents were given the option to just check this column if all apply.

** Rather than being asked about species-specific access, those who lease WIHA were asked whether they allow a fall lease (all wildlife), with 10 responding in the affirmative, and whether they allow both a fall and spring lease, with 6 responding in the affirmative.

Red font is the modal selected species across all respondents in the row upon request to “circle one species for which the land was primarily leased to hunt.” (See last column in the Q32 and Q33 series survey table as part of the questionnaire above.) None of the four respondents in the last row circled a primary species.

Q34 How do you feel about the way KDWPT manages deer populations?

- I am extremely satisfied..... 3.5
- I am satisfied.....29.2
- I am neither satisfied nor dissatisfied....46.0
- I am dissatisfied..... 14.9
- I am extremely dissatisfied..... 6.4



Q35 Please use the Deer Management Unit map (above) to tell us in which Deer Management Unit and in which County *most* of your land is located:

Deer Management Unit #1-19: SEE TABLE 2 OF REPORT County _____

Q36 Where do you reside?

- On this farm/ranch.....66.6
- In the country, but not on the land I farm/ranch..... 7.9
- In a small town or rural community (less than 2,000 people).....10.5
- In a city or urban area.....15.6
- Outside of Kansas..... 0.4

Q37 How many years have you owned or operated this land? _____ (years)

MEAN= 32.7
MEDIAN= 32.0
STD DEV= 18.2

Q38 Approximately what percent of your household's net income last year was derived from agricultural products from this land? _____%

MEAN=40.8
MEDIAN=30.0
STD DEV=37.1

Q39 Please provide any additional comments you have about deer-related issues here:

Thank you very much for your time and for completing this survey. Please tape the booklet closed and drop it in any US Postal Service mail box. The booklet is addressed and postage is prepaid.

**Kansas Department of Wildlife, Parks and Tourism
Emporia Research and Survey Office
P O Box 1525
Emporia, KS 66801
(620) 342-0658**

Appendix 2

Comparison of key sociodemographic characteristics in the 2006 and the 2017 final samples

Because there is a desire to conduct trend analysis with this 2017 deer survey as the most recent data point, it is important to assess how similar the different sampling frames and administration processes were in reaching the same profile of landowner. So, the 2006 sample was compared to the 2017 sample on: number of years owned/operated land covered in the survey, approximate percentage of household's net income derived from the agricultural products produced from this land, and type of location where the respondent resides. Samples from 2006 year and the 2017 are very comparable on three sociodemographic characteristics of the final samples in the two time periods.

HOW MANY YEARS HAVE YOU OWNED OR OPERATED THIS LAND? (certainly the 4.0 years difference in mean years owned/operated shown here could very plausibly be attributed to a real increase in this measure of central tendency over this 10-year period)

	2017	2006
Mean	32.7 years	28.7 years
Median	32.0 years	27.0 years
Std. dev.	18.2 years	17.5 years

APPROXIMATELY WHAT PERCENT OF YOUR HOUSEHOLD'S NET INCOME LAST YEAR WAS DERIVED FROM AGRICULTURAL PRODUCTS FROM THIS LAND?

	2017	2006
Mean	40.8%	40.8%
Median	30.0%	30.0%
Std. dev.	37.1%	36.6%

WHERE DO YOU RESIDE?

	2017	2006
On this farm/ranch	66.6%	67.7%
In the country, but not on the land I farm/ranch	7.9%	6.0%
In a small town or rural community (<2000 pop)	10.5%	13.2%
In a city or urban area	15.6%	10.0%
Outside of KS	0.4%	3.1%