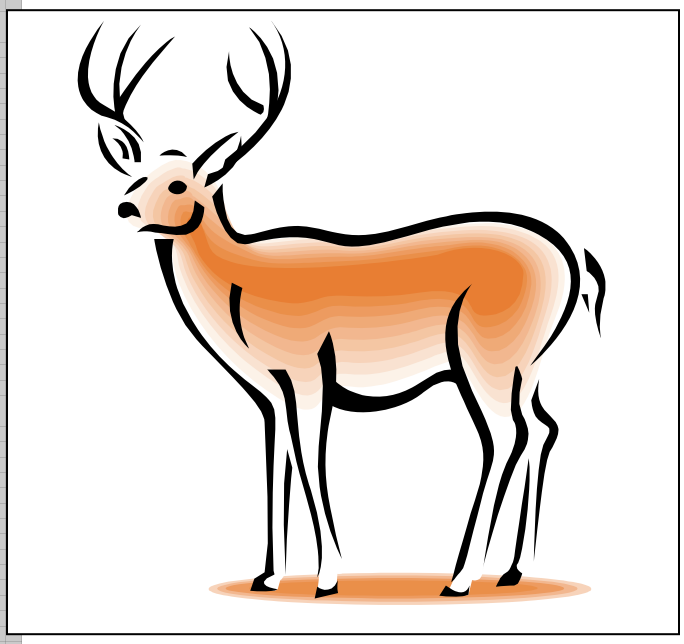
Opinions Of Deer Hunters in Wildlife Management Units 7F, 7H, and 7J About Possible Changes In Buck Harvest Regulations



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EXECUTIVE SUMMARY

Deer biologists with the New York State Department of Environmental Conservation (DEC) are responsible for managing white-tailed deer (Odocoileus virginianus) in New York. The general goal of deer management in the state is to ensure that benefits of deer to people (e.g., viewing, hunting) can be achieved while minimizing concerns or problems that deer may cause. DEC addresses this goal in a variety of ways including promulgation of deer-hunting regulations aimed at providing safe and satisfying experiences for deer hunters.

Two regulations that might affect hunter satisfaction and that have received attention recently, especially in central New York State, are (1) the buck harvest standard defining which bucks are legal to harvest, and (2) the antlered buck bag limit. The purpose of this study was to assess the interests and opinions of deer hunters about possible changes to buck harvest limits and antler criteria in WMUs 7F, 7H, and 7J in central New York.

Consideration about whether to enact either possible, experimental regulation will depend on a variety of factors. These include not only level of support, but also: hunters' beliefs about likely changes in buck-related hunting experiences, importance of those experiences, and their influence on hunters' satisfaction. According to DEC deer biologists, majority support by itself would be insufficient to warrant enacting the experimental regulations, especially if substantial percentages of hunters either oppose the experimental regulations or are ambivalent toward them. Also needed would be for most hunters to believe that positive and "very important" (i.e., highly valued) changes would occur in their buck-related hunting experiences, and that these changes would maintain or improve hunter satisfaction.

Methods

A total of 405 deer hunters residing in these WMUs (135 per WMU) were surveyed by telephone. Topics addressed in the survey were: characteristics of landownership and hunting implements used, satisfaction with current buck-hunting opportunities, importance of seeing antlered bucks of any age while hunting, importance of seeing older-aged bucks while hunting, attitude toward an experimental regulation that would reduce the buck bag limit to 1 antlered buck for all hunters, attitude toward an experimental regulation that would protect most yearling bucks from harvest, and evaluative beliefs regarding how either experimental regulation would affect their buck-hunting interactions and satisfaction level. Prior to conducting the telephone survey, all 533 hunters chosen randomly as the sample from which calls would be made were mailed a letter and information about likely changes in deer population characteristics that would occur if the experimental regulations were enacted. The purpose of the mailing was to ensure that respondents could develop informed attitudes about the experimental regulations.

Results

Hunter characteristics. The vast majority of hunters from all 3 WMUs owned small landholdings of <5 ac, and typically hunted during the regular firearm season or during both the regular firearm and early archery seasons. Most also had read the informational material mailed to them by DEC prior to being called for the survey.

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Baseline satisfaction with buck-hunting opportunities and importance of buck-related interactions. More than two-thirds of hunters in all 3 WMUs currently are satisfied with their buck-hunting opportunities. About 80% of hunters in each WMU indicated that seeing antlered bucks of any age while hunting is "moderately" or "very important." Seeing antlered bucks is "very important" for more hunters in WMU 7F (37% said "very") compared to hunters in the other WMUs (25-29% said "very"). Slightly fewer hunters in each WMU (i.e., 67-74%) indicated that seeing older-aged bucks while hunting is "moderately" or "very important." However, the percentages from each WMU indicating it is "very important" to see older-aged bucks were similar too those who said it is "very important" to see antlered bucks in general.

Attitudes toward the possible, experimental regulations. About one-third of respondents from WMUs 7H (31%) and 7J (35%) said they would support an experimental reduction in the buck bag limit, and 47% in each WMU would oppose it. In 7F, 53% would support it, and 30% would oppose it. A slight majority of hunters in WMUs 7H (58%) and 7J (53%), and 69% of hunters in WMU 7F would support an experimental regulation to protect most yearling bucks from harvest. Those opposed ranged from 17% in WMU 7F to 28% in 7J.

Reasons for support or opposition to the experimental regulations.

- Supporters tend to be dissatisfied with their current buck-hunting experiences, and to believe that 2 outcomes of the experimental regulations would be to have more "good" encounters with antlered bucks in general and older-aged bucks specifically. Because these kinds of buck-related experiences are "very important" to supporters, they believe that their satisfaction will increase if either experimental regulation is enacted.

- Opposers and non-supporters tend to be satisfied with their current buck-hunting experiences. They also mostly believe that they would have more "good" buck-related encounters. However, because these experiences are less important than other unidentified experiences, they believe their satisfaction would either decrease or not change if either experimental regulation is enacted.

- Having read material from DEC about the likelihood of seeing more antlered bucks in general and more older-aged bucks specifically had no influence on evaluative beliefs about outcomes of the possible, experimental regulation changes, nor on support or opposition.

- Size of landholding and types of hunting implements used have no influence on support or opposition toward either of the experimental regulations for hunter in WMUs 7J and 7H. In WMU 7F only, supporters of an experimental 1-buck bag limit are more likely to own <5 ac and to hunt during both archery and regular firearms seasons. There are no WMU differences in these characteristics for supporters (or opposers) of an experimental regulation to protect most yearling bucks from harvest.

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- Evaluative beliefs about outcomes associated with the possible experimental regulations have little influence, by themselves, on support or opposition. The vast majority of hunters in each WMU believed that they would see more antlered bucks of any age while hunting, as well as a greater number of older-age bucks, and that both of these outcomes would be "good." Even most hunters with negative evaluative beliefs thought that the 2 outcomes would be "good," but that the outcomes "will not happen" if most yearling bucks are protected from harvest.

Discussion

Deer hunter satisfaction in these 3 central New York WMUs, specifically with buck-hunting opportunities, is quite high. This is a positive evaluation of those aspects of DEC's deer management program pertaining to buck-hunting regulations, especially considering the great importance placed by hunters on buck-related interactions while hunting. One impetus for this study was DEC interest in evaluating whether changes in specific buck-hunting regulations could address satisfaction issues raised by some groups of hunters in central New York. Although buck-hunting satisfaction probably would increase for some hunters if either experimental regulation is enacted, satisfaction likely would decrease for others. Indeed, most hunters do not support an experimental 1-buck bag limit, and only slight majorities support an experimental regulation to protect most yearling bucks. Further, many hunters who said that more buck-related interactions would be "good" still opposed or were neutral toward either experimental regulation.

One reason for this lack of support for experimental regulations that would produce "good" outcomes is that having buck-related interactions simply are not "very important" to most deer hunters in the 3 WMUs. The data show that the more importance hunters placed on seeing older-aged bucks while hunting, the more likely hunters are to support either experimental regulations. On the other hand, however, the less importance hunters placed on having buck-related interactions, the more likely hunters are to oppose the experimental regulations. Related to these findings is that as level of importance of buck-related interactions decreased, fewer hunters evaluated those interactions as "good," and increasing percentages said seeing more bucks or more older-aged bucks would be "neither good nor bad" or even "bad."

Another factor affecting support or opposition was whether hunters currently are satisfied with their buck-hunting opportunities. In general, supporters of either possible, experimental regulation are dissatisfied with their current buck-hunting opportunities, and believed that the experimental regulations would improve their satisfaction. Most opposers already are satisfied, and many believe their satisfaction would decrease under either experimental regulation.

Support, by hunters who already are satisfied with their buck-hunting opportunities, for protecting most yearling bucks from harvest raises important management questions. Do hunters believe their satisfaction will increase even more because protecting yearling bucks would maintain the level of positive impacts (i.e., seeing bucks, especially older-aged bucks) above desirable levels, or because they believe such an experimental regulation would lead to higher levels of other, unidentified impacts?

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Opposition to an experimental regulation by hunters who place less importance on otherwise "good" buck-related interactions suggests the existence of impact trade-offs about which we do not know. If seeing bucks is not very important, why do they oppose the idea of protecting most yearling bucks, instead of being neutral toward the idea? Do they believe that an experimental regulation to protect yearlings would change something else that is very important to them (i.e., is an impact)? For example, do they believe the option to choose whether to shoot at a particular buck will decrease below a desirable level? Do they believe non-compliance by other hunters would increase above a tolerable level? These questions are beyond the scope of this study and we have no data to examine them at this time, yet they warrant research focus so the best possible decisions can be made about future regulation changes.

Conclusions and Implications

At this time, there is little compelling evidence that either experimentally reducing the buck bag limit to 1 for all hunters or experimentally increasing the buck harvest standard in an effort to protect most yearling bucks from harvest is warranted for WMUs 7F, 7H, or 7J. The idea of experimentally reducing the buck bag limit is opposed by substantial percentages of hunters in central New York, Although more supporters than opposers currently are dissatisfied with their buck-hunting opportunities, relatively few said such an experimental regulation would increase their satisfaction. Overall, more hunters said such an experimental regulation would decrease their buck-hunting satisfaction than said it would increase their satisfaction.

Majorities of hunters in the 3 WMUs supported an experimental regulation to protect most yearling bucks from harvest, but the majorities slim in WMUs 7H and 7J. Importantly, we found that the 2 main reasons for implementing such an experimental regulation (increasing the total number of antlered bucks hunters see while hunting, and increasing the proportion of older-aged bucks in the buck population) are <u>not</u> very important for the vast majority of deer hunters (~two-thirds). Although many supporters indicated that their buck-hunting satisfaction would increase if the experimental regulation were enacted, there is no evidence to suggest that this would affect management capability or long-term participation by hunters.

Most opposers and those who are neutral toward the idea of protecting most yearling bucks from harvest believe that their satisfaction would decrease. Apparently, hunters believe that other impacts of greater importance to them than interactions with bucks would be affected negatively by the experimental regulation. At this time, we do not know if hunters believe that such an experiment would diminish "very important" positive impacts such as being able to choose which antlered bucks they want to harvest, or that it would increase above an intolerable level some negative impact like non-compliance or unfairness among hunters.

Finally, this study provided an opportunity to validate essential hypotheses about the concept of adaptive impact management, or AIM. Clearly, hunters evaluate the potential consequences of possible, experimental changes in regulations in terms of positive and negative impacts of greatest importance/concern to them. Future research should be focused on identifying these impacts. The greatest benefit to managers in terms of continued management capability and long-term participation by hunters should occur when the identified impacts are managed at desirable/tolerable levels.

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We greatly appreciate the assistance provided to us by the Deer Team members of the New York State Department of Environmental Conservation (DEC). D. Riehlman was particularly instrumental in helping to develop the phone survey instrument, and he and his colleagues on DEC's Deer Team prepared the information and mailed it to potential survey respondents prior to the start of telephoning. E. Kautz obtained the sample of hunters names and telephone numbers. The phone survey was implemented by staff with Cornell University's Survey Research Institute. Several staff from Cornell University's Human Dimensions Research Unit (HDRU) assisted with the study, including K. Smith and M. Peech.

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INTRODUCTION

Deer biologists with the New York State Department of Environmental Conservation (DEC) are responsible for managing white-tailed deer (Odocoileus virginianus) in New York. The general goal of deer management in the state is to ensure that benefits of deer to people (e.g., viewing, hunting) can be achieved while minimizing concerns or problems that deer may cause (Riehlman et al. No Date). DEC addresses this goal in a variety of ways including promulgation of deer-hunting regulations aimed at providing safe and satisfying experiences for deer hunters.

Two regulations that might affect hunter satisfaction and that have received attention recently are (1) the buck harvest standard defining which bucks are legal to harvest, and (2) the antlered buck bag limit. Since 1912, the buck harvest standard in most of the state has been that a buck must have an antler at least 3-inches long to be harvested legally. The current harvest standard has resulted in most bucks being taken as yearlings, with relatively few bucks surviving into 2.5 year-old or older age classes. DEC has received input from some sportsmen advocating for a more restrictive buck harvest standard to allow more bucks to survive into older age classes, and to create more balance in the number of adult males and females. The other change advocated by some sportsmen is to reduce the buck bag limit. This is promoted largely as a means to more fairly allocate the use of a limited resource.

Recent increasing interest in alternative buck harvest regulations seems to have arisen, in part, to considerable coverage in the popular press. In central NY, discussion of the subject was further stimulated by a group of deer hunters advocating for change, and who distributed a specific proposal widely through the internet. In addition, 2 public meetings about their proposal were co-sponsored by that group and the Cayuga and Onondaga County Sportsmen Federations.

In late summer 2006, DEC deer biologists responded to this discussion within the sportsmen's community by asking staff with the Human Dimensions Research Unit (HDRU) in the Department of Natural Resources at Cornell University to develop and implement a phone survey of deer hunters in 3 central New York wildlife management units (WMUs). The purpose of the survey was to assess the interests and opinions of deer hunters about possible changes to buck harvest limits and antler criteria in WMUs 7F, 7H, and 7J (Figure 1).

Consideration about whether to enact either possible, experimental regulation will depend on a variety of factors. These include not only level of support, but also: hunters' beliefs about likely changes in buck-related hunting experiences, importance of those experiences, and their influence on hunters' satisfaction. Majority support by itself would be insufficient to warrant enacting the experimental regulations, especially if substantial percentages of hunters either oppose the experimental regulations or are ambivalent toward them. Also needed would be for most hunters to believe that positive and "very important" (i.e., highly valued) changes would occur in their buck-related hunting experiences, and that these changes would maintain or improve hunter satisfaction.

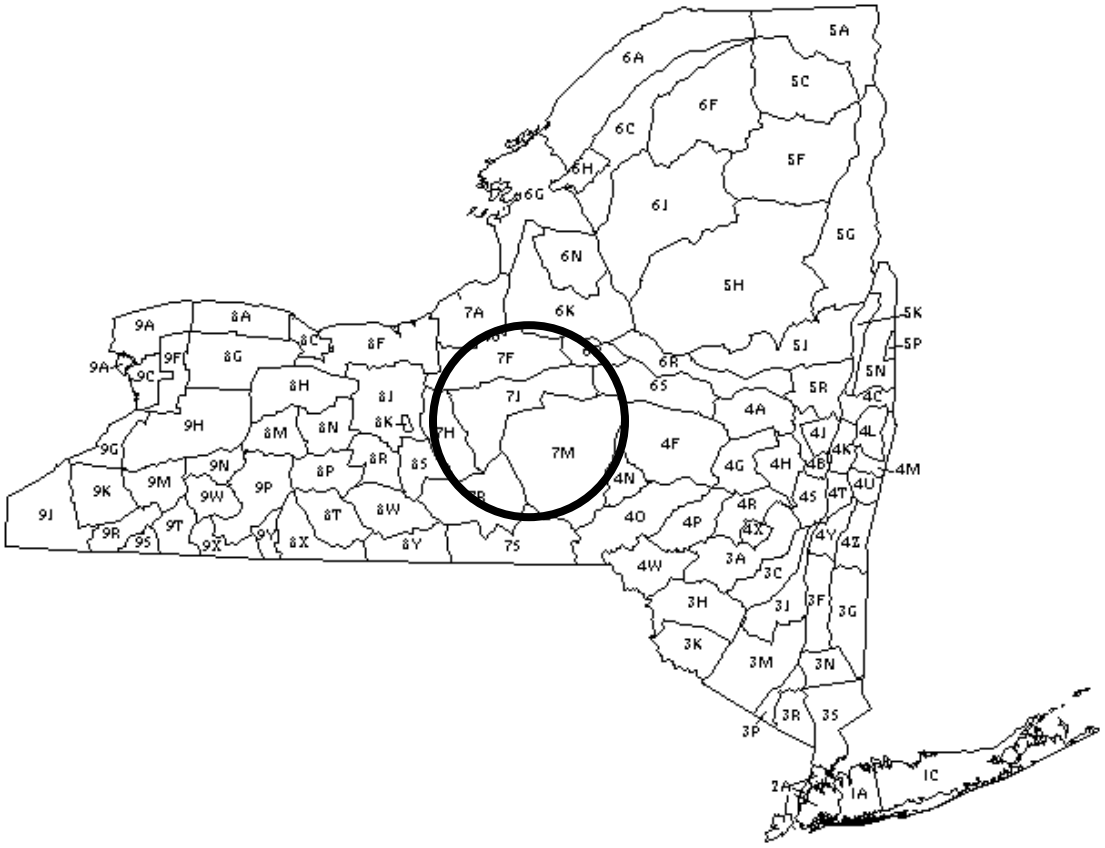

Figure 1. Location in central New York State of wildlife management units (WMUs) 7F, 7H, and 7J.

METHODS

DEC selected an initial, stratified, random sample of 533 persons who had purchased a deer-hunting license for 2005-06 and who lived in each of the 3 target WMUs. An additional 100 persons were randomly selected from WMU 7F to ensure a sufficient number of respondents completed the survey. In advance of the telephone interviews, all persons in the samples were mailed an information packet to read (Appendix A), and informed that they may be interviewed. Staff with Cornell University's Survey Research Institute began telephone interviews on 9 September 2006 and ceased data collection on 1 October 2006. At least 3 attempts were made to call each hunter, and ultimately 135 interviews were completed in each WMU.

All surveys implemented with a sample of persons from a large population have a margin of error associated with them. This margin of error varies according to sample size and the percentage of respondents giving a particular answer to each question. The number of interviews completed in each WMU resulted in a maximum margin of error at the 95% confidence level of about $\pm$8.0%, and the combined 405 completed interviews resulted in a maximum margin of error of about $\pm$4.5% for the combined units.

Concepts Measured In The Telephone Survey

The interview included 10 total questions, although several had multiple parts (Appendix B). Prior to asking opinions about possible changes in regulations, we determined interviewees' current, or baseline, level of satisfaction with buck-hunting opportunities. We accomplished this through a 2-part question in which we first asked if respondents were satisfied, dissatisfied, or neither satisfied nor dissatisfied with their buck-hunting opportunities in WMUs 7F, 7H, or 7J. Then we asked whether they were "slightly," "moderately," or "strongly" satisfied/dissatisfied.

Although satisfaction may be influenced by many kinds of hunter-deer interactions, the possible experimental regulations likely would influence buck-related interactions. Thus, we assessed how important each of 2 buck-related interactions was to their hunting satisfaction: (1) the total number of antlered bucks of any age they see while hunting, and (2) the number of older-aged bucks they see while hunting. Possible response categories for each question were "very important," "moderately important," "slightly important," and "not at all important."

The next section of the interview assessed opinions about a possible change in buck bag limit. Interviewees were told that the current buck bag limit is 2 bucks for hunters who use multiple implements, but is 1 buck for those who use only 1 hunting implement. Then they were asked whether an experimental change to a 1-buck bag limit for all hunters would increase, not change, or decrease their satisfaction with buck-hunting opportunities in the target WMUs. If their response was either an increase or decrease in satisfaction, we asked whether that change in satisfaction would be "a little" or "a lot." Finally, we asked whether they would support, be neutral toward, or oppose an experimental change to a 1-buck bag limit for all hunters.

We then assessed opinions and evaluative beliefs about a possible increase in the buck harvest standard. As before, interviewees were told that a large percentage of yearling bucks are harvested each fall in central New York, and that an experimental regulation change could be to protect most yearling bucks from harvest. To assess evaluative beliefs about possible outcomes of such an experimental regulation, we used a pair of 2-part questions. First, we asked whether they believed that such a regulation would result in them seeing more antlered bucks of all ages while hunting. Possible response categories were yes, don't know, and no. Then we asked them to suppose that they did see more antlered bucks while hunting in subsequent years, and to indicate whether that would be a good change, a bad change, or neither good nor bad. The second question set pertained to seeing a greater number of older-aged bucks while hunting.

As before, we then asked whether an experimental change to protect most yearling bucks from harvest would increase, decrease, or not change their overall satisfaction with buck-hunting opportunities. If a change was indicated, interviewees were asked if the change would be "a little," or "a lot." Then they were asked whether they would support, be neutral toward, or oppose an experimental change to protect most yearling bucks from harvest.

We asked several comparative questions. One was total acres of land owned, if any, in WMUs 7F, 7H, and 7J. Do they typically hunt deer in any of the WMUs? If so, do they hunt during bow season (yes or no), regular gun season (yes or no), and muzzleloader season (yes or no). We also asked if they read the material DEC mailed them prior to the interview.

We analyzed interview data using SPSS-X (Version 14.0), and used p = 0.05 as the significance threshold for all analyses. We used Pearson Chi-square tests to compare categorical data among WMUs.

RESULTS

Response Rates

The total sample of 1,700 hunters resulted in 405 completed interviews (135 for each WMU), 105 inoperative telephone numbers, 5 persons who were deceased or too ill to respond, 1 person who could not understand English to complete the interview, and 16 persons who were ineligible to respond (<18 years of age). Further, 20 persons refused to be interviewed.

General Characteristics of Respondents

The percent of hunters in each of 3 landownership categories (Table 1) differed by WMU (X^2 = 19.835, df = 4, p = 0.001). In general, hunters in WMU 7F owned smaller landholdings. The vast majority of respondents from all 3 WMUs hunted deer during the regular firearms season only or during regular firearms season and either archery or muzzleloader seasons (Table 2). A similar pattern occurred in all 3 WMUs (X^2 = 7.278, df = 4, p = 0.122). A large percentage of interviewees had read the material sent to them by DEC prior to the survey, and no differences in these percentages were found among the 3 WMUs (X^2 = 4.723, df = 2, p = 0.094).

Table 1. Numbers and percentages of deer hunters residing in each of 3 wildlife management units (WMUs) in central New York State owning landholdings of different sizes, based on a telephone survey conducted in 2006.

	WMU 7F		WMU 7H		WMU 7J	
Landholding size	n	%	n	%	n	%
<5 acres	105	78.9	72	53.7	85	64.4
5 – 49 acres	17	12.8	38	28.4	25	18.9
≥50 acres	11	8.3	24	19.9	22	16.7
totals	133	100.0	134	100.0	132	100.0

Table 2. Various deer-hunting seasons in which deer hunters residing in each of 3 wildlife management units (WMUs) in central New York State typically participate, based on a telephone survey conducted in 2006.

Participation in deer-hunting seasons	WMU 7F n	WMU 7F %	WMU 7H n	WMU 7H %	WMU 7J n	WMU 7J %
Archery only	2	1.7	1	0.9	1	0.9
Regular firearm only	47	40.5	49	42.2	34	30.6
Muzzleloder only	0	0.0	0	0.0	0	0.0
Archery/muzzleloader	0	0.0	0	0.0	0	0.0
Regular firearm and ≥1 other season	49	42.2	57	49.1	59	53.2
Do not hunt any of these 3 WMUs	18	1.6	9	7.8	17	15.3
totals	116	100.0	116	100.0	111	100.0

Table 3. Numbers and percentages of deer hunters residing in each of 3 wildlife management units (WMUs) in central New York State who read material sent to them by the state wildlife agency about likely outcomes of 2 possible experimental changes in buck-hunting regulations, based on a telephone survey conducted in 2006.

Read material?	WMU 7F n	WMU 7F %	WMU 7H n	WMU 7H %	WMU 7J n	WMU 7J %
No	41	30.6	31	23.1	26	19.4
Yes	93	69.4	103	76.9	108	80.6
totals	134	100.0	134	100.0	134	100.0

Baseline Satisfaction With Buck-Hunting Opportunities And Importance of Buck-related Interactions

More than two-thirds of hunters in all 3 WMUs currently are satisfied with their buck-hunting opportunities (Table 4). The pattern of satisfied vs. dissatisfied seems different in WMU 7F compared to the pattern in the other WMUs, with more dissatisfaction in 7F. However, given the relatively small sample sizes for each WMU, the percentages of hunters who currently are satisfied, or who are dissatisfied, do not differ statistically among the WMUs ($X^2 = 6.977$, df = 4, p = 0.137).

About 80% of hunters in each WMU indicated that seeing bucks of any age while hunting is at least "moderately important" (Table 5). These general buck-related interactions, however, may be more of a management interest for hunters in WMU 7F compared to the other WMUs, given that management actions may be focused most appropriately on effect/interactions that are "very important." In WMU 7F, about one-third of hunters reported that these interactions with bucks of any age are "very important" whereas about one-quarter of hunters in the other WMUs reported them as "very important." Despite this seemingly different pattern, it is not significant ($X^2 = 6.028$, df = 6, p = 0.420).

Slightly fewer hunters in each WMU (i.e., 67-74%) indicated that seeing older-aged bucks while hunting is "moderately" or "very important" (Table 6). The same pattern exists for these interactions with older bucks, with a higher percentage of hunters in WMU 7F reporting that seeing older-aged bucks is "very important." Nonetheless, we did not find differences among WMUs for the percentage who indicated seeing older bucks is "very important" vs. less important ($X^2 = 9.144$, df = 6, p = 0.166).

Table 4. Numbers and percentages of deer hunters residing in each of 3 wildlife management units (WMUs) in central New York State who currently are satisfied or dissatisfied with their buck-hunting opportunities, based on a telephone survey conducted in 2006.

	WMU 7F		WMU 7H		WMU 7J	
Level of satisfaction	n	%	n	%	n	%
Dissatified	29	22.0	15	11.2	17	12.8
Neither satisfied nor dissatisfied	14	10.6	15	11.2	15	11.2
Satisfied	89	67.4	104	76.6	101	75.9
totals	132	100.0	134	100.0	133	100.0

Table 5. Numbers and percentages of deer hunters residing in each of 3 wildlife management units (WMUs) in central New York State who associated different levels of importance with seeing antlered bucks of any age while hunting, based on a telephone survey conducted in 2006.

	WMU 7F		WMU 7H		WMU 7J	
Importance level	n	%	n	%	n	%
Not at all important	12	9.0	10	7.5	12	9.0
Slightly important	14	10.5	19	14.2	15	11.3
Moderately important	58	43.6	72	53.7	68	51.1
Very important	49	36.8	33	24.6	38	28.6
totals	133	100.0	134	100.0	133	100.0

Table 6. Numbers and percentages of deer hunters residing in each of 3 wildlife management units (WMUs) in central New York State who associated different levels of importance with seeing older-aged antlered bucks with larger antlers while hunting, based on a telephone survey in 2006.

	WMU 7F		WMU 7H		WMU 7J	
Importance level	n	%	n	%	n	%
Not at all important	15	11.1	22	16.4	15	11.3
Slightly important	27	20.0	22	16.4	18	13.5
Moderately important	47	34.8	57	42.5	65	48.9
Very important	46	34.1	33	24.6	35	26.3
totals	135	100.0	134	100.0	133	100.0

General Levels of Support For, Or Opposition To, Possible Experimental Changes in Buck Bag Limit And Buck Harvest Standard

We found differences among the WMUs with respect to hunters' attitudes toward reducing the buck bag limit to 1 for all hunters regardless of how many hunting implements they use (Table 7, top). Less than one-half of respondents from WMUs 7H and 7J said they would support such an experimental change. Hunters from WMU 7F were more likely to support, and less likely to oppose such an experimental change ($X^2 = 17.324$, df = 4, p = 0.002). A slight majority of hunters in WMUs 7H and 7J, and about two-thirds of hunters in WMU 7F, would support an experimental change in the buck harvest standard to protect most yearling bucks from harvest (Table 7, bottom). Although the percentages are not statistically different among WMUs ($X^2 = 8.842$, df = 4, p = 0.065), the general trend is for more support in WMU 7F and less support in WMU 7J.

Table 7. Attitudes of deer hunters residing in each of 3 wildlife management units (WMUs) in central New York State toward 2 possible, experimental changes in hunting regulations, based on a telephone survey conducted in 2006.

Attitude toward a 1-buck bag limit	WMU 7F n	WMU 7F %	WMU 7H n	WMU 7H %	WMU 7J n	WMU 7J %
Support	71	53.4	41	30.8	46	34.6
Neither support nor oppose	22	16.5	30	22.6	24	18.0
Oppose	40	30.1	62	46.6	63	47.4
totals	133	100.0	133	100.0	133	100.0

Attitude toward protecting most yearling bucks	WMU 7F n	WMU 7F %	WMU 7H n	WMU 7H %	WMU 7J n	WMU 7J %
Support	91	68.9	77	57.9	71	53.0
Neither support nor oppose	19	14.4	29	21.8	26	19.4
Oppose	22	16.7	27	20.3	37	27.6
totals	132	100.0	133	100.0	134	100.0

Changes In Satisfaction Under Each Possible Experimental Regulation

An experimental regulation reducing the buck bag limit to 1 for all hunters would increase satisfaction for relatively few hunters in any WMU (i.e., 19-30%). Such an experimental regulation would not change satisfaction for more than one-third of hunters in each WMU, but would decrease satisfaction for about the same percentage of hunters (Table 8). If such an experimental regulation is enacted, it would change satisfaction at the extremes as more hunters said it would decrease/increase satisfaction "a lot" compared to "a little." We found similar results in all 3 WMUs when we examined all 5 response categories (X^2 = 10.155, df = 8, p = 0.254). Similarly, we found no differences when we collapsed the response categories into increase, decrease, or no change (X^2 = 6.009, df = 4, p = 0.198).

Table 8. Direction and magnitude of change in satisfaction with buck-hunting opportunities anticipated by deer hunters residing in each of 3 wildlife management units (WMUs) in central New York State if an experimental regulation is enacted to reduce the buck bag limit to 1 for all hunters, based on a telephone survey conducted in 2006.

Change in satisfaction with an experimental 1-buck bag limit	WMU 7F		WMU 7H		WMU 7J	
	n	%	n	%	n	%
Decrease a lot	30	22.6	43	32.1	42	31.6
Decrease a little	16	12.0	11	8.2	11	8.3
No change	45	33.8	54	40.3	43	32.3
Increase a little	13	9.8	7	5.2	14	10.5
Increase a lot	29	21.8	19	14.2	23	17.3
totals	133	100.0	134	100.0	133	100.0

An experimental regulation to protect most yearling bucks from harvest would increase satisfaction for more than one-half of hunters in WMUs 7F and 7J, and slightly less than one-half in WMU 7H (Table 9). Such an experimental regulation would not change satisfaction for about one-third of hunters in each WMU, and would decrease satisfaction for relatively few hunters. Among those for whom such a regulation would increase satisfaction, many more hunters said "increase a lot" compared to "increase a little." The percentages of hunters indicating the direction and strength of change in satisfaction if such a regulation is enacted did not differ among WMUs, regardless of whether we examined all 5 response categories (X^2 = 6.306, df = 8, p = 0.613), or collapsed response categories into increase, decrease, or no change (X^2 = 1.970, df = 4, p = 0.741).

Table 9. Direction and magnitude of change in satisfaction with buck-hunting opportunities anticipated by deer hunters residing in each of 3 wildlife management units (WMUs) in central New York State if an experimental regulation is enacted to protect most yearling bucks from harvest, based on a telephone survey conducted in 2006.

Change in satisfaction if most yearling bucks are protected from harvest	WMU 7F n	WMU 7F %	WMU 7H n	WMU 7H %	WMU 7J n	WMU 7J %
Decrease a lot	11	8.4	13	9.9	13	9.9
Decrease a little	4	3.1	6	4.6	7	5.3
No change	45	34.4	50	38.2	43	32.8
Increase a little	30	22.9	17	13.0	20	15.3
Increase a lot	41	31.3	45	34.4	48	36.6
totals	131	100.0	131	100.0	131	100.0

Evaluative Beliefs About Outcomes Of An Experimental Regulation To Protect Most Yearling Bucks From Harvest

Positive evaluative beliefs correspond to either of these conditions: (1) a good outcome will happen, or (2) a bad outcome will not happen. Similarly, negative evaluative beliefs correspond to: (1) a bad outcome will happen, or (2) a good outcome will not happen. The vast majority of hunters in each WMU expressed positive evaluative beliefs about a possible, experimental regulation to protect most yearling bucks from harvest (Table 10). Indeed, most hunters believed that they would see more antlered bucks of any age while hunting, and a greater number of older-age bucks, and that both outcomes would be good interactions. Most hunters with negative evaluative beliefs thought that the 2 outcomes would be good, but that neither would happen if most yearling bucks are protected from harvest.

The percentages of hunters with positive, neutral, or negative beliefs about seeing bucks of any age while hunting did not differ among the 3 WMUs ($X^2 = 4.131$, df = 4, p = 0.389). However, more hunters in WMU 7H had negative beliefs (and fewer had positive beliefs) about seeing older-aged bucks while hunting ($X^2 = 13.675$, df = 4, p = 0.008) if most yearling bucks are protected from harvest.

Whether interviewees read the material DEC sent them prior to our telephone survey had no influence on evaluative beliefs ($X^2 = 0.401$, df = 3, p = 0.940). Strong majorities of both readers (74%) and non-readers (75%) believed they would see both (a) more bucks of any age while hunting, and (b) more older-aged bucks while hunting (Table 11). About 12% of both readers and non-readers believed neither outcome would happen. Similarly small percentages of readers and non-readers believed one or the other outcome would happen.

Table 10. Evaluative beliefs of deer hunters residing in each of 3 wildlife management units (WMUs) in central New York State about buck-related interactions occurring as a result of a possible, experimental regulation to protect most yearling bucks from harvest, based on a telephone survey conducted in 2006.

See more antlered bucks of all ages while hunting?	WMU 7F		WMU 7H		WMU 7J	
	n	%	n	%	n	%
Will happen, and will be good	96	76.2	82	64.6	84	67.2
Would be bad, but won't happen	0	0.0	3	2.4	2	1.6
Neutral beliefs	16	12.7	23	18.1	17	13.6
Will happen, and will be bad	1	0.8	4	3.1	4	2.4
Would be good, but won't happen	13	10.3	15	11.8	19	15.2
totals	126	100.0	127	100.0	126	100.0

See more older-aged bucks while hunting?	WMU 7F		WMU 7H		WMU 7J	
	n	%	n	%	n	%
Will happen, and will be good	93	75.0	76	60.8	93	74.4
Would be bad, but won't happen	0	0.0	1	0.8	1	0.8
Neutral beliefs	19	15.3	17	13.6	17	13.6
Will happen, and will be bad	1	0.8	5	4.0	4	3.2
Would be good, but won't happen	11	8.9	26	20.8	10	8.0
totals	124	100.0	125	100.0	125	100.0

Table 11. Beliefs about buck-related interactions that might occur under an experimental regulation to protect most yearling bucks from harvest, of deer hunters in central New York State who read information about likely outcomes of the experimental regulation vs. those who did not read the information, based on a telephone survey conducted in 2006.

If most yearling bucks are protected from harvest, hunters believe:	Read material about likely changes in buck-related interactions? No, did not read n	%	Yes, did read n	%
they will see more antlered bucks in total, and more older-aged bucks	63	75.0	201	73.6
they will see more antlered bucks in total, but not more older-aged bucks	4	4.8	18	6.6
they will see more older-aged bucks, but not more antlered bucks in total	7	8.3	21	7.7
they will not see more total bucks, nor more older-aged bucks	10	11.9	33	12.1
Totals	84	100.0	273	100.00

Exploring Reasons For Support Or Opposition To The Possible Experimental Regulations

Hunter Characteristics Have Little Influence On Support Or Opposition:

Size of landholding and types of hunting implements used have no influence on support or opposition toward the experimental regulations in WMUs 7J and 7H. In WMU 7F only, supporters of an experimental 1-buck bag limit are more likely to own <5 ac (X^2 = 13.457, df = 2, p = 0.001). However, in all WMUs supporters of a 1-buck bag limit are no more likely than opposers to own ≥5 ac (X^2 = 3.046, df = 2, p = 0.218). Also in all WMUs, supporters of protecting most yearling bucks from harvest are no more likely than opposers to own <5 ac (X^2 = 1.630, df = 2, p = 0.443) or own ≥5 ac (X^2 = 5.041, df = 2, p = 0.080).

Similarly, in WMU 7F only, hunters who hunt during both archery and regular firearms seasons are less likely to oppose a 1-buck bag limit (X^2 = 15.117, df = 2, p = 0.001) and are less likely to oppose protecting most yearling bucks from harvest (X^2 = 9.143, df = 2, p = 0.010). We found no WMU differences in the percentage of supporters (or opposers) among shot-gun only hunters for the 1-buck bag limit (X^2 = 3.398, df = 2, p = 0.183) and no WMU differences for protecting most yearling bucks (X^2 = 1.120, df = 2, p = 0.571).

Opposition/Support Is Linked To Current Satisfaction/Dissatisfaction:

In WMUs 7F and 7J, more supporters (compared to opposers) of reducing the buck bag limit to 1 antlered buck for all hunters, are dissatisfied with their current buck-hunting opportunities (Table 12). Among WMU 7H hunters, supporters of the experimental bag limit were more satisfied (X^2 = 7.447, df = 2, p = 0.024) and less dissatisfied (X^2 = 9.290, df = 2, p = 0.010) than supporters in the other WMUs. In all 3 WMUs, more supporters than opposers of increasing the buck harvest standard are dissatisfied (Table 13).

One plausible explanation for this finding is that supporters are willing to try the experimental changes in an effort to improve their buck-hunting opportunities, particularly seeing bucks of any age while hunting and seeing older-aged bucks while hunting. This explanation is borne out by results showing that most supporters (51-62%) of a 1-buck bag limit for all hunters believe their satisfaction would increase whereas most opposers (69-75%) believe their satisfaction would decrease (Table 14). We found similar results for supporters (64-81% said their satisfaction would increase) and opposers (47-70% said their satisfaction would decrease) of an experiment to protect most yearling bucks from harvest (Table 15).

Opposition/Support Is Linked To Importance Of Seeing Bucks:

One premise underlying this research is that hunters' evaluations of their general satisfaction with buck-hunting opportunities are related to the trade-offs among positive and negative impacts they associate with those opportunities (Riley et al. 2002, Enck et al. 2006). That is, if hunters perceive that positive impacts they associate with buck-hunting opportunities are above desirable levels and negative impacts are below intolerable levels, hunters will be satisfied with their buck-hunting opportunities.

For this study, we assumed that the numbers of (a) antlered bucks of any age hunters see while hunting, and (b) older-aged bucks with large antlers hunters see while hunting may be 2 "very important" effects (i.e., impacts) of their deer-related interactions. If this assumption is true, then satisfaction with buck-hunting opportunities will be related closely to hunters' perceptions of these 2 impacts. Also, support for, or opposition to, any change in hunting regulations will be related to hunters' beliefs about how the changes in regulations will affect levels of these impacts, and ultimately, their satisfaction.

To examine these assumptions and determine if they provide reasonable explanations of support for or opposition to possible, experimental regulations, we combined all hunters who indicated that seeing older-aged bucks while hunting was "very important" from all 3 WMUs (7F n = 46; 7H n = 33; and 7J n = 35; total n = 114), and compared them to hunters who indicated that seeing older-aged bucks was less important. We felt confident with this segregation because the only difference we found among WMUs was that a slightly higher percentage of hunters in 7H (76%) were currently satisfied with their buck-hunting opportunities than hunters in 7F (62%) or 7J (63%), although these are not significantly different (X^2 = 2.742, df = 4, p = 0.602). A visual examination of results for these grouping of hunters revealed no other differences (Appendix C).

Table 12. Comparison of support for, or opposition to, a possible experimental regulation reducing the buck bag limit to 1 buck for all hunters, with their level of satisfaction with current buck-hunting opportunities, for deer hunters residing in each of 3 wildlife management units (WMUs) in central New York State, based on a telephone survey conducted in 2006.

Satisfaction with current buck-hunting opportunities	WMU 7F						WMU 7H						WMU 7J					
	Oppose		Neither		Support		Oppose		Neither		Support		Oppose		Neither		Support	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Dissatisfied	6	16.2	3	13.6	20	28.2	9	14.8	3	10.0	3	7.3	5	8.1	4	16.7	8	17.8
Neither	2	5.4	1	4.5	11	15.5	4	6.6	5	16.7	6	14.6	5	8.1	4	16.7	6	13.3
Satisfied	29	78.4	18	81.9	40	56.3	48	78.7	22	73.3	32	78.0	52	83.9	16	66.7	31	68.9
Totals	37	100.0	22	100.0	71	100.0	61	100.0	30	100.0	41	100.0	62	100.0	24	100.0	45	100.0

Table 13. Comparison of support for, and opposition to, a possible experimental regulation that would protect most yearling bucks from harvest with satisfaction with current buck-hunting opportunities, for deer hunters residing in each of 3 wildlife management areas (WMUs) in central New York State, based on a telephone survey conducted in 2006.

Satisfaction with current buck-hunting opportunities	WMU 7F						WMU 7H						WMU 7J					
	Oppose		Neither		Support		Oppose		Neither		Support		Oppose		Neither		Support	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Dissatisfied	1	4.8	4	21.1	23	25.8	3	11.5	3	10.3	9	11.7	4	11.1	3	11.5	10	14.3
Neither	1	4.8	2	9.5	11	12.4	1	3.8	3	10.3	11	14.3	2	5.5	1	3.8	12	17.1
Satisfied	19	90.5	13	68.4	55	61.8	22	84.6	23	79.3	57	74.0	30	83.3	22	84.6	48	68.6
Totals	21	100.0	19	100.0	89	100.0	26	100.0	29	100.0	77	100.0	36	100.0	26	100.0	70	100.0

Table 14. Comparison of support for, and opposition to, a possible experimental change to a 1-buck bag limit for all deer hunters, with anticipated change in satisfaction with buck-hunting opportunities, for deer hunters residing in each of 3 wildlife management units (WMUs) in central New York State, based on a telephone survey conducted in 2006.

Influence of 1-buck bag limit on future hunting satisfaction	WMU 7F						WMU 7H						WMU 7J					
	Oppose		Neither		Support		Oppose		Neither		Support		Oppose		Neither		Support	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Decrease	30	75.0	9	42.9	7	10.0	43	70.5	8	26.7	3	7.3	43	69.4	8	33.3	2	4.4
No change	9	22.5	10	47.6	24	34.3	14	23.0	21	70.0	17	41.5	13	21.0	14	58.3	15	33.3
Increase	1	2.5	2	9.5	39	55.7	4	6.6	1	3.3	21	51.2	6	9.7	2	8.3	28	62.2
Totals	40	100.0	21	100.0	70	100.0	61	100.0	30	100.0	41	100.0	62	100.0	24	100.0	45	100.0

Table 15. Comparison of support for, and opposition to, a possible experimental regulation to protect most yearling bucks from harvest, with anticipated change in satisfaction with buck-hunting opportunities, for deer hunters residing in each of 3 wildlife management units (WMUs) in central New York State, based on a telephone survey conducted in 2006.

Influence of protecting yearling bucks on hunting satisfaction	WMU 7F						WMU 7H						WMU 7J					
	Oppose		Neither		Support		Oppose		Neither		Support		Oppose		Neither		Support	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Decrease	10	47.6	1	5.9	3	3.3	16	69.6	1	3.3	2	2.6	17	47.2	2	7.7	1	1.4
No change	7	33.3	9	52.9	29	32.2	9	39.1	19	65.5	21	27.6	16	44.4	15	57.7	12	17.4
Increase	4	19.0	7	41.2	58	64.4	1	4.3	9	31.0	53	69.7	3	8.3	9	34.6	56	81.2
Totals	21	100.0	17	100.0	90	100.0	23	100.0	29	100.0	76	100.0	36	100.0	26	100.0	69	100.0

The greater the importance hunters placed on seeing older-aged bucks while hunting, the more likely hunters are to support an experimental change to a 1-buck bag limit (Table 16). Also, the less importance placed on this kind of buck-related interaction, the more likely hunters are to oppose such an experimental change ($X^2 = 26.392$, df = 4, $p < 0.001$). We found similar results (Table 17) for the relationship between importance of seeing older-aged bucks while hunting and support for protecting most yearling bucks from harvest ($X^2 = 26.392$, df = 4, $p < 0.001$).

Table 16. Relationship between importance of seeing older-aged bucks while hunting and support for, or opposition to, a possible experimental regulation reducing the buck bag limit to 1 for all deer hunters, according to deer hunters residing in 3 wildlife management units (WMUs) in central New York State, based on a telephone survey conducted in 2006.

Support/oppose 1-buck bag limit	Seeing older bucks is very important		Seeing older bucks is moderately important		Seeing older bucks is not/slightly important	
	n	%	n	%	n	%
Support	66	58.4	60	35.7	32	27.8
Neither	11	9.7	39	23.2	26	22.6
Opposed	36	31.9	69	41.1	57	49.6
Totals	113	100.0	168	100.0	115	100.0

Table 17. Relationship between importance of seeing older-aged bucks while hunting and support for, or opposition to, a possible experimental regulation to protect most yearling bucks from harvest, according to deer hunters residing in 3 wildlife management units (WMUs) in central New York State, based on a telephone survey conducted in 2006.

Support/oppose 1-buck bag limit	Seeing older bucks is very important		Seeing older bucks is moderately important		Seeing older bucks is not/slightly important	
	n	%	n	%	n	%
Support	89	80.2	104	61.9	45	38.5
Neither	15	13.5	35	20.8	24	20.5
Opposed	7	6.3	29	17.3	48	41.0
Totals	111	100.0	168	100.0	115	100.0

Positive Evaluations Of A Buck-related Interaction Does Not Define It As An Impact To Be Managed

Another important assumption underlying this research is that hunters who associate impacts with their buck-related observations will evaluate those interactions unequivocally as being "good" whereas hunters who do not associate impacts with those interactions will be more ambivalent toward them. To examine this assumption, we developed the following hypotheses:

> H_1: hunters who indicate that seeing bucks of any age while hunting is "very important" will be more likely to evaluate seeing antlered bucks as "good." compared to hunters who place less importance on seeing bucks of any age.
>
> H_2: hunters who indicate that seeing older-aged bucks while hunting is "very important" will be more likely to evaluate seeing those bucks as "good" compared to hunters who place less importance on seeing older-aged bucks.

Both H_1 and H_2 are supported (Tables 18 and 19), with the vast majority (>96%) of hunters who indicated each kind of buck-related interaction is "very important" also evaluating those interactions as being "good." Further, as level of importance of each kind of buck-related observation decreased, decreasing percentages of hunters evaluated those observations as being "good," and increasing percentages of hunters evaluated the observations as "neither good nor bad" or "bad."

Table 18. Relationship between importance of seeing antlered bucks of any age while hunting and evaluative beliefs about that kind of buck-related interaction, for deer hunters residing in 3 wildlife management units (WMUs) in central New York State, based on a telephone survey conducted in 2006.

	Evaluation of seeing antlered bucks of any age while hunting						
Importance of	Good		Neither		Bad		Row totals
interaction	n	row %	n	row %	n	row %	n
Very important	115	96.6	2	1.7	2	1.7	119
Moderately important	161	82.1	29	14.8	6	3.1	196
Slightly important	32	66.7	14	29.2	2	4.2	48
Not at all important	18	52.9	13	38.2	3	8.8	34
Column totals	326		58		13		397

$X^2 = 45.813$, d.f. = 6, $p<0.001$

Table 19. Relationship between importance of seeing older-aged bucks while hunting and evaluative beliefs about that kind of buck-related interaction, for deer hunters residing in 3 wildlife management units (WMUs) in central New York State, based on a telephone survey conducted in 2006.

	Evaluation of seeing older bucks with large antlers while hunting						
Importance of	Good		Neither		Bad		Row totals
interaction	n	row %	n	row %	n	row %	n
Very important	109	95.6	4	3.5	1	0.9	114
Moderately important	144	85.7	20	11.9	4	2.4	168
Slightly important	52	77.6	13	19.4	2	3.0	67
Not at all important	18	36.7	25	51.0	6	12.2	49
Column totals	323		62		13		398

$X^2 = 82.146$, d.f. = 6, $p<0.001$

A corollary to the assumption validated above is that a "good" interaction/effect does not necessarily reflect an impact to be managed. By definition, a positive impact is something that stakeholders believe is "very important." Based on hunter satisfaction research, it is quite likely that many interactions/effects that are less than "very important" may also be evaluated as "good." Thus, we assume that many "good" interactions/effects will, nonetheless, not be considered important enough to be impacts to be managed. To examine this assumption, we developed these research hypotheses:

> H_3: Many hunters who believe that seeing antlered bucks of any age while hunting is "good" will not evaluate those observations as being "very important."
>
> H_4: Many hunters who believe that seeing older-aged bucks while hunting is "good" will not evaluate those observations as being "very important."

A review of Tables 18 and 19 above reveals that both H_3 and H_4 are supported. The majority of hunters who evaluated as "good" seeing antlered bucks of any age (211/326 = 65%) and the majority of hunters who evaluated as "good" seeing older-aged bucks (214/323 = 66%) indicated that these observations were less than "very important" (i.e., were moderately, slightly, or not at all important). Thus, neither of these buck-related interactions are impacts to be managed for those hunters. Although these buck-related interactions may be enjoyable and satisfying, they do not warrant consideration as quantifiable objectives of deer management for most (i.e., ~2/3) hunters.

Changes In Impacts Affect Satisfaction Whereas Changes In Interactions Evaluated As "Good" Do Not

Another assumption underlying this research is that a noticeable change in the level of an impact to be managed (i.e., it is "very important") will have a strong influence on hunters' satisfaction with their deer-related experiences, whereas a noticeable change in that same interaction/effect will have little or no bearing on satisfaction for hunters who indicate it is less than "very important" (not an impact) to them personally. In particular, if the level of a positive impact is below a desirable level, hunters who identify it as an impact ***should*** be dissatisfied. If the level of a positive impact is above a desirable level, hunters who identify it as an impact ***may*** be satisfied, depending on their evaluations of the levels of other impacts. On the other hand, hunters for whom an interaction/effect is less than "very important" might enjoy having more of those interactions (e.g., seeing a greater number of older bucks than they typically do). However, they should not be greatly dissatisfied if they do not see many, or perhaps if they even see no older bucks with large antlers[1].

We lack data from this study about the number of buck-related observations hunters typically experience, or how many they desire. We cannot develop or examine any hypotheses about whether those hunters will be satisfied or dissatisfied without knowing about their experiences or desires. We can, however, examine the following hypotheses about the relationship between hunters' satisfaction with their experiences and the importance they place on seeing bucks while hunting:

> H_5: The less importance hunters place on seeing antlered bucks of any age, the less likely they will evaluate their current buck-hunting opportunities as dissatisfying and the more likely they will evaluate their buck-hunting opportunities as satisfying or ambivalent.
>
> H_6: The less importance hunters place on seeing older-aged bucks, the less likely they will evaluate their current buck-hunting opportunities as dissatisfying and the more likely they will evaluate their buck-hunting opportunities as satisfying or ambivalent.

Hypothesis H_5 is supported (Table 20). Relatively few hunters who said that it is less than "very important" to see antlered bucks of any age (<15%) were dissatisfied with their buck-hunting opportunities and more who said it was "very important" to have these interactions were currently dissatisfied. The pattern[2] is measurably different ($X^2 = 6.097$, d.f. = 2, p = 0.047). This suggests (although we have no data to examine it) that hunters for whom seeing antlered bucks is "very important" typically see fewer bucks than they desire.

The pattern pertaining to the importance of seeing older-aged bucks seems similar, but hypothesis H_6 is rejected ($X^2 = 5.677$, d.f. = 4, p = 0.225). As hypothesized, more hunters for

[1] Hunters' expectations undoubtedly play a role in whether they are satisfied. Even if seeing antlered bucks of any age while hunting is not an impact, hunters may be dissatisfied if they expect to see some but don't see any.
[2] Because of small numbers for some cells in Table 19, we had to combine "not at all important" and "slightly important" to conduct the Chi-square analysis.

whom is it "very important" to see older-aged bucks are dissatisfied (21%) compared to all other hunters combined (13%). Also, fewer of the first group are satisfied (66%) compared to the others (76%). However, the percentages who are neutral/ambivalent are similar (12% vs. 11%).

Table 20. Relationship between satisfaction with current buck-hunting opportunities and importance of seeing antlered bucks of any age while hunting, for deer hunters residing in 3 wildlife management units (WMUs) in central New York State, based on a telephone survey conducted in 2006.

Currently dissatisfied or satisfied/ambivalent	How important is seeing bucks of any age while hunting?							
	Very		Moderately		Slightly		Not at all	
	n	%	n	%	n	%	n	%
Dissatisfied	25	20.8	24	12.4	7	14.6	3	9.1
Satisfied / ambivalent	95	79.2	170	87.6	41	85.4	30	90.9
Totals	120		194		48		33	

Table 21. Relationship between satisfaction with current buck-hunting opportunities and importance of seeing older-aged bucks while hunting, for deer hunters residing in 3 wildlife management units (WMUs) in central New York State, based on a telephone survey conducted in 2006.

Currently dissatisfied or satisfied/ambivalent	How important is seeing older-aged bucks while hunting?							
	Very		Moderately		Slightly		Not at all	
	n	%	n	%	n	%	n	%
Dissatisfied	24	21.2	22	13.1	9	13.2	6	12.0
Satisfied / ambivalent	89	78.8	146	86.9	57	83.8	44	88.0
Totals	113		168		68		50	

Support For Experimental Regulations Is Linked To Both Current Satisfaction And Beliefs About Changes In Impacts Caused By Regulations

Another assumption associated with management of impacts is that a positive relationship exists between (a) support for/opposition to a regulation change and (b) beliefs about the influence of the change on the level of an interaction/effect. We assume the relationship will be stronger for hunters who identify the interaction/effect as "very important" compared to those who identify it as less important. We also assume a relationship between (a) support for/opposition to a regulation change and (b) whether hunters currently are satisfied with their buck-hunting opportunities. To examine these assumptions, we developed these hypotheses:

Among hunters currently satisfied with their buck-hunting opportunities,

> H_7: Hunters who believe an interaction/effect is "very important" will be more likely to support a regulation change if they believe the new regulation will not decrease (i.e., increase or not change) the level of the positive impact, compared to hunters who believe the interaction/effect is less important.

Among hunters currently dissatisfied with their buck-hunting opportunities,

> H_{8a}: Hunters who believe an interaction/effect is "very important" will be more likely to support a regulation change if they believe the new regulation will increase the level of the positive impact, compared to hunters who believe the interaction/effect is less important.
>
> H_{8b}: Hunters who believe an interaction/effect is "very important" will be more likely to oppose a regulation change if they believe the new regulation will not increase (i.e., decrease or not change) the level of the positive impact, compared to hunters who believe the interaction/effect is less important.

H_7 is supported for both seeing bucks of any age ($X^2 = 3.949$, d.f. = 1, p = 0.047) and seeing older-aged bucks ($X^2 = 8.214$, d.f. = 1, p = 0.004). Satisfied hunters for whom seeing antlered bucks is "very important," and who believe they would see more antlered bucks if most yearling bucks are protected from harvest, are more likely to support protecting yearling bucks, compared to satisfied hunters who said seeing bucks of any age was less important (Table 22; 80% vs. 66%). Similarly, hunters for whom seeing older-aged bucks is "very important" are more likely to support protecting yearling bucks compared to those who place less importance on seeing older-aged bucks (Table 23; 81% vs. 60%).

We found additional support for H_7 when we examined support/opposition in relation to hunters' beliefs about how their satisfaction would change under the new regulation. First, we examined hunters for whom seeing bucks of any age while hunting is "very important." Most (37 of 45 who currently are satisfied, and who believe their satisfaction would increase even more, supported protecting yearling bucks. Similarly for those who said seeing old-aged bucks is "very important," most (42 of 48) who currently are satisfied and believe their satisfaction would increase even more also supported protecting yearling bucks.

Table 22. Among deer hunters residing in 3 wildlife management units (WMUs) in central New York State who currently are satisfied with their buck-hunting opportunities, relationship between (1) beliefs about whether protecting most yearling bucks from harvest will result in more interactions with bucks of any age while hunting, (2) importance of those interactions, and (3) support for an experimental regulation aimed at protecting most yearling bucks from harvest, based on a telephone survey conducted in 2006.

	How important is seeing bucks of any age while hunting?			
	Very important		Less than very important	
Experimental regulation will result in more interactions with antlered bucks	n	%	n	%
Support experimental regulation	52	80.0	93	66.4
Oppose or neutral toward regulation	13	20.0	47	33.6
	65		140	
Experimental regulation will/might not result in more interactions with antlered bucks				
Support experimental regulation	1	33.3	5	8.3
Oppose or neutral toward regulation	2	67.7	55	91.7
	2		60	

Table 23. Among deer hunters residing in 3 wildlife management units (WMUs) in central New York State, and who are satisfied with their current buck-hunting opportunities, relationship between (1) beliefs about whether protecting most yearling bucks from harvest will result in more interactions with older-aged bucks while hunting, (2) importance of those interactions, and (3) support for an experimental regulation aimed at protecting yearling bucks, based on a telephone survey conducted in 2006.

	How important is seeing older-aged bucks while hunting?			
	Very important		Less than very important	
	n	%	n	%
Experimental regulation will result in more interactions with older-aged bucks				
Support experimental regulation	50	80.6	89	60.1
Oppose or neutral toward regulation	12	19.4	59	33.6
	62		148	
Experimental regulation will/might not result in more interactions with older-aged bucks				
Support experimental regulation	3	37.5	8	16.0
Oppose or neutral toward regulation	5	62.5	42	84.0
	8		50	

H_{8a} is rejected, most likely because of small cell sizes. Although more hunters who currently are dissatisfied with their buck-hunting opportunities, and who believed they would have a greater number of "very important" interactions with antlered bucks of any age while hunting, support an experimental regulation to protect most yearling bucks from harvest, compared to hunters who said those interactions are less important (Table 24; 81% vs. 71%), the difference is not significant ($X^2 = 0.589$, d.f. = 1, p = 0.443). The difference in percentages is even greater for those who said seeing older-aged bucks is "very important" vs. those for whom those interactions are less important (Table 24; 82% vs. 63%), but still are not significant ($X^2 = 2.221$, d.f. = 1, p = 0.146). H_{8b} cannot be examined because of small numbers of hunters in some of the categories (see Table 24).

Stronger support for this hypothesis exists when we also considered hunters' beliefs about how an experimental regulation to protect most yearling bucks from harvest would affect their satisfaction. For hunters who indicated that seeing bucks of any age is "very important," 16 of 17 hunters who currently are dissatisfied, and believe their satisfaction would increase if most yearlings are protected, support doing so. Also, for hunters who said that seeing older-aged bucks is "very important," 16 of 18 who currently are dissatisfied, and think their satisfaction would increase if most yearlings are protected, support such an experimental regulation.

Table 24. Among deer hunters residing in 3 wildlife management units (WMUs) in central New York State and who currently are dissatisfied with their buck-hunting opportunities, relationship between (1) beliefs about whether protecting most yearling bucks from harvest will result in more buck-related interactions, (2) importance of those interactions, and (3) support for an experimental regulation aimed at protecting yearling bucks, based on a telephone survey conducted in 2006.

	How important is seeing bucks of any age while hunting?				How important is seeing older-aged bucks while hunting?			
	Very important		Less than very important		Very important		Less than very important	
Experimental regulation	n	%	n	%	n	%	n	%
will result in seeing more of these bucks								
Support experimental regulation	17	81.0	20	71.4	18	81.8	17	63.0
Oppose or neutral toward regulation	4	19.0	8	28.6	4	18.2	10	37.0
			28				27	
Experimental regulation will/might not result in seeing more of these bucks								
					22			
Support experimental regulation	1	50.0	3	50.0	1	100.0	6	60.0
Oppose or neutral toward regulation	2	50.0	3	50.0	0	0.0	4	40.0
	2		6				10	

1

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DISCUSSION

Deer hunter satisfaction in central New York, specifically with buck-hunting opportunities, is quite high as >67% of hunters in all 3 WMUs currently are satisfied with those kinds of opportunities. This is a positive evaluation of those aspects of DEC's deer management program pertaining to buck-hunting regulations, especially considering the level of importance placed on those kinds of interactions. About 80% of hunters in each WMU indicated that seeing antlered bucks of any age while hunting is at least "moderately important." Similarly, more than two-thirds of hunters in each WMU said seeing older-aged bucks is at least "moderately important."

The impetus for this study was, in large part, DEC interest in evaluating whether changes in specific buck-hunting regulations could address satisfaction issues raised by some groups of hunters in central New York. The possibility of reducing the buck bag limit to 1 antlered buck for all hunters regardless of how many hunting implements they used was considered as a way to more fairly allocate buck harvest opportunity among hunters. The possibility of protecting most yearling bucks from harvest was considered as a way of both increasing the number of antlered bucks seen by hunters and to develop more of an age structure among the buck portion of the deer population.

DEC has indicated that its decisions about whether to enact either possible, experimental regulation will depend on a variety of factors. These include: level of support, beliefs about likely changes in buck-related hunting experiences, importance of those experiences, and their influence on overall satisfaction. Majority support by itself would be insufficient to warrant enacting the experimental regulations. Also needed would be for most hunters to believe that positive and "very important" (i.e., highly valued) changes would occur in their buck-related hunting experiences, and that these changes would maintain or improve hunter satisfaction.

We found relatively low support for reducing the buck bag limit, with higher levels of opposition than support in WMUs 7H and 7J. We found somewhat higher levels of support for an experimental regulation that would protect most yearling bucks from harvest. However, support ranged only from 53-69% in the 3 WMUs. Whether hunters supported or opposed this kind of experimental regulation had more to do with how much importance they placed on seeing bucks than on whether they either believed they would see more bucks or whether those additional observations would be "good" outcomes of such a regulation.

The vast majority of hunters in each WMU believed that they would see more antlered bucks of any age while hunting, as well as a greater number of older-age bucks, and that both of these outcomes would be "good." Even most hunters with negative evaluative beliefs thought that the 2 outcomes would be "good," but that the outcomes "will not happen" if most yearling bucks are protected from harvest. However, many of the hunters who said that more buck-related interactions would be "good" still opposed or were neutral toward either experimental regulation.

One reason for this lack of support for experimental regulations that would produce "good" outcomes is that having buck-related interactions simply are not "very important" to most deer hunters in the 3 WMUs. The data show that the more importance hunters placed on

seeing older-aged bucks while hunting, the more likely hunters are to support either experimental regulations. Conversely, the less importance hunters placed on having buck-related interactions, the more likely hunters are to oppose the experimental regulations. Related to these findings is that as level of importance of buck-related interactions decreased, fewer hunters evaluated those interactions as "good," and increasing percentages said seeing more bucks or more older-aged bucks would be "neither good nor bad" or even "bad."

Another factor affecting support or opposition was whether hunters currently are satisfied with their buck-hunting opportunities. In general, supporters of either possible, experimental regulation are dissatisfied with their current buck-hunting opportunities, and believed that the experimental regulations would improve their satisfaction. Most opposers already are satisfied, and many further believe their satisfaction would decrease under either experimental regulation.

Support, by hunters who already are satisfied with their buck-hunting opportunities, for protecting most yearling bucks from harvest raises important questions with respect to adaptive management of hunter-defined impacts. Do hunters believe their satisfaction will increase even more because protecting yearling bucks would maintain the level of positive impacts (i.e., seeing bucks, especially older-aged bucks) above desirable levels, or because they believe such an experimental regulation would lead to higher levels of other, unidentified impacts?

The likelihood that other, unidentified impacts are involved in hunters' attitudes toward protecting most yearling bucks from harvest also emerged from the analysis of hunters for whom seeing bucks is not so important. For example, compared to those for whom seeing older-aged bucks is "very important," hunters for whom seeing older bucks is less important are more likely to oppose protecting yearlings if they believe sightings of older bucks would not change, or if they are unsure if those sightings would change. Further, majorities of hunters for whom seeing bucks of any age is not "very important" also opposed the idea of protecting yearlings if they believe it would not result in them seeing more bucks, or if they are unsure if they would see more antlered bucks.

Opposition to an experimental regulation by hunters who place less importance on buck-related interactions suggests the existence of impact trade-offs about which we do not know. If seeing bucks is not very important, why do they oppose the idea of protecting most yearling bucks, instead of being neutral toward the idea? Do they believe that an experimental regulation to protect yearlings would change something else that is very important to them (i.e., is an impact)? For example, do they believe the option to choose whether to shoot at a particular buck will decrease below a desirable level? Do they believe non-compliance by other hunters would increase above a tolerable level? These questions are beyond the scope of this study and we have no data to examine them at this time, yet they warrant research focus so the best possible decisions can be made about future regulation changes.

CONCLUSIONS AND IMPLICATIONS

At this time, there is little compelling evidence that either experimentally reducing the buck bag limit to 1 for all hunters or experimentally increasing the buck harvest standard in an effort to protect most yearling bucks from harvest is warranted for WMUs 7F, 7H, or 7J. The

idea of experimentally reducing the buck bag limit is opposed by substantial percentages of hunters in central New York, Although more supporters than opposers currently are dissatisfied with their buck-hunting opportunities, relatively few said such an experimental regulation would increase their satisfaction. Overall, more hunters said such an experimental regulation would decrease their buck-hunting satisfaction than said it would increase their satisfaction.

Majorities of hunters in the 3 WMUs supported an experimental regulation to protect most yearling bucks from harvest, but the majorities were quite slight in WMUs 7H and 7J. An important consideration is that the 2 main reasons for implementing such an experimental regulation (increasing the total number of antlered bucks hunters see while hunting, and increasing the proportion of older-aged bucks in the buck population) are not very important for the vast majority of deer hunters (~two-thirds). Although many supporters indicated that their buck-hunting satisfaction would increase if the experimental regulation were enacted, there is no evidence to suggest that this would affect management capability or long-term participation by hunters.

Perhaps even more important is that opposers and those who are neutral toward the idea of protecting most yearling bucks from harvest believe that their satisfaction would decrease. Apparently, hunters believe that other impacts of greater importance to them than interactions with bucks would be affected negatively by the experimental regulation. At this time, we do not know if hunters believe that such an experiment would diminish "very important" positive impacts such as being able to choose which antlered bucks they want to harvest, or that it would increase above an intolerable level some negative impact like non-compliance or unfairness among hunters.

Finally, this study provided an opportunity to validate essential hypotheses about the concept of adaptive impact management, or AIM. Clearly, hunters evaluate the potential consequences of possible, experimental changes in regulations in terms of positive and negative impacts of greatest importance/concern to them. Future research should be focused on identifying these impacts. The greatest benefit to managers in terms of continued management capability and long-term participation by hunters should occur when the identified impacts are managed at desirable/tolerable levels.

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APPENDIX A:

BUCK HARVEST STANDARDS (BHS) - IS IT TIME FOR A CHANGE?

NY's Deer Management Program

New York's overall deer management program strives to provide both the means to control deer numbers and recreational benefits. The program has evolved over several decades in response to changing deer numbers and human interests.

The current buck harvest standard (BHS), an antler 3" long, was established in 1912. At that time NY was in the restoration phase of deer management, trying to allow deer populations to expand after they were decimated in the 1800s. The intent of the 3" inch BHS was to simply differentiate bucks from does. Protecting does from harvest worked and NY's deer populations grew. By the 1950's deer numbers had grown to the point that population control was needed in some areas of the state. To control deer numbers a program to provide for doe harvest was needed and the Deer Management Permit (DMP) system now in place began to take shape.

While the DMP system, or something similar, will continue to be essential for population control, because buck harvest plays a lesser role in population management the BHS could be changed in response to other interests.

Why consider changing the BHS?

While buck harvest plays a minimal direct role in deer population control, it is a major element of the recreational aspects of the program and has considerable influence on hunter satisfaction. Looking long term, maintaining hunter numbers and effort will be important to successful deer management. Are there changes that could be made to buck hunting opportunities that would help maintain, or even boost, hunter interest and participation?

Effect of BHS on a deer herd.

The BHS sets the age that a buck is likely to be eligible for harvest. The age at which an animal can be taken and the intensity of harvest affects the composition of a population. In the case of bucks in NY, because most can be taken as yearlings, very few bucks live into older age classes - less than 2% live to age 4. Alternatively with does, where harvest intensity is controlled, and generally lower, over 10% live to age 4. The differential harvest rates on the sexes effects adult sex ratios, which may affect breeding and other social behavior.

Can real change be achieved?

Yes, where hunting occurs it is commonly the highest form of mortality deer face. Hunters can and do dictate herd composition. After many decades of experiencing the abbreviated buck age structure that results from the current BHS some hunters mistakenly believe that is all that can be expected. Deer are capable of surviving into their teens and survival rates of young adults are very high, excluding hunting mortality. Change hunter selectivity and you can change herd composition.

What could a higher BHS accomplish?

While programs utilizing higher BHS are purported to, and may, have several positive effects on a deer herd, people should have realistic expectations on what they may see accomplished. Some changes will be obvious and others, if they occur, will be subtle and hard to note in the field. Following are some interests/concerns commonly raised....

Larger bucks - This is the most straight forward and obvious result of increasing the BHS. Younger bucks protected by a higher BHS have very good prospects of surviving to the following fall. Research including recent work in PA show that over 75% of bucks that survive a hunting season will survive to the following fall. NY's deer belong to the subspecies, O.v. borealius, which occurs over much of the northeastern portions of the deer's range - east of the Mississippi from Illinois to New Jersey northward into Canada and given an opportunity to live a few years could produce deer to rivals those found most anywhere.

More Bucks - Protecting all or portions of one or more year classes results in adding most of these bucks to the buck population the following fall. The extent of change is dependent on the BHS used, but nearly a doubling of preseason buck numbers is possible.

Balancing Adult Sex Ratios

While adult sex ratios in areas of NY with a history of does harvest (most of the southern tier) are not terribly skewed in most cases, increasing the BHS would tend to bring it more in balance - this is assuming appropriate doe harvests are achieved.

Harvest Rates - Setting a higher BHS will result in a period of reduced buck harvest opportunity. The length of this period is roughly equal to the number of year classes a new BHS is intended to protect. A BHS intended to protect yearling bucks would result in one season of very limited opportunity to harvest a buck followed by a return to conditions where buck harvests should approach the level previously achieved. Long term buck harvest rates are likely to settle in slightly below previous levels, as would doe harvest needs.

Breeding behavior/success - More older bucks and a more balanced adult sex ratio may increase the intensity of the rut. NY's deer have been thriving and the timing of the rut is largely tied to seasonal changes (day length) so people should not expect dramatic changes in breeding timing or success. A more intense rut may produce conditions that benefit hunters, with bucks possibly being more vulnerable and responsive to hunting techniques such as rattling.

Hunter Satisfaction - If the prospects of seeing more bucks afield, of having a better chance of taking a larger buck, or of successfully using hunting techniques such as "grunting"or "rattling" interests you, than a higher BHS offers the prospect of boosting your hunting satisfaction.

Are There Risks or Costs with a higher BHS?

The biggest cost of a higher BHS is the "investment period" with very limited buck harvest. Prospects of unintentionally (or intentionally) effecting genetics are remote. Long term harvest opportunity following setting a new BHS will be dependent on the standard set, but a program

set to protect yearlings, would result in harvest opportunities approaching those previously available.

How do you set a BHS?

Parties must agree on the minimum age (or size) they would like most bucks to obtain. Then an ideal BHS would provide an easy field technique for distinguishing bucks above and below that point. Unfortunately, no such criteria exist. Lacking that, a review of habitat quality and antler data should be used to determine what makes sense for a particular area. Because of the range in habitat quality and the age (or size) standards that might be chosen there is no one size fits all answer for setting BHS. However, it can be said that on good quality habitat, point criteria provide a much weaker basis for separating age classes than antler width.

Field Application and Enforcement

A commonly voiced concern is that any new BHS would be difficult to adhere to in the field and to enforce. Even the 3" rule requires some judgement by a hunter, while counting points or gauging width may take more care and patience, for some people it would be a small price to pay for the potential benefits. A point count or width standard could both offer clear enforcement standards.

Herd Numbers versus Herd Composition?

NY's deer program has long been focused on controlling overall deer numbers, with little emphasis on the composition of the resulting deer herd. For many people, i.e. farmers and motorist, this serves their interests and maintaining overall deer numbers at desired levels will continue to be a program priority and changing the BHS would not change the population goal for an area. For some other people, i.e. hunters and deer observers, management which directed attention on herd composition could heighten their enjoyment of the resulting deer herd. Changing the BHS is one means to do so, is it time to consider a change?

APPENDIX B:

PHONE INTERVIEW INSTRUMENT

Good (morning/afternoon/evening). My name is _____, and I work for Cornell University in Ithaca, NY. We are conducting a survey of deer hunters who live and hunt deer in WMUs 7F, 7H, and 7J in central New York State. This survey deals with your opinions about the possibility of some changes in buck-hunting regulations in those WMUs.

May I please speak to _____?

[IF YOU HAVE REACHED THE CORRECT PERSON, CONTINUE. IF PERSON IS NOT AVAILABLE, ASK): When may I call back to reach him/her?

a.m. p.m. date

[WHEN APPROPRIATE PERSON TO INTERVIEW HAS BEEN LOCATED]:

This is a survey to determine your opinions about some potential changes in buck-hunting opportunities only in WMUs 7F, 7H, and 7J, but first I have some questions about your hunting experiences.

1. How many total acres of land, if any, do you own WMUs 7F, 7H, and 7J?

   _____ acres.

2. Do you typically hunt deer in any of these WMUs?

___ No.

___ Yes during bow season? ___ No ___ Yes
during regular gun season? ___ No ___ Yes
during muzzleloader season? ___ No ___ Yes

3. Think about your current <u>buck-hunting opportunities</u> in these units. Would you say that overall you are satisfied, dissatisfied, or neither satisfied nor dissatisfied with those <u>buck-hunting opportunities</u>?

___ Satisfied How satisfied; would you say…**?**

___ slightly ___ moderately ___ strongly

___ Neither

___ Dissatisfied How dissatisfied; would you say…**?**

___ slightly ___ moderately ___ strongly

4a. How important to your satisfaction is the total number of antlered bucks you see while hunting? Would you say, very important, moderately important, slightly important, or not at all important?

___ Very ___ Moderately ___ Slightly ___ Not at all

4b. How important to your satisfaction is the number of older bucks you see? Would you say, very important, moderately important, slightly important, or not at all important?

___ Very ___ Moderately ___ Slightly ___ Not at all

Now I have some questions about possible changes in regulations about taking antlered bucks.

Currently, the bag limit for antlered bucks is 2 for hunters who hunt with multiple implements (like bow and shotgun), although the limit is 1 buck for people who hunt only during the regular gun season. A experimental change would be to have a 1 buck bag limit for all hunters regardless of how many implements they use.

5a. Would an experimental change to a 1-buck bag limit increase, not change, or decrease your overall satisfaction with your buck-hunting opportunities in these units?

___ Increase Increase how much; would you say…**?**

___ a little ___ a lot

___ Not change

___ Decrease Decrease how much; would you say…**?**

___ a little ___ a lot

5b. Would you support, oppose, or be neutral towards an experimental change to a 1-buck bag limit for all hunters in WMUs 7F, 7H, and 7J?

___ Support ___ Neutral ___ Oppose

Currently, a large percentage of the yearling bucks are harvested by hunters each fall in WMUs 7F, 7H, and 7J. An experimental regulation change would protect most yearling bucks from harvest.

6a. Do you think a regulation to protect yearling bucks would result in you seeing more antlered bucks of all ages while hunting in subsequent years?

___ Yes ___ Don't know ___ No

6b. Suppose you did see more antlered bucks of all ages while hunting in subsequent years. Would that be a good change, a bad change, or neither?

___ Good ___ Neither ___ Bad

7a. Do you think a regulation to protect yearling bucks would result in you seeing a greater number of older bucks while hunting?

___ Yes ___ Don't know ___ No

7b. Suppose you do see more older bucks while hunting. Would that be a good change, a bad change, or neither?

___ Good ___ Neither ___ Bad

8. Would an experimental regulation that protected most yearling bucks from harvest increase, not change, or decrease your overall satisfaction with your buck-hunting opportunities?

___ Increase Increase how much; would you say…**?**

___ a little ___ a lot

___ Not change

___ Decrease Decrease how much; would you say…**?**

___ a little ___ a lot

9. Would you support, oppose, or be neutral towards an experimental regulation that protected most yearling bucks from harvest in WMUs 7F, 7H, and 7J?

___ Support ___ Neutral ___ Oppose

10. Last question. Did you read through the material that DEC sent to you on this subject a few days ago?

___ No ___ Yes

Those are all the questions I have for you. Thank you very much for your cooperation.

APPENDIX C:

RESULTS FOR HUNTERS FROM ALL 3 WMUS COMBINED, SEGREGATED BY IMPORTANCE OF SEEING OLDER-AGED BUCKS WHILE HUNTING

	Seeing older bucks is very important		Seeing older bucks is moderately important		Seeing older bucks is not/slightly important	
	n	%	n	%	n	%
A. Land ownership						
own <5 acres	72	63.2	112	67.1	76	66.1
own 5-50 acres	25	21.9	33	19.8	22	19.1
own >50 acres	17	14.9	22	13.2	17	14.8
	114		167		115	

** Note that there is virtually no difference in landownership patterns among these 3 groups of hunters. For example, there is no evidence that large landowners are any more, or less, likely to say that seeing older bucks is “very important” vs. less important.

B. Implements used to hunt these WMUs	Seeing older bucks is very important		Seeing older bucks is moderately important		Seeing older bucks is not/slightly important	
	n	%	n	%	n	%
Don’t hunt any of these WMUs	16	16.7	18	12.2	10	10.4
Bow only	1	1.0	0	0.0	3	3.1
Reg gun only	33	33.4	53	35.8	42	43.8
Muzzle only	0	0.0	0	0.0	0	0.0
Bow/muzzle	0	0.0	0	0.0	0	0.0
Reg gun and other	46	47.9	77	52.0	41	42.7
total	96		148		96	

** Note that a slightly higher percentage of hunters who said that seeing older bucks was either not or slightly important participated only in the regular gun season. However, the percentages are not substantially different, and given that >40% of those hunters (~43%) hunt both regular gun and 1 of the special seasons, I doubt if this has much practical, explanatory value.

C. Satisfaction with current buck-hunting opportunities	Seeing older bucks is very important n	%	Seeing older bucks is moderately important n	%	Seeing older bucks is not/slightly important n	%
Dissatisfied	24	21.2	22	13.1	15	12.9
Neither	14	12.4	20	11.9	10	8.6
Satisfied	75	66.4	126	75.0	91	78.4
	113		168		116	

** Note that the percent of hunters satisfied with their current buck-hunting opportunities is lower among those for whom seeing older bucks is "very important" vs. less important. Also, percent dissatisfied is highest for this group. We can assume (but need to verify with data from statewide survey) that these folks are not seeing as many older bucks as they'd like to see. They may see as many, or even more, older bucks than hunters in the other 2 groups, but still be less satisfied if they want to see more.

D. Importance of total number of antlered bucks of any age seen while hunting	Seeing older bucks is very important n	%	Seeing older bucks is moderately important n	%	Seeing older bucks is not/slightly important n	%
Not important	4	3.5	6	3.6	24	20.3
Slightly	6	5.3	17	10.1	25	21.2
Moderately	39	34.5	104	61.5	55	46.6
Very important	64	56.6	42	29.4	14	11.9
	113		169		118	

** Note that a majority of hunters who said that seeing older bucks was "very important" also said that seeing bucks of any age was "very important." Further, note that seeing bucks of any age is more important (i.e., moderately or very) for more than one-half of the hunters who said that seeing older bucks was "not/slightly important."

E. Impact on buck-hunting satisfaction if change to one-buck bag limit.	Seeing older bucks is very important n	%	Seeing older bucks is moderately important n	%	Seeing older bucks is not/slightly important n	%
Decrease	42	37.5	66	39.3	43	36.8
No change	29	25.9	61	36.3	51	43.6
Increase	41	36.6	41	24.4	23	19.7
	112		168		117	

** This is the only "evaluative belief" we have related to reducing the buck bag limit. The patterns are clear. First, slightly >1/3 in each group believe their satisfaction would decrease. Second, increasing percentages of hunters believe it would increase their satisfaction as importance of seeing older bucks increases (from right to left in the bottom row). Although interesting, these results are not interpretable until you see F below.

F Support/oppose 1-buck bag limit	Seeing older bucks is very important n	%	Seeing older bucks is moderately important n	%	Seeing older bucks is not/slightly important n	%
Support	66	58.4	60	35.7	32	27.8
Neither	11	9.7	39	23.2	26	22.6
Opposed	36	31.9	69	41.1	57	49.6
total	113		168		115	

** Compare with E above. Note that percent supporting or opposing reduction in bag limit is unrelated to percentage expecting a decrease in their satisfaction if bag limit is reduced. Instead, the greatest percentage opposed is related to the smallest percentage expecting an increase in satisfaction. Opposition to bag limit change seems linked for some hunters to low expectations for improvements in their satisfaction, rather than expectations that their satisfaction will decrease. For other hunters (about 1/3 in each group), there is a link between expected decrease in satisfaction and opposition to reducing the bag limit. What "good things" will they lose, or what "bad things" will increase to the point of causing dissatisfaction?

G. Impact on buck-hunting satisfaction if buck harvest standard increase	Seeing older bucks is very important		Seeing older bucks is moderately important		Seeing older bucks is not/slightly important	
	n	%	n	%	N	%
Decrease	5	4.4	19	11.4	29	25.4
No change	25	22.1	61	36.7	53	45.6
Increase	83	73.5	86	51.8	32	28.9
total	112		166		114	

** See H. below.

H. Support/oppose increase in buck harvest standard						
Support	89	80.2	104	61.9	45	38.5
Neither	15	13.5	35	20.8	24	20.5
Opposed	7	6.3	29	17.3	48	41.0
total	111		168		117	

** Note that the relationships between satisfaction and support/opposition for increasing harvest standard are very different than relationship between satisfaction and support/opposition for changing buck bag limit. Here, opposition is linked to higher expectation that satisfaction will decrease (good things given up or bad thing become intolerable – what are these?), and lower expectation that satisfaction will increase – which is quite consistent with the “fact” that seeing older bucks simply is not that important to those folks.

I. Seeing more antlered bucks of any age would be…	Seeing older bucks is very important n	%	Seeing older bucks is moderately important n	%	Seeing older bucks is not/slightly important n	%
good, will happen	100	87.7	116	68.6	46	38.7
good, won't happen	4	3.5	20	11.8	22	18.5
bad, will happen	1	0.9	5	3.0	2	1.7
bad, won't happen	0	0.0	1	0.6	4	3.4
uncertain evaluative belief	9	7.9	27	16.0	45	37.8
	114		169		119	

** Note the uncertainty about whether seeing more antlered bucks would be good or bad among hunters who said seeing older bucks is "not/slightly important" (37.8%) and "moderately important" (16.0%). Of the 45 for whom seeing older bucks is "not/slightly important," 36 said whether they believe they would see (n = 17) or would not see (n = 19) more antlered bucks of any age. Of the 27 for whom seeing older bucks is "moderately important," 15 said whether they believe they would see (n = 9) or would not see (n = 6) more antlered bucks of any age. Also, hunters for whom seeing older bucks is "very important" almost universally believe good things will happen (will see more bucks total [I] and will more older bucks [J below]).

J. Seeing more older bucks with larger antlers would be… total						
good, will happen	99	86.8	120	71.0	42	35.3
good, won't happen	5	4.4	17	10.1	23	19.3
bad, will happen	1	0.9	4	2.2	5	4.2
bad, won't happen	0	0.0	0	0.0	2	1.7
uncertain evaluative belief	9	7.9	28	16.6	47	39.5
	114		169		119	

** Note the uncertainty in table above, too, among hunters who said seeing older bucks is "not/slightly important" (39.5%) and "moderately important" (16.6%). Of the 47 for whom seeing older bucks is "not/slightly important," 31 could tell us their beliefs about whether they would see (n = 15) or would not see (n = 16) more older bucks. Of the 28 for whom seeing older bucks is "moderately important," 18 could tell us their beliefs about whether they would see (n = 15) or would not see (n = 3) more antlered bucks of any age.

Read material	Seeing older bucks is very important		Seeing older bucks is moderately important		Seeing older bucks is not/slightly important	
from DEC	n	%	n	%	n	%
No	34	30.1	39	23.2	25	21.2
Yes	79	69.9	129	76.8	93	78.8
total	113		168		118	

** Note that of 405 respondents from all 3 WMUs, 93 did not believe that they would see more bucks of any age, and/or older bucks if the buck harvest standard is increased (see next table below). Of these 93, 72 or 77% had read the material sent to them by DEC (and apparently did not believe it). The other 21 (23%) had not read the material. Data in this table and the following table suggest that hunters will not "jump on the band-wagon" for increasing the buck harvest standard if they "know the facts." Indeed, this analysis probably is more informative than looking at those who read vs. did not read the material and seeing if there is a difference in the percentage who support the increase in buck harvest standard. Justification for me to say this is that we would not know whether someone supported or opposed the increase in standard after reading "the facts" or for some other reason. Interestingly, the analysis above shows that the most supportive hunters (those who said seeing older bucks is "very important," of whom 86.8% support the change) had the highest percentage of folks who had not read the material (30.1%). Likely they already had their minds made up before receiving the material.

If buck harvest standard is increased, believe:	Read material from DEC: No n	column %	row %		Yes n	column %	row %	Row n
BOTH will see more bucks of any age, and will see more older bucks		64.3				66.1		264
			23.9				76.1	
ONE, but not OTHER will see more bucks of any age, but will not see more older bucks	4	4.1	18.2	201	18	5.9	81.8	22
OTHER, but not ONE will not see more bucks of any age, but will see more older bucks	7	7.1	25.0		21	6.9	75.0	28
NEITHER will not see more bucks of any age, and will not see more older bucks	10	10.2	23.3		33	10.9	76.7	43
MISSING DATA	14	14.3	31.1		31	10.2		45
Column totals		100.0				100.00		402
							68.9	

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*** Note that there is virtually no difference in the column percents. Whether hunters read the material or not, about 1/3 (64-66%) believed both outcomes would happen. Whether hunters read the material or not, a handful (4-7%) believed one outcome or the other and disbelieved one or the other. Whether hunters read the material or not, 1 in 10 (10-11%) disbelieved both outcomes would happen.

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