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# **Evaluation of Antler Restrictions in DEC Region 3: 2<sup>nd</sup> Year in 3C and 3J, 1<sup>st</sup> Year in 3H and 3K**



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# EXECUTIVE SUMMARY

## Introduction

This report presents findings from the continuing evaluation of the pilot antler restriction program initiated in WMUs 3C-3J prior to the 2005 hunting season and expanded to WMUs 3H-3K prior to the 2006 hunting season. Findings included here are from the second year of data collection in 3C-3J and are the first year of data from 3H-3K.

## Methods

We used mail surveys to collect data from licensed deer hunters living in all four pilot WMUs. The sample for WMUs 3C-3J consisted of all 498 hunters who had responded to the mail survey conducted in early 2006 after the initial year of pilot program (during the 2005 hunting season). The sample WMUs 3H-3K consisted of 500 persons who lived in or adjacent to those units and who had purchased a 2006-07 big game license. We implemented both mail surveys on 15 February 2007, and analyzed all questionnaires returned by 10 April 2007.

To assess any non-response bias in our data from respondents, we contacted by telephone 50 non-respondents to the mail survey implemented with hunters in WMUs 3C-3J and 69 non-respondents from WMUs 3H-3K.

## Results

- The sample of 498 hunters from WMUs 3C-3J resulted in a 71.9% response rate. For WMUs 3H-3K, the initial sample of 500 resulted in a 46.9% response rate.
- We found only a few expected differences between respondents and non-respondents, with non-respondents participating fewer days and harvesting less deer, yet generally being satisfied with their hunting experiences.
- Awareness of the pilot. The vast majority of respondents from WMUs 3C-3J (98%) and WMUs 3H-3K (95%) were aware of the pilot antler restriction program in those units.
- Primary place to hunt. Very high percentages of respondents from both 3C-3J (84.0%) and 3H-3K (81.0%) indicated their primary hunting location was in those respective WMUs. Also, about three-quarters of respondents from 3C-3J (76%) and 3H-3K (75%) hunted in those WMUs, respectively, during the 2006 hunting season.
- Change in primary place to hunt among 3C-3J hunters between the first and second years of the pilot. More than two-thirds of hunters (69%) reported that their primary place to hunt was in 3C-3J in both 2005 and 2006. About 13% said 3C-3J was their primary place in 2005, but that changed to “elsewhere” in 2006. Conversely, 17% reported that their primary place to hunt was “elsewhere” in 2005 but was in 3C-3J in 2006. Less than 1% reported their primary place to hunt deer was “elsewhere” both in 2005 and 2006.

- Reasons for hunting in these units. More than two-thirds of hunters from 3C-3J (69%) and more than three-quarters from 3H-3K (82%) said they hunted in those units because that was their primary place to hunt deer. Most of the remainder from both sets of WMUs reported that, “I live there,” “it’s close to home,” or “I own land there.”
- Reasons for not hunting in these units. A plurality of hunters who live but do not hunt in the pilot WMUs hunt elsewhere because they have family and friends or own land somewhere else. Among those who live but do not hunt in 3C-3J, about 13% said “I do not support the pilot program,” and about 8% said, “I support the program but thought my odds of taking a buck were better elsewhere.” Among the hunters who live but do not hunt in 3H-3K, about 10% said, “I support the pilot program, but felt my odds of taking a buck were better elsewhere,” and only 2% said, “I do not support the pilot program.”
- Days of hunting. Hunters from the pilot WMUs bowhunted an average of 3-4 days during the early archery season, 8.5 days during the regular firearms season, and 1.5 days during the late special seasons. Overall, respondents hunted an average of 12-14 total days for deer in the pilot units in 2006, and 14-15 days total throughout New York State.
- Deer harvest. About 20% of hunters from 3C-3K reported taking a buck in those units in 2006, compared to 15% from 3H-3K. More than one-quarter of hunters from 3C-3J took an antlerless deer in those units in 2006 whereas 18% of hunters from 3H-3K did so. Overall, 28% of 3C-3J hunters reported taking at least one antlerless deer somewhere in New York during 2006, and 23% reported taking a buck. Also, 18% of respondents from 3H-3K harvested at least one antlerless deer, and 23% took a buck.
- Effort to bag a deer. It took an average of 16.3 days for hunters in 3C-3J to harvest a doe, and 14.2 days on average to harvest a buck. In 3H-3K, hunters took 15.3 days on average to harvest a doe, and 14.1 days to take a buck.
- Perceptions of deer sex ratio and buck age ratio. In 3C-3J, hunters believed there were an average of 20% antlered bucks and 80% antlerless deer out of every 100 total deer prior to the 2006 season. In 3H-3K, the percentages were 18% bucks and 81% antlerless deer. Hunters in 3C-3J perceived 71% young bucks and 29% older bucks out of every 10 antlered bucks. In 3H-3K, the percentages were 72% young bucks and 27% older bucks.
- Change in willingness to harvest an antlerless deer. About two-thirds of hunters from both sets of WMUs said their willingness to take an antlerless deer had not changed since the inception of the pilot program in those areas.
- Satisfaction with hunting experiences. In 3C-3J, 46% of hunters reported were dissatisfied with their hunting experiences during the 2006 season, and 38% said they were satisfied. In 3H-3K, 41% were dissatisfied and 44% were satisfied.
- Change in satisfaction since inception of the pilot program. Following the 2006, 42% of hunters in WMUs 3C-3J said their satisfaction had decreased, 37% said it had not changed, and 21% said it had increased. Among hunters from 3H-3K, 36% reported a

decrease in satisfaction, 53% reported no change, and 11% said their satisfaction had increased.

- Positive impacts to be managed. Positive impacts (i.e., aspects that are “very important”) for >50% of respondents from both sets of pilot WMUs are: “seeing healthy deer,” “seeing antlered bucks of any size/age,” “seeing older bucks with larger antlers,” “having a natural buck age ratio,” and “having a natural sex ratio.” On average, hunters from 3H-3K placed greater importance than hunters from 3C-3J on “seeing older bucks with larger antlers,” and “having a natural buck age ratio.”
- Changes in positive impacts. Strong pluralities or simple majorities of hunters from both sets of pilot units reported noticing no change in the number of antlered bucks of any age, the number of older (i.e., legal) bucks, or in the age ratio of bucks or in the buck to doe ratio. Overall, more hunters from both sets of units said they had noticed that all bucks, generally, and older (legal) bucks, specifically, had decreased vs. the percentages who said they had noticed an increase in bucks. A majority of hunters from WMUs 3C-3J noticed a decrease in deer density after two years of the pilot program whereas in 3H-3J a similar percentage reported no change as reported a decrease.
- Which positive impacts are at desirable levels? A majority of hunters from 3C-3J reported that all six possible, positive impacts about which we asked were “too low” for them to be satisfied. A majority of hunters from 3H-3K indicated that four of the six were “too low.” In both sets of WMUs, the greatest percentages of hunters indicated that the number of older, legal bucks was too low. Less than one-quarter of hunters from either set of WMUs indicated that any of the six aspects were “more than enough for me to be satisfied.”
- Negative impacts to be managed. Only “feeling crowded by too many hunters” is a negative impact for a majority of hunters from WMUs 3H-3K, and only 45% in 3C-3J. Both “seeing that some sub-legal bucks have been shot by mistake,” and “fearing for my safety because people shoot unsafely at deer” are impacts for substantial minorities of hunters from both sets of WMUs. Hunters from both sets of WMUs are split about whether they are “not at all concerned” or “very concerned” about “having difficulty figuring out if a buck I see is legal to shoot.”
- Changes in negative impacts. Overall, all possible negative impacts increased for more hunters than who said they decreased. Level of “fear of being shot” had changed for the fewest hunters from both sets of WMUs. Amount of “difficulty figuring out if a buck I see is legal to shoot” increased for the most hunters. “Sense of urgency to shoot the first buck I see instead of waiting for one I’d rather shoot” decreased for the most hunters in both sets of WMUs, but sense of urgency still increased for more hunters than for whom it decreased.
- Which negative impacts are at tolerable levels? More hunters in both areas reported that all five negative aspects about which we asked were “low enough for me to still be satisfied” compared to those who indicated that the experiences were “too high for me to

be satisfied.” Between 30-40% of hunters from both sets of WMUs indicated that many of the negative aspects we examined were “just about at the maximum level I can tolerate.”

- Current perceptions about whether the pilot program should continue. Strong majorities of hunters from both WMUs 3C-3J (64%) and WMUs 3H-3K (81%) believe the pilot antler restrictions should be continued in those units. About one-quarter of hunters (27%) from 3C-3J, and 11% from 3H-3K indicated that the pilot should not be continued.
- Changes in perceptions about continuing the pilot program. After the second hunting season under antler restrictions in 3C-3J, about one-quarter of hunters (26%) said their support for the pilot program had increased, and one-quarter (27%) said their support had decreased. The remaining 47% said their support had not changed over the two years. In 3H-3K where the pilot was in place for only one season prior to the survey, 56% said their support for the pilot program had increased, 13% said their support had decreased, and 31% reported no change in their level of support.

## **Summary and Implications**

Fairly strong majorities of hunters from both sets of WMUs supported the idea of continuing the pilot antler restrictions for the 2007 hunting season. Apparently, a small percentage of 3C-3J respondents have changed their primary location for deer hunting as a result of the pilot program. About as many hunters were attracted to units 3C-3J (17%) for the second year of the pilot as were lost (13%) after the first year of the antler restrictions. Thus, no large changes in the number of people hunting in these units have occurred because of the pilot.

Seeing and bagging deer, particularly older bucks with larger antlers, certainly is attractive to deer hunters surveyed from the pilot WMUs. However, the degree to which hunters are satisfied with their hunting experiences depends on a complex set of factors. A majority of hunters indicated that four or five positive aspects (depending on the WMU) were “very important” to them, and >40% of hunters in both sets of pilot units were “very concerned” about three negative aspects.

Whether hunters perceived positive impacts to be at or above desirable levels and negative impacts to be at or below tolerable levels clearly influenced hunter satisfaction in the pilot units. The relatively high percentage of dissatisfied hunters in all pilot units seems to be related mostly to multiple, positive impacts being “too low” for hunters to be satisfied.

Despite the relatively high dissatisfaction, strong majorities of hunters from both WMUs 3C-3J and 3H-3K support continuation of the pilot program. Overall, hunters who believe that seeing bucks in general and older bucks with larger antlers in particular are “very important” and who believe the number of bucks has increased, also generally believe the increased number is at least at a minimum desired level. The vast majority of hunters who believe seeing bucks is an impact to be managed, but that the number has not changed since the inception of antler restrictions, indicated that the existing number is “too low.” Obviously, this

condition is dissatisfying. Nonetheless, these hunters seem to be continuing to express the “wait and see attitude” reported after the first year of the pilot in WMUs 3C-3J.

Negative impacts that are “too high” seem to be weighted less by hunters than positive impacts that are “too low.” Despite already “too high” levels of negative impacts that apparently are worsening, the majority of hunters seem willing to support continuation of antler restrictions based on the potential of improving levels of positive impacts. Beyond these findings, it is possible – even likely – that additional positive impacts and negative impacts exist for which we have no data. If levels of both positive and negative impacts are improving under antler restrictions, it could help explain why so many hunters are supportive of continuing the pilot program.

## **ACKNOWLEDGMENTS**

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## **INTRODUCTION**

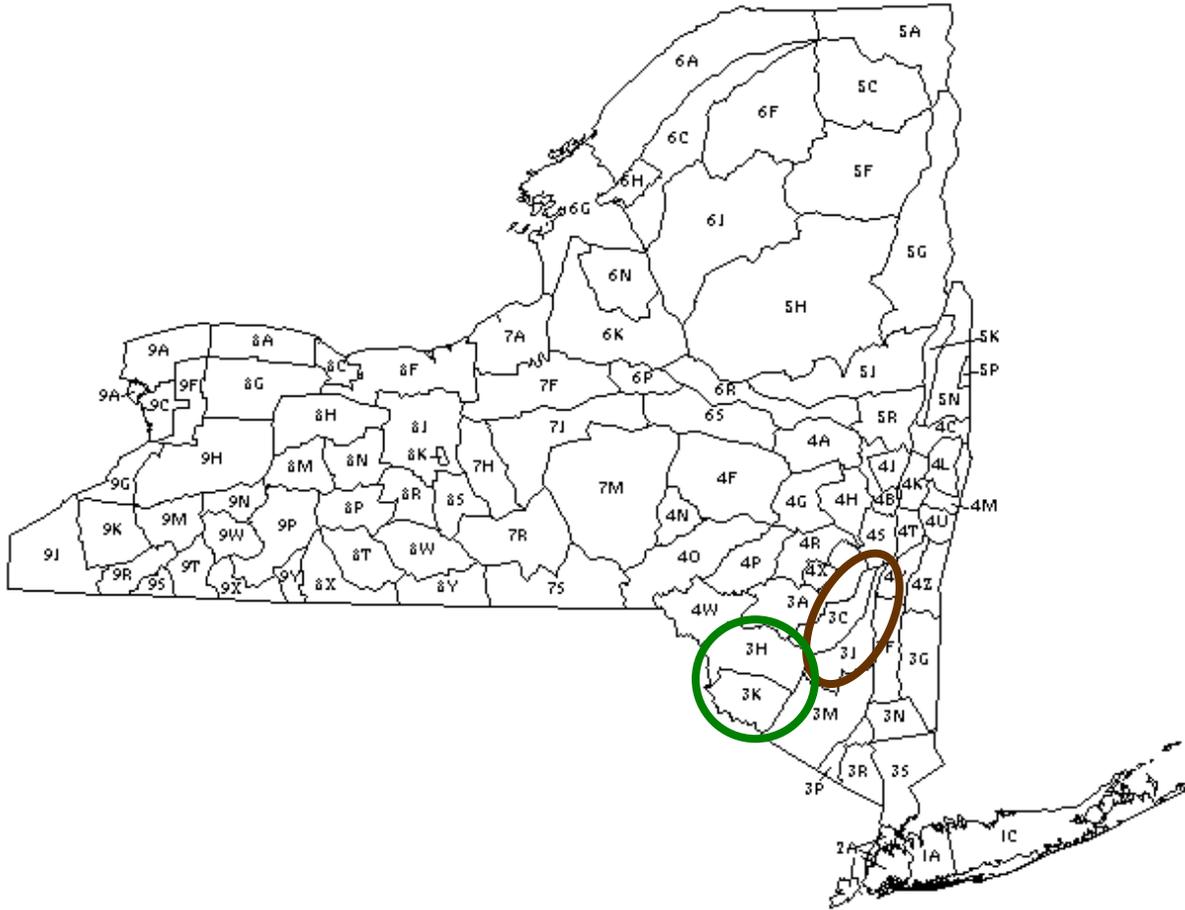
This report presents findings from the continuing evaluation of the Pilot Antler Restriction Program in southeastern New York. In 2005, deer managers with the New York State Department of Environmental Conservation (DEC) implemented a pilot program in Wildlife Management Units (WMUs) 3C and 3J, occurring largely in Ulster County (Figure 1), to enhance the age structure of adult bucks. In 2006, the pilot program was expanded to WMUs 3H and 3K, occurring largely in Sullivan County. The pilot restrictions require that antlered bucks harvested in these four WMUs have at least one antler with three points that are at least one inch in length. To provide maximum opportunity for young hunters to harvest an antlered buck, those under age 17 are exempt from the regulation, and may harvest any antlered buck with at least one antler three or more inches long.

DEC staff requested that HDRU evaluate hunter satisfaction and beliefs about the pilot program after the first year it was implemented in WMUs 3C and 3J. A mail survey revealed that many hunters (41%) had a “wait and see” attitude about whether the pilot program would improve the buck age structure and ultimately increase hunter satisfaction (Brown 2006). That survey also identified two particular issues to monitor in subsequent years. These were the number of deer seen by hunters (and whether this number was sufficiently satisfying), and perceptions of hunter compliance with the pilot restrictions. Despite these possible concerns identified in the initial survey, most respondents (75%) with a point of view wanted the pilot program to continue.

This report presents findings and insights from a mail survey conducted after the second year of the pilot program in WMUs 3C and 3J, and a similar mail survey conducted in WMUs 3H and 3K the first year after the pilot program was expanded to those units.

### **Study Objectives**

1. Determine hunters’ attitudes toward, and degree of support for, antler restrictions in the QDM pilot area.
2. Determine reasons underlying hunters’ attitudes toward antler restrictions, including their assessment of whether desirable/intolerable experiences that affect their hunting satisfaction are improving or worsening as a result of the pilot program.
3. Monitor hunter effort and harvest-related behaviors to determine whether any changes have occurred in response to antler restrictions in the QDM pilot area.



**Figure 1. Location of Wildlife Management Units (WMUs) 3C and 3J (oval, largely in Ulster County) and 3H and 3K (circle, largely in Sullivan County) where pilot antler restrictions have been in place since 2005 and 2006, respectively.**

## METHODS

### Sampling Frame

The sample for WMUs 3C and 3J consisted of all 498 hunters who had responded to the mail survey conducted after the initial year of pilot program in 2005. Resurveying these hunters allowed us to monitor any changes in their behavior or attitudes due to their experiences with the pilot program. The sample WMUs 3H and 3K consisted of 500 persons who lived in or adjacent to those units and who had purchased a 2006-07 big game license. Both samples were obtained by DEC staff using the DECALS automated licensing system.

We implemented both mail surveys on 15 February 2007 following Dillman's (2000) four-wave procedure. Our last reminder letter was mailed to non-respondents on 15 March, and we included in our analysis all questionnaires returned by 10 April 2007.

## **Questionnaire Development**

We developed slightly different instruments given that the pilot program had been in place for two hunting seasons in WMUs 3C and 3J, but only one hunting season in WMUs 3H and 3K. See Appendices A and B for the two instruments. The main differences between the instruments were simple word changes to reflect that the 2006 hunting season was the second year of the pilot program in the Ulster County WMUs, but only the first year in the Sullivan County WMUs.

### **General Deer-hunting Information:**

We first assessed whether hunters were aware of the pilot program, whether any of the pilot WMUs was their primary hunting location, whether they hunted deer in the pilot WMUs during the 2006 hunting season, and if not, why not. We then asked how many days they hunted during the early archery season, regular firearms season, and late special seasons in each of the pilot WMUs. We also asked how many antlered bucks and antlerless deer they harvested in those units. Finally, we asked why they chose to hunt deer in the pilot WMUs.

### **Deer-hunting Satisfaction in the Pilot WMUs and Factors Affecting Satisfaction:**

Prior to asking opinions about any changes they had perceived in deer population characteristics or whether they thought the pilot program should continue, we used a 7-point scale (from greatly satisfied to greatly dissatisfied) to determine hunters' satisfaction with their overall deer-hunting experiences in the pilot WMUs during the 2006 season. We also used a 5-point scale (from increased a lot to decreased a lot) to assess whether and how much their satisfaction from hunting in these WMUs had changed since the inception of the pilot program.

Next, we used a 4-point scale (from not at all important to very important) to assess how important each of eight possible positive aspect of deer hunting is to them personally. The possible positive aspects were: (1) seeing antlered bucks of any age, (2) seeing older bucks with larger antlers, (3) having a natural mix of older and yearling bucks, (4) having a natural deer sex ratio, (5) seeing healthy deer, (6) being considered a "good" or expert buck hunter by others, (7) being considered a "good" or expert deer hunter by others, and (8) freedom of choice to shoot at the buck of my preference. Similarly, we used a 4-point scale (from not at all concerned to very concerned) to assess how concerned they were personally about each of five possible negative aspects of deer hunting. The possible negative aspects were: (1) feeling crowded by too many hunters, (2) fearing for my safety because people shoot unsafely at deer, (3) having difficulty figuring out if a buck I see is legal to shoot, (4) seeing that some sub-legal bucks have been shot by mistake, and (5) feeling a sense of urgency to shoot the first legal buck I see instead of waiting for one I'd rather shoot.

We followed these questions with an assessment of changes hunters noticed in 10 specific aspect of deer hunting since the inception of the pilot program. To do this, we used a 5-point scale from increased a lot to decreased a lot. The 10 items were: (1) number of antlered bucks of any age, (2) number of older, legal bucks, (3) sense of urgency to shoot the first legal buck I see instead of waiting for one I'd rather shoot, (4) amount of difficulty figuring out if a

buck I see is legal to shoot, (5) total deer density, (6) fear of being shot by people who shoot unsafely at deer, (7) freedom of choice to shoot at the buck of my preference, (8) feeling crowded by other hunters, (9) number of sub-legal bucks shot by mistake, and (10) my willingness to shoot a doe.

Next, we asked hunters to consider how their experiences during the season with each of six possible positive aspects of deer hunting affected their overall satisfaction. The possible positive aspects were: (a) total number of bucks seen, (b) total number of deer seen, (c) number of older, larger-antlered bucks seen, (d) naturalness of the mix of older bucks compared to yearling bucks in the deer population, (e) naturalness of the mix of bucks and antlerless deer, and (f) their freedom of choice to shoot at a buck of their preference. For each, we asked them to indicate whether what they experienced was “too low for me to be satisfied,” “just about the minimum level I need to be satisfied,” or “more than enough for me to be satisfied.”

We also asked hunters to consider how their experiences during the season with each of five possible negative aspects of deer hunting affected their overall satisfaction. The possible negative aspects were: (a) sense of urgency to shoot the first legal buck seen when hunter would rather wait for a different one, (b) number of sub-legal bucks shot by mistake, (c) feeling crowded by other hunters, (d) fear of being shot by people who shoot unsafely at deer, and (e) amount of difficulty figuring out if bucks hunter sees were legal to shoot. For each of these, we asked them to indicate whether what they experienced was “too high for me to be satisfied,” “just about the maximum level I can tolerate,” or “low enough for me to still be satisfied.”

To monitor perceived changes in specific deer population characteristics, we used two pairs of questions. First, we asked them to estimate what percent of deer in pilot WMUs were antlered bucks and what percent were antlerless deer (does and fawns) before the start of the 2006-07 deer hunting season. We also asked them to estimate the percent of antlered bucks were yearlings with smaller antlers and what percent were older bucks with larger antlers. Second, we used a 5-point scale (from increased a lot to decreased a lot) to determine any changes they had noticed since the pilot program began in: (1) the number of older bucks compared to younger bucks, and (2) number of bucks compared to does.

### **Evaluation Questions:**

We used two questions to determine hunters’ beliefs about whether they were in favor of the pilot program being continued. First, we assessed their attitude toward the program using a 5-point scale (from I am much more supportive now to I am much less supportive now). Second, we asked their opinion about whether the pilot program should be continued in 2007.

### **Data Analysis:**

We analyzed all survey data using SPSS-X (Version 16.0). In this report, we present descriptive statistics (percentages, means and standard errors), and do not make comparisons between the Ulster County WMUs (3C-3J) and the Sullivan County WMUs (3H-3K). Thus, we report no significance thresholds for any of these analyses. Where we have two years of data for

the same respondents from WMUs 3C-3J, we present the percentage whose attitudes/behaviors remained the same vs. changed.

### **Assessment of Non-response Bias:**

To assess any non-response bias in our data from respondents, we contacted by telephone 50 non-respondents to the mail survey implemented with hunters in WMUs 3C-3J and 69 non-respondents from WMUs 3H-3K. We administered a shortened version of the questionnaire to these persons, and compared their aggregated responses to those of respondents to the mail survey. We used t-tests to compare mean values and the Fisher Exact to compare proportional data.

## **RESULTS**

### **Survey Response Rates**

The initial sample of 498 hunters from WMUs 3C and 3J resulted in 477 deliverable questionnaires and 343 useable returns (71.9% response rate). For hunters from WMUs 3H and 3K, the initial sample of 500 resulted in 458 deliverable questionnaires and 215 useable returns (46.9% response rate).

### **Differences Between Respondents and Non-respondents**

We found only two differences out of 15 variables between non-respondents and respondents in WMUs 3H and 3K. First, a higher percentage of non-respondents (12%) compared to respondents (5%) were not aware of the regulation pertaining to antler restrictions ( $X^2 = 4.107$ ,  $p = 0.043$ ). Second, more respondents (19%) compared to non-respondents (6%) reported an increase in their fear of being shot by hunters shooting unsafely at deer since the inception of the pilot program ( $X^2 = 5.243$ ,  $p = 0.022$ ).

We found five differences out of 11 variables between non-respondents and respondents in WMUs 3C and 3J. Four of these differences were with participation and harvest variables. First, non-respondents hunted fewer days (mean = 9) than respondents (mean = 15) during the 2006 deer-hunting seasons in New York ( $t = -3.124$ ,  $p = 0.003$ ), but hunted similar numbers of days (11 vs. 14) within the pilot WMUs ( $t = -1.13$ ,  $p = 0.261$ ). Fewer nonrespondents than respondents (8% vs. 39%, respectively) harvested an antlerless deer within 3C or 3J in 2006 ( $X^2 = 13.412$ ,  $p < 0.001$ ). Similarly, no nonrespondents harvested an antlered buck or an antlerless deer someplace other than 3C-3J whereas 14% and 9% of respondents did so, respectively.

Finally, respondents and nonrespondents differed substantially about whether their hunting experiences in 3C-3J during 2006 had been satisfying or dissatisfying ( $X^2 = 7.207$ ,  $p = 0.007$ ). Nonrespondents generally were satisfied (61%; 22% dissatisfied) with their hunting experiences in during 2006. Respondents were more split about whether they were satisfied (38%) or dissatisfied (46%).

## Results for Respondents

### Awareness of, and Hunting Within, the Pilot WMUs:

Awareness. The vast majority of respondents from WMUs 3C-3J (98%) and WMUs 3H-3K (95%) were aware of the pilot antler restriction program in those units. In both WMUs 3C-3J and 3H-3K, hunters who were unaware of the pilot program did not hunt in any of those units.

Primary place to hunt deer. Similar percentages of respondents from both 3C-3J (84.0%) and 3H-3K (81.0%) indicated their primary hunting location was in those respective WMUs. Also, similar percentages of respondents from 3C-3J (76%) and 3H-3K (75%) hunted in those WMUs, respectively, during the 2006 hunting season. Slightly more than one-half of hunters from 3C-3J (56%) hunted deer in those units in both 2005 and 2006, 20% hunted there in 2005 but not 2006, and another 20% did not hunt in 3C-3J in 2005 but did in 2006. The remaining 4% did not hunt in 3C-3J in either year.

Change in primary place to hunt deer. Among 3C-3J hunters, about 30% reported a change in their primary place to hunt between 2005 and 2006. Of those, 13% indicated that 3C-3J was their primary place to hunt in 2005, but that changed to “elsewhere” in 2006. Conversely, 17% reported that their primary place to hunt was “elsewhere” in 2005 but had changed to units 3C-3J in 2006. For most hunters (69%) 3C-3J was their primary location in 2005 and remained their primary location in 2006. Less than 1% reported their primary place to hunt deer was “elsewhere” both in 2005 and 2006.

Reasons for hunting in these units. More than two-thirds of hunters from 3C-3J (69%) and more than three-quarters from 3H-3K (82%) indicated that they hunted in those units because that was their primary place to hunt deer. About 9% from 3C-3J and 2% from 3H-3K indicated they hunted in those units because they thought their chances of taking an older buck would be better there than elsewhere. The remainder from each area indicated “other” as the reason. However, 50 of 56 “other” reasons from 3C-3J and 24 of 25 “other” reasons from 3H-3K pertained to “I live there,” “it’s close to home,” or “I own land there.”

Reasons for not hunting in these units. We found somewhat different reasons among the approximately one-quarter of respondents from both 3C-3J and 3H-3K who did not hunt in those units in 2006. “I usually hunt somewhere else” was the primary reason given by 42.3% of respondents from 3H-3K, but only 25.3% of respondents from 3C-3J. “I do not support the pilot program” was a reason for 12.7% of respondents from 3C-3J, but only 1.9% from 3H-3K. “I support the pilot program, but felt my odds of taking a buck were better elsewhere” was indicated by 7.6% from 3C-3J and a similar 9.6% in 3H-3K. Among the hunters from 3C-3J who did not hunt in those pilot units, 54.5% indicated “other” as the reason for not hunting there. About one-third (36.5%) of hunters from 3H-3K who did not hunt in those units also indicated “other” as the reason.

Days of hunting. On average, hunters in 3H-3K hunted about two fewer days during the early bow season than hunters in 3C-3J, but hunters in both areas hunted about 8.5 days during the regular firearms season and 1.5 days during the late special seasons (Table 1). Overall, respondents from 3C-3J hunted an average of 14.1 total days for deer in those units in 2006 and 15.2 days total in all of New York State. Respondents from 3H-3K hunted an average of 12.4 total days for deer in those units and 14.4 total days in all of New York State during 2006.

**Table 1. Mean days of participation in various deer-hunting seasons reported by hunters taking part in management units with pilot antler restrictions in southeastern New York, from mail surveys conducted in 2007.**

Wildlife Management Unit	Days hunted <u>early archery</u>		Days hunted <u>regular firearms</u>		Days hunted <u>late seasons</u>	
	<u>mean</u>	<u>SE</u>	<u>mean</u>	<u>SE</u>	<u>mean</u>	<u>SE</u>
3H	3.5	.52	6.8	.48	1.5	.22
3K	2.1	.46	4.5	.54	0.7	0.17
Total Sullivan Co.	4.5	.61	8.4	.48	1.8	.23
Elsewhere in NY	2.1	.60	4.4	.60	0.7	.18
3C	4.6	.48	6.3	.38	1.0	.16
3J	3.9	.41	5.1	.35	0.9	.14
Total Ulster Co.	6.7	.50	8.5	.39	1.5	.17
Elsewhere in NY	1.5	.30	3.5	.38	0.3	.10

Deer harvest. Hunters from 3C-3J were somewhat more successful than hunters from 3H-3K. About 20% of hunters from 3C-3K reported taking a buck in those units in 2006, compared to 15% from 3H-3K (Table 2). More than one-quarter of hunters from 3C-3J took an antlerless deer in those units in 2006 whereas 18% of hunters from 3H-3K did so. Overall, 28.2% of 3C-3J hunters reported taking at least one antlerless deer somewhere in New York during 2006, and 23.2% reported taking a buck. Also, 18.5% of respondents from 3H-3K harvested at least one antlerless deer, and 22.7% took a buck.

In both sets of WMUs, hunters had to hunt relatively long periods, on average, to bag deer. It took an average of 16.3 days for hunters in 3C-3J to harvest a doe, and 14.2 days on average to harvest a buck. In 3H-3K, hunters took 15.3 days on average to harvest a doe, and 14.1 days to take a buck.

Perceptions of deer sex ratio and buck age ratio. Hunters in both 3C-3J and 3H-3K perceived similar deer sex ratios and bucks age ratios prior to the 2006 season. In 3C-3J, hunters believed there were an average of 20% antlered bucks and 80% antlerless deer out of every 100 total deer. In 3H-3K, the percentages were 18% bucks and 81% antlerless deer. Hunters in 3C-3J perceived 71% young bucks and 29% older bucks out of every 10 antlered bucks. In 3H-3K, the percentages were 72% young bucks and 27% older bucks.

**Table 2. Deer harvest reported by hunters taking part in management units with pilot antler restrictions in southeastern New York, from mail surveys conducted in 2007.**

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Wildlife Management Unit	Antlered bucks harvested			Antlerless deer harvested			
	% taking...			% taking...			
	<u>0</u>	<u>1</u>	<u>2</u>	<u>0</u>	<u>1</u>	<u>2</u>	<u>3+</u>
3H	88.6	8.3	3.0	85.6	9.6	2.4	2.4
3K	85.9	14.1	0.0	92.1	7.9	0.0	0.0
total Sullivan Co.	84.9	10.3	4.9	82.4	15.1	2.5	0.0
elsewhere in NY	87.1	11.4	1.5	90.6	9.4	0.0	0.0
3C	86.4	12.0	1.6	81.4	13.8	3.2	1.6
3J	86.7	11.6	1.7	80.3	15.0	2.3	2.3
total Ulster Co.	80.5	17.1	2.4	73.5	18.9	4.6	2.9
elsewhere in NY	87.1	11.4	1.5	90.6	9.4	0.0	0.0

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**Positive and Negative Hunting-related Impacts:**

Seeing healthy deer while hunting is a positive impact (i.e., “very important”) for the vast majority of hunters in both WMUs 3C-3J (88.5%) and WMUs 3H-3K (92.4%). Other positive impacts for  $\geq 50\%$  of hunters from both sets of WMUs are: “seeing antlered bucks of any size/age,” “seeing older bucks with larger antlers,” “having a natural buck age ratio,” and “having a natural sex ratio.” On average, hunters from 3H-3K placed greater importance than hunters from 3C-3J on “seeing older bucks with larger antlers,” and “having a natural buck age ratio.” “Having freedom of choice to shoot at the buck of my preference” is an impact for a substantial minority of hunters from both sets of WMUs (Table 3).

We identified only “feeling crowded by too many hunters” as a negative impact to be managed for  $\geq 50\%$  of hunters from WMUs 3H-3K (~45% in 3C-3J; Table 4). None of the five possible negative experiences we examined are impacts to be managed for a majority of hunters from 3C-3J. Nonetheless, both “seeing that some sub-legal bucks have been shot by mistake,” and “fearing for my safety because people shoot unsafely at deer” were impacts for substantial minorities of hunters from both sets of WMUs. Note that hunters from both sets of WMUs are split about whether they are “not at all concerned” or “very concerned” about “having difficulty figuring out if a buck I see is legal to shoot.”

**Table 3. Mean levels of importance placed by persons hunting deer in either of two areas in New York State on possible positive hunting experiences, from mail surveys conducted in 2007.**

	Geographic area hunted		t	p		
	WMUs 3C-3J	WMUs 3H-3K				
<u>Potential positive influence on deer-hunting satisfaction</u>	<u>Mean<sup>a</sup></u>	<u>SE</u>				
Seeing healthy deer	3.9	0.03	3.9	0.03	0.000	1.000
% not at all important	0.8%		1.3%			
% very important	88.5%		92.4%			
Seeing antlered bucks of any age or size	3.4	0.05	3.3	0.07	1.155	0.249
% not at all important	3.6%		5.1%			
% very important	57.1%		54.5%			
Seeing older bucks with larger antlers	3.2	0.06	3.5	0.06	-2.944	0.003
% not at all important	9.0%		4.4%			
% very important	55.3%		65.4%			
Having a natural mix of older and younger bucks (buck age ratio)	3.2	0.05	3.4	0.07	-2.342	0.020
% not at all important	5.2%		5.1%			
% very important	48.2%		56.1%			
Having a natural mix of bucks and does (sex ratio)	3.2	0.06	3.3	0.06	-1.159	0.247
% not at all important	6.0%		2.6%			
% very important	50.8%		50.0%			
Freedom of choice to shoot the buck of my preference	2.9	0.07	2.8	0.09	0.837	0.403
% not at all important	17.5%		21.4%			
% very important	45.8%		42.1%			

Table 3. Continued.

	<u>Geographic area hunted</u>		<u>t</u>	<u>p</u>
	<u>WMUs 3C-3J</u>	<u>WMUs 3H-3K</u>		
<u>Potential positive influence on deer-hunting satisfaction</u>	<u>Mean<sup>a</sup></u>	<u>SE</u>		
Being considered a “good” or “expert” <u>deer</u> hunter by others	2.5	0.07	2.5	0.10
% not at all important	29.3%		31.6%	
% very important	23.7%		31.6%	
Being considered a “good” or “expert” <u>buck</u> hunter by others	2.2	0.07	2.3	0.10
% not at all important	39.2 %		37.1%	
% very important	17.6%		25.8%	

<sup>a</sup>On scale from 1 = not at all important, 2 = slightly important, 3 = moderately important, and 4 = very important.

**Table 4. Mean levels of concern placed by persons hunting deer in either of two areas in New York State on possible negative hunting experiences, from mail surveys conducted in 2007.**

	<u>Geographic area hunted</u>		<u>t</u>	<u>p</u>		
	<u>3C-3J</u>	<u>3H-3K</u>				
Potential positive influence on deer-hunting satisfaction	<u>Mean</u>	<u>SE</u>	<u>Mean</u>	<u>SE</u>		
Feeling crowded by too many other deer hunters	3.0	0.07	3.2	0.08	-1.877	0.062
% not at all concerned	12.5%		11.5%			
% very concerned	44.9%		53.5%			
Seeing that some sub-legal bucks have been shot by mistake	3.0	0.07	3.1	0.08	-0.929	0.354
% not at all concerned	13.5%		10.2%			
% very concerned	44.4%		48.4%			
Fear of being shot by people who shoot unsafely at deer	2.9	0.07	3.1	0.07	-1.948	0.053
% not at all concerned	14.1%		6.3%			
% very concerned	43.5%		47.2%			
Having difficulty figuring out if a buck I see is legal to shoot	2.6	0.08	2.5	0.09	0.825	0.410
% not at all concerned	28.7%		28.5%			
% very concerned	33.1%		28.5%			
Feeling a sense of urgency to shoot the first legal buck I see instead of waiting for one I'd rather shoot	2.0	0.07	2.0	0.09	0.000	1.000
% not at all concerned	48.4%		44.6%			
% very concerned	15.0%		14.6%			

<sup>a</sup>On scale from 1 = not at all concerned, 2 = slightly concerned, 3 = moderately concerned, and 4 = very concerned.

### **Satisfaction with Hunting Experiences in the Pilot WMUs:**

Hunters from both sets of WMUs were relatively split about whether they were satisfied or dissatisfied with the overall deer-hunting experiences in those units. In 3C-3J, 46% said they were dissatisfied, but only 38% said they were satisfied. In 3H-3K, 41% were dissatisfied and 44% were satisfied.

When we examined reported satisfaction/dissatisfaction for hunters in 3C-3J after the 2006 season with satisfaction/dissatisfaction reported by those same hunters after the 2005 season using our longitudinal data set, we found that about twice as many indicated a decrease in satisfaction from 2005 to 2006 (40%) compared to those who indicated an improvement in their satisfaction (21%). We found no change in what the other 39% had reported in 2006 vs. 2005. These measured changes in satisfaction are reflected almost exactly in the long-term perceptions of hunters. Following the 2006 season, we asked hunters from 3C-3J how their satisfaction had changed since the inception of the pilot program. Twice as many said their satisfaction had decreased (42%) as said it had increased (21%), with the remaining 37% saying their satisfaction had not changed.

We also asked hunters from 3H-3K how their satisfaction had changed after participating in the pilot for one hunting season. About one-half (53%) said their satisfaction had not changed. More than one-third (36%) said their satisfaction had decreased. Only about 11% said their satisfaction had increased.

### **Change in Willingness to Harvest Antlerless Deer as an Outcome of the Pilot Program:**

Among hunters from WMUs 3C-3J, nearly two-thirds (66%) reported that their willingness to shoot an antlerless deer had not changed since the inception of the pilot program in 2005. For the remaining one-third of hunters, about twice as many said their willingness had increased (24%) as indicated their willingness had decreased (10%). Most (71%) of the hunters who said their willingness had decreased had taken a doe in 3C-3J previously and had said in the 2006 survey that they would do so again. However, this decrease was more than offset by the finding that 86% of those who said their willingness had increased also had taken a doe previously in 3C-3J and said in the 2006 survey that they would do so again.

Reported change in willingness to harvest an antlerless deer among hunters in WMUs 3H-3K was similar to that reported above. Just under two-thirds (64%) said their willingness had not changed in the one year since the pilot was extended to these units. Among the remainder, twice as many reported that their willingness had increased (24%) as said their willingness had decreased (12%). We have no information from these hunters about their past antlerless deer harvest in these units.

**Evaluation of Changes in Experiences Since Inception of the Pilot Program:**

We found patterns of responses from hunters in WMUs 3H-3K similar to those for hunters from 3C-3J with respect to six positive aspects of deer hunting (Table 5). Many hunters from both pairs of units said they had noticed no changes in these experiences, with slightly higher percentages of hunters from 3H-3K (where the pilot had been in place for only one hunting season) reporting no change in various experiences. In particular, strong pluralities or majorities of hunters from both sets of units reported noticing no change in the number of antlered bucks of any age, the number of older (i.e., legal) bucks, or in the age ratio of bucks or in the buck to doe ratio.

However, more hunters from both sets of units said they had noticed that all bucks, generally, and older (legal) bucks, specifically, had decreased vs. the percentages who said they had noticed an increase in bucks. Despite this finding, more hunters from 3C-3J noticed an increase in all bucks after two years of the pilot compared to the percentages of hunters from 3H-3J who noticed an increase after just one year of the pilot in those units. More hunters from 3C-3J also noticed an improving buck age ratio compared to hunters from 3H-3K. Conversely, more hunters from 3C-3J noticed a decrease in total deer density after two years of the pilot compared to the percentage who noticed a decrease in deer density after one year in 3H-3K.

**Table 5. Percentages of deer hunters from either of two areas in New York State indicating that various positive aspects of deer hunting had increased, decreased, or not changed since inception of a pilot antler restriction program in those areas (2005 for WMUs 3C-3J, and 2006 for WMUs 3H-3K), from mail surveys conducted in 2007.**

	Geographic area hunted					
	WMUs 3C-3J			WMUs 3H-3K		
Possible positive aspects of deer hunting	% increase	% no change	% decrease	% increase	% no change	% decrease
Number of antlered bucks of any age/size	28.6	42.0	29.4	19.3	46.2	34.6
Number of older, legal bucks	23.3	47.7	30.1	13.4	48.7	37.9
Freedom of choice to shoot at the buck of my preference	21.6	49.6	28.7	18.7	56.1	25.1
Total deer density (as index to total deer seen)	13.5	33.2	53.3	16.9	42.2	40.9
Change in number of older bucks compared to younger bucks (buck age ratio)	33.9	46.2	19.8	22.7	52.0	25.3
Change in number of bucks compared to antlerless deer (deer sex ratio)	25.9	42.5	31.6	18.4	47.6	34.0

Among possible negative experiences, level of “fear of being shot” had changed for the lowest percentage of hunters from both sets of WMUs (Table 6). Amount of “difficulty figuring out if a buck I see is legal to shoot” increased for the most hunters. “Sense of urgency to shoot the first buck I see instead of waiting for one I’d rather shoot” decreased the most for hunters in both sets of WMUs, but sense of urgency still increased for more hunters than for whom it decreased. Overall, all possible negative experiences increased for more hunters than who said they decreased.

**Table 6. Percentages of deer hunters from either of two areas in New York State indicating that various negative aspects of deer hunting had increased, decreased, or not changed since inception of a pilot antler restriction program in those areas (2005 for WMUs 3C-3J, and 2006 for WMUs 3H-3K), from mail surveys conducted in 2007.**

Possible negative aspects of deer hunting	Geographic area hunted					
	WMUs 3C-3J			WMUs 3H-3K		
	% increase	% no change	% decrease	% increase	% no change	% decrease
Fear of being shot by people who shoot unsafely at deer	17.8	77.5	4.8	19.5	70.1	10.3
Feeling crowded by other hunters	24.9	67.6	7.5	22.1	66.9	11.0
Sense of urgency to shoot the first legal buck I see instead of waiting for one I’d rather shoot	28.4	57.7	13.8	21.9	61.3	16.8
Number of sub-legal bucks shot by mistake	35.6	55.3	9.0	37.1	53.6	9.3
Amount of difficulty figuring out if a buck I see is legal to shoot	48.2	44.5	6.3	42.9	48.7	7.7

Overall, large percentages of hunters in both sets of WMUs believe that the positive experiences about which we asked were “too low” for them to be satisfied (Table 7). Indeed, all six kinds of experiences about which we asked were “too low” for a majority of hunters in 3C-3J, and four of the six were “too low” for hunters in 3H-3K. In both sets of WMUs, the greatest percentages of hunters indicated that the number of older, legal bucks was too low. Fewer than one-quarter of hunters from either set of WMUs indicated that any of the six experiences were “more than enough for me to be satisfied.”

**Table 7. Percentages of deer hunters from two areas in New York State, where pilot antler restrictions have been implemented, indicating that experienced levels of various positive aspects of deer hunting were “too low for me to be satisfied,” “just about at the minimum level I need to be satisfied,” or “more than high enough for me to be satisfied”, from mail surveys administered in 2007.**

<u>Possible positive aspects of deer hunting</u>	<u>Geographic area hunted</u>					
	<u>WMUs 3C-3J</u>			<u>WMUs 3H-3K</u>		
	<u>% too low for me</u>	<u>% just at minimum level</u>	<u>% more than high enough</u>	<u>% too low for me</u>	<u>% just at minimum level</u>	<u>% more than high enough</u>
Number older, large-antlered bucks I saw	74.6	17.3	8.1	87.0	13.0	0.0
Naturalness of the mix of older bucks compared to yearling bucks (age ratio)	64.2	30.7	5.1	67.9	32.1	0.0
Naturalness of the mix of bucks compared to antlerless deer (sex ratio)	63.2	32.9	3.9	64.7	31.4	3.9
Total number of antlered bucks I saw	63.0	24.8	12.2	58.9	28.6	12.5
Total number of deer I saw	51.7	31.9	16.3	48.1	27.8	24.1
Freedom of choice to shoot at a buck of my preference	54.3	30.7	15.0	45.1	37.3	17.6

Conversely, only about one-third or fewer hunters from either set of WMUs indicated that any of the five negative experiences about which we asked were “too high for me to be satisfied” (Table 8). Indeed, with the exception of 3H-3K hunters’ perceptions of the “number of sub-legal bucks shot by mistake” (similar percentages “too high” and “low enough”), a greater percentage of hunters in both areas reported that all the negative experiences were “low enough for me to still be satisfied” compared to those who indicated that the experiences were “too high for me to be satisfied.” It should be noted, however, that 30-40% of hunters from both sets of WMUs indicated that many of the negative experiences we examined were “just about at the maximum level I can tolerate.”

**Table 8. Percentages of deer hunters from two areas in New York State, where antler restrictions have been piloted, indicating that experienced levels of various negative aspects of deer hunting were “too high for me to be satisfied,” “just about at the maximum level I can tolerate,” or “low enough for me to still be satisfied,” from mail surveys administered in 2007.**

Possible negative aspects of deer hunting	Geographic area hunted					
	WMUs 3C-3J			WMUs 3H-3K		
	% too high for me	% just at maximum level	% more than low enough	% too high for me	% just at maximum level	% more than low enough
Sense of urgency to shoot a buck when I'd rather wait for a different one	22.4	31.7	45.9	31.8	18.2	50.0
Amount of difficulty figuring out if a buck I see is legal to shoot	23.6	35.4	40.9	17.8	40.0	42.2
Fear of being shot by people who shoot unsafely at deer	13.5	27.1	59.4	17.8	40.0	42.2
Feeling crowded by other hunters	16.7	37.5	45.8	23.4	38.3	38.3
Number of sub-legal bucks shot by mistake	17.0	29.8	53.2	34.1	31.8	34.1

**Hunters’ Perceptions of Whether the Pilot Program Should Continue:**

Strong majorities of hunters from both WMUs 3C-3J (64%) and WMUs 3H-3K (81%) believe the pilot antler restrictions should be continued in those units. About one-quarter of hunters (27%) from 3C-3J indicated that the pilot should not be continued in those units. Only about one in nine hunters (11%) from 3H-3K believed the pilot should not be continued.

After the second hunting season under antler restrictions in 3C-3J, about one-quarter of hunters (26%) said their support for the pilot program had increased, and one-quarter (27%) said their support had decreased. The remaining 47% said their support had not changed over the two years. Between the end of the first pilot season and the end of the second pilot season, some hunters from 3C-3J had changed their mind about whether the pilot should be continued (Table 9). Nearly the same percentage changed their mind from “no – do not continue” after the 2005 to “yes – continue” after the 2006 season (15.6%) as changed from “yes” after 2005 to “no” after 2006 (16.7%). Thus, although about two-thirds of hunters from 3C-3J supported continuation of the pilot after both its first and second years, the individual hunters who accounted for the two-thirds support differed somewhat between the first and second years.

**Table 9. Longitudinal comparison of the percentages of deer hunters from wildlife management units 3C and 3J in southeastern New York State who believed a pilot antler restriction program should be continued or not continued for the 2006 and 2007 hunting seasons, based on mail surveys of the same hunters after the 2005 and 2006 hunting seasons.**

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Should the pilot be continued for the 2006 season	Should the pilot be continued for the 2007 season?			Row (2006) totals
	% no	% yes	% not sure	
% no	5.6	15.6	2.2	23.4
% yes	16.7	42.2	5.6	64.5
% not sure	<u>3.3</u>	<u>7.8</u>	<u>1.1</u>	12.2
Column (2007) totals	25.6	65.6	8.9	

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Overall, the percentage of 3C-3J hunters who were undecided decreased slightly from the first year of the pilot (12%) to the second year (9%). Relatively few hunters (6%) consistently believed (after both the 2005 and 2006 seasons) that the pilot should not be continued. A strong plurality (42%) consistently believed the pilot should be continued after both the 2005 and 2006 seasons.

In 3H-3K where the pilot was in place for only one season prior to the survey, more than one-half of hunters (56%) said their support for the pilot program had increased after the first year under antler restrictions. About 13% of hunters said their support had decreased. The remaining one-third (31%) reported no change in their level of support after the first season of the pilot.

### SUMMARY AND IMPLICATIONS

Fairly strong majorities of hunters from both sets of WMUs supported the idea of continuing the pilot antler restrictions for the 2007 hunting season. More than one-half of hunters from 3H-3K indicated that their support had increased after experiencing a first hunting season under the restrictions. Among 3C-3J hunters, some shift in opinion occurred, but the net result was that about two-thirds of hunters registered support for continuation of the pilot after both the first and second seasons in those units.

Evidence, particularly from WMUs 3C-3J where we have data from the same hunters for two years, indicates that a small percentage of hunters (<18%) have changed their primary location for deer hunting as a result of the pilot. However, about as many hunters were attracted to units 3C-3J (17%) for the second year of the pilot as had been lost (13%) after the first year of the antler restrictions. Thus, no large changes in the number of people hunting in these units have occurred because of the pilot.

Although it took hunters, on average, about two weeks of hunting to harvest a deer in either set of WMUs, this amount of effort required to harvest a deer was much less than the estimated effort required in 3C-3J during the 2005 season (Brown 2006). Then, it took an average of 42 hunter days in 3C and 23 in 3J to take a deer. At least in WMUs 3C-3J, hunters seem to have been more effective at taking deer in 2006 compared to 2005, as the same individual hunters were surveyed in both years and a high percentage of them responded in both years.

Seeing and bagging deer, particularly older bucks with larger antlers, certainly is attractive to deer hunters surveyed from all four WMUs. However, the degree to which hunters are satisfied with their hunting experiences depends on a complex set of factors. Of eight potential positive aspects of deer hunting that we examined, a majority of hunters indicated that four or five (depending on the WMU) were “very important.” Fewer hunters were “very concerned” about the five potential negative aspects that we examined. However, three of the five still were very concerning to >40% of hunters. Aspects that are “very important” to hunters or about which hunters are “very concerned” are, according to the concept of adaptive impact management (AIM), impacts to be managed (e.g., Riley et al. 2003, Enck et al. 2006).

Whether hunters perceived positive impacts to be at or above desirable levels and negative impacts to be at or below tolerable levels clearly influenced hunter satisfaction in the pilot units. More than 40% of hunters in WMUs 3C-3J and 3H-3K were dissatisfied with their hunting experiences. Further, two times as many hunters in 3C-3J and three times as many in 3H-3K indicated that their satisfaction had decreased since inception of the pilot program, compared to those who said their satisfaction had increased. The relatively high dissatisfaction seems to be related mostly to multiple, positive impacts being “too low” for hunters to be satisfied.

Despite the relatively high dissatisfaction, strong majorities of hunters from both WMUs 3C-3J and 3H-3K support continuation of the pilot antler restrictions. Several reasons likely account for this seemingly contradictory set of relationships. First, perceptions about experienced levels of positive and negative aspects of deer hunting differ greatly between hunters who believe that those aspects are impacts vs. those who believe they are of lesser importance or concern. In particular, hunters who believe that seeing bucks in general and older bucks with larger antlers in particular are “very important” and who believe the number of bucks has increased, also generally believe the increased number is at least at a minimum desired level. The vast majority of hunters who believe seeing bucks is an impact to be managed, but that the number has not changed since the inception of antler restrictions, indicated that the existing number is “too low.” Obviously, this condition is dissatisfying. Nonetheless, these hunters seem to be continuing to express the “wait and see attitude” reported by Brown (2006) after the first year of the pilot in WMUs 3C-3J.

Second, negative impacts that are “too high” seem to be weighted less by hunters than positive impacts that are “too low.” Among hunters identifying various potential negative aspects of deer hunting as things about which they are “very concerned,” relatively few indicated that experienced levels had decreased, and higher percentages indicated that experienced levels of these negative impacts had increased under the antler restrictions. Further, majorities of

hunters indicated that experienced levels of these negative impacts generally were “too high” for them to be satisfied – which is reflected in the low levels of satisfaction. Despite already “too high” levels of negative impacts worsening, the majority of hunters seem willing to support continuation of antler restrictions based on the potential of improving levels of positive impacts.

Finally, we inquired about only a small set of potential positive and negative aspects of deer hunting. It is possible – even likely – that additional positive impacts and negative impacts exist for which we have no data. If levels of both positive and negative impacts are improving under antler restrictions, it could help explain why so many hunters are supportive of continuing the pilot program.

### **LITERATURE CITED**

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