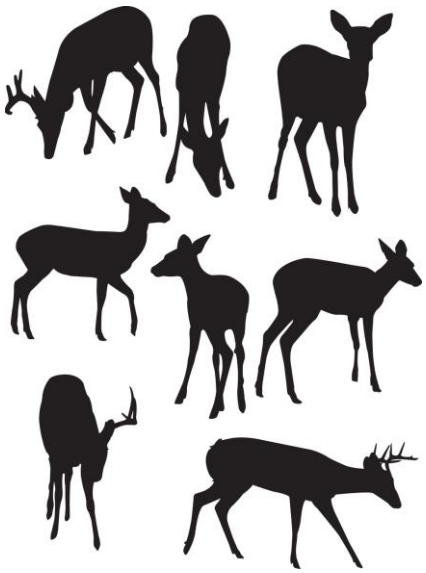
Hunter Satisfactions with Deer Harvest Opportunities in New York State



April 2015

HDRU Series No 15–05

Prepared by:

William F. Siemer, Daniel J. Decker,
and Richard C. Stedman
Human Dimensions Research Unit
Department of Natural Resources
Cornell University

HUMAN DIMENSIONS RESEARCH UNIT PUBLICATION SERIES

This publication is one of a series of reports resulting from investigations dealing with public issues in environmental and natural resources management. The Human Dimensions Research Unit (HDRU) in the Department of Natural Resources at Cornell University studies the social and economic aspects of natural resources and the environment and the application of social and economic insights in management planning and policy. A list of HDRU publications may be obtained by writing to the Human Dimensions Research Unit, Department of Natural Resources, Fernow Hall, Cornell University, Ithaca, NY 14853, or by accessing our World Wide Web site at: http://www2.dnr.cornell.edu/hdru.

TO CITE THIS REPORT

Siemer, W. F., D. J. Decker, and R. C. Stedman. 2015. Hunter satisfactions with deer harvest opportunities in New York State. Human Dimensions Research Unit Publication Series 15–05. Department of Natural Resources, Cornell University, Ithaca, New York. 38pp.

`

EXECUTIVE SUMMARY

In 2013, the New York State Department of Environmental Conservation (DEC) sponsored a statewide survey of deer hunters. We worked with DEC and the USGS New York Cooperative Fish and Wildlife Research Unit (NYCFWRU) to design a survey instrument that collected specific data on deer harvest satisfactions needed by NYCFWRU to analyze how various deer management policies may affect deer hunter satisfactions. We conducted a statewide survey of New York deer hunters to quantify deer harvest satisfactions within particular management zones and hunter subgroups. This report synthesizes results from that statewide deer hunter survey.

Study purpose: DEC sponsored this research to obtain data on hunter satisfactions needed to evaluate strategies for reducing harvest of yearling bucks in light of consequences each strategy may have on hunter satisfaction, deer population growth, and costs for deer program administration. We designed the 2013 statewide deer hunter survey to address the following research objectives:

> *Objective 1:* Collect information needed to place relative weights on facets of hunter satisfaction that may be affected differentially by deer management alternatives taken to protect yearling (1.5 year old) bucks.
>
> *Objective 2:* Collect demographic and activity-involvement information necessary to compare hunting-related satisfaction among deer hunting subgroups.

METHODS

Sampling

- DEC provided access to a list of all 2012/13 deer hunters in New York, from which we drew a stratified random sample of 7,000 adults (≥18 years old).

- We sampled big game hunters from four geographic strata. The sample size differed by stratum (n=1,000 in the Nassau/Suffolk/Westchester stratum; n=1,000 in the Adirondack stratum; n=1,000 in the Northwest stratum; and n=4,000 in the remainder of New York State stratum, an area that we expected to divide into multiple buck management zones for analysis).

Mail survey instrument

- To determine and rank conditions that contribute to hunter satisfaction with deer harvest opportunities, we assessed the importance of multiple conditions pertaining to: opportunity to harvest a big buck, opportunity to take any buck one chooses, opportunity to take more than one buck, opportunity to take at least one deer, overall opportunity to be in the field, consistency in buck harvest rules/regulations, and being able to determine easily if a buck is legal to shoot. Hunters were asked to rate the importance of each condition to their satisfaction with deer harvest opportunities in the wildlife management unit they hunt most often (scale 0–4; 0 = not important, 4 = very important). Then, the 16

`

individual conditions were aggregated into seven dimensions of hunting satisfaction, and hunters were asked to rank the dimensions from most important (ranking = 1) to least important (ranking = 7) in determining their personal satisfaction with deer harvest opportunities in the wildlife management unit they hunted most often in the previous five years.

- We developed a set of six questions to assess hunters' willingness to voluntarily pass up shots at small-antlered bucks in a variety of scenarios (e.g., "if it was the last day of the season and you had not taken a buck"). All items used a seven-point response scale (response options: never, rarely, sometimes, often, very often, always, and unsure). We also asked how often they had voluntarily passed up shots at small-antlered bucks in the previous five years, when they had a clear shot and an unfilled tag allowing them to legally take such a deer.

- We developed three items to assess hunters' views on the proportion of yearling bucks in the total (statewide) buck harvest. First we asked how important it was to them to reduce the proportion of young bucks in the buck harvest. Then, we asked hunters how willing they were to accept some limitations on their opportunity to hunt bucks, and how willing they were to accept some restrictions on their freedom to shoot a buck of any size/age, in order to achieve an overall reduction in yearling bucks in the statewide harvest.

Survey implementation

- The Survey Research Institute at Cornell University (SRI) implemented the survey mailings between October 15, 2013 and November 13, 2013. Each member of the sample was contacted up to four times.

- SRI completed follow-up telephone interviews with a sample of 260 nonrespondents between December 14, 2013 and January 18, 2014. Interviews were approximately 5 minutes in duration and contained 14 questions from the mail survey that obtained data on deer hunting involvement and satisfaction with deer harvest opportunities in New York State.

Weighting the data:

- Deer hunters are not distributed equally across the state. This raises the possibility of sampling bias. To address that possibility, we developed weighting factors for each geographic stratum, and we applied those weight factors based on county of residence.

FINDINGS HIGHLIGHTS

- We received 2,720 completed questionnaires from a pool of 6,729 deliverable questionnaires, yielding a response rate of 40.4% after deleting undeliverable questionnaires (n=271). Response by stratum was used to calculate weighting factors.

`

Nonrespondent–respondent comparisons

- Nonrespondents were similar to respondents with regard to whether they had gone deer hunting in New York State in the previous 5 years and in likelihood of identifying themselves as primarily bowhunters, regular firearms season hunters, muzzleloader season hunters, or multi-season hunters.

- On average, nonrespondents were younger than respondents (48 vs. 55 years old) and had deer hunted fewer years (22 years vs. 32 years). We found few differences between hunter age cohorts; all cohorts assigned very similar rank order among satisfactions dimensions. Given the outcome of those comparisons, statewide results were not adjusted for age differences between respondents and nonrespondents.

- Nonrespondents were less likely than respondents to have participated in regular archery season (40% vs. 61%) or late archery/muzzleloader season (46% vs. 65%). They also were more likely than respondents to be satisfied with current harvest opportunities in New York State, including opportunity to: take at least 1 deer, take at least 1 buck, and take a big-antlered deer.

Overall satisfactions with deer harvest opportunities:

- Across New York State, most hunters were moderately or very satisfied with levels of opportunity to be in the field (82%), to take at least one deer (67%), or to take at least one buck (62%) in the deer management unit where they hunted most often. More than half of all deer hunters across the state were moderately or very satisfied with buck hunting rules/regulations (58%) and deer hunting rules/regulations (59%) in 2013. Satisfaction with opportunities to take more than one buck or to take a big-antlered buck was lower; only 41% of hunters were moderately or very satisfied with opportunities to take a big-antlered deer where they hunted most often.

Ratings for factors that may affect satisfactions:

- We asked hunters to rate how important 16 specific attributes were in determining their level of satisfaction with deer harvest opportunities in New York State. Specific attributes were listed under seven headings: opportunity to take a big-antlered buck; opportunity to take any buck I choose; opportunity to take more than one buck; opportunity to take at least one deer; overall opportunity to be in the field; consistency in buck harvest rules/regulations; and being able to easily see if a buck is legal to shoot.

- For most deer hunters, multiple factors contributed to level of satisfaction with harvest opportunities. More than half of all respondents considered 11 of 16 attributes to be moderately to very important to their satisfaction (i.e., they rated the attributes a 3 or 4 on a scale of 0 to 4; 0=not important and 4=very important).

`

- Hunters were divided in terms of the importance they placed on several attributes as contributors to satisfaction with deer harvest opportunities. For example, approximately 45% of hunters reported that having a better chance of taking a buck with large antlers was of no or low importance to their hunting satisfaction, while 55% of hunters reported that attribute as being moderately to highly important to their satisfaction. Continuing to be allowed to take any legal antlered deer they choose was of no or low importance for approximately 43% of hunters; 57% of hunters said that opportunity was of moderate or high importance to their hunting satisfaction.

Ranking factors that may affect satisfactions:

- We aggregated 16 individual attributes into seven dimensions of hunting satisfaction, and asked hunters to rank the dimensions from most important (ranking = 1) to least important (ranking = 7) in determining their personal satisfaction with deer harvest opportunities in New York State. In order to provide data for purposes of modeling the potential effects of different deer management alternatives on deer management objectives, we grouped the ranking results in four categories representing fundamental objectives related to maximizing hunter satisfaction. Statewide, "opportunity to take at least one deer" was ranked as the most important dimension of hunter satisfaction. The opportunity to take a big-antlered buck and the opportunity to take any buck one chooses were ranked statistically equal at second in importance; other hunting satisfactions (i.e., a composite of overall hunting opportunity and complexity of regulations) ranked last in importance.

- The relative ranking of satisfactions differed across hunter subgroups.

    - Hunters with a moderate to high interest in taking antlerless deer, and those who applied for a deer management permit (DMP), ranked "opportunity to take at least one deer" as the most important factor influencing their satisfaction with deer harvest opportunities.

    - Respondents who had no or low interest in harvesting antlerless deer, and those who had hunted in a mandatory antler restriction (MARS) zone ranked "opportunity to take a big-antlered deer" as the most important factor influencing their satisfaction with deer harvest opportunities.

NEXT STEPS

Results from analysis of the satisfaction ranking data were provided to NYCFWRU researchers and are being used as inputs for a quantitative decision-making framework. The framework involves a process of modeling the effects that implementing any of several deer management alternatives would have on three fundamental objectives for deer management (i.e., maximizing hunter satisfaction, minimizing the impact on DEC's ability to monitor and control deer populations, and minimizing program administration costs to DEC). NYCFWRU researchers are currently finalizing their analysis, in collaboration with a DEC project contact team. DEC staff will present results of that analysis to hunters in various venues.

`

ACKNOWLEDGMENTS

We extend our appreciation to New York State's deer hunters for their participation in this study. Many staff members within the New York State Department of Environmental Conservation (DEC) Bureau of Wildlife helped during various phases of this research. For their assistance, we express our thanks to DEC staff Gordon Batcheller, Tom Bell, Dan Bishop, Lance Clark, James Farquhar, Jeremy Hurst, Steven Joule, Edward Kautz, Art Kirsch, Adam Perry, Michael Schiavone, and Bryan Swift.

For their contributions to survey instrument design, we express our appreciation to Angela Fuller and Kelly Robinson, in the New York Cooperative Fish and Wildlife Research Unit.

The Survey Research Institute (SRI) at Cornell University conducted nonrespondent follow-up interviews.

Nancy Connelly (Human Dimensions Research Unit) provided consultation on sampling strategy, data weighting, and analysis. Karlene Smith assisted with survey implementation and data coding. Gretchen Gary assisted with coding of comments and open-ended questions.

Our survey instrument and request to conduct survey research was reviewed and granted approval by the Cornell University Office of Research Integrity and Assurance (Institutional Review Board for Human Participants Protocol ID# 1006001472).

This work was supported by New York Federal Aid in Wildlife Restoration Grant WE – 173 – G.

`

TABLE OF CONTENTS

`

LIST OF TABLES

`

`

INTRODUCTION

Using Objective Criteria to Evaluate Deer Management Alternatives

Objective 2.3 of the New York State Department of Environmental Conservation's (DEC's) current deer management plan is to "Encourage various strategies to reduce harvest of young (≤ 1.5 years old) bucks in accordance with hunter desires" (DEC 2011, page 21). One of the strategies associated with that objective (Strategy 2.3.7) is, "Use objective criteria to determine and evaluate optimal strategies for reducing harvest of yearling bucks, including mandatory antler restrictions" (DEC 2011, page 21).

DEC is addressing Strategy 2.3.7 with assistance from the USGS New York Cooperative Fish and Wildlife Research Unit (NYCFWRU). NYCFWRU is working with DEC to develop a decision framework that uses objective criteria to evaluate a set of management alternatives that may reduce harvest of yearling bucks. The quantitative decision framework (or model) being developed by NYCFWRU will provide a means to estimate how different deer management alternatives would affect three fundamental management objectives: (1) maximizing hunter satisfaction, (2) minimizing the impact on DEC's ability to monitor and control deer populations, and (3) minimizing program administration costs to DEC. The modeling work DEC sponsored will integrate biological data on deer and social data on hunter satisfactions. Although DEC has sponsored multiple investigations of hunter preferences, motivations, and satisfactions over three decades (Decker and Mattfeld 1988a, 1988b; Decker et al. 1980, 1992; Enck and Brown 2001, 2007, 2008; Enck and Decker 1991; Enck et al. 2011; Lauber and Brown 2000; Stedman et al. 1993), those investigations do not provide the specific data needed by NYCFWRU to complete their decision-making framework. Thus, additional survey work was needed.

In 2013, we partnered with DEC to collect specific data on deer harvest satisfactions needed by the NYCFWRU to analyze how various deer management policies may affect deer hunter satisfactions. We conducted a statewide survey of New York deer hunters to quantify deer harvest satisfactions within particular management zones and hunter subgroups. This report synthesizes results from that statewide deer hunter survey.

Purpose and Objectives of 2013 Hunter Satisfactions Research

Maximizing aggregate levels of hunter satisfaction is one of the fundamental objectives that will be considered in decisions regarding how best to manage harvest of yearling bucks. Thus, NYCFWRU staff have incorporated a sector on hunter satisfactions into their quantitative framework for weighing tradeoffs associated with multiple deer management alternatives. DEC sponsored this research to obtain data on hunter satisfactions needed for a quantitative analysis that will evaluate strategies for reducing harvest of yearling bucks in light of consequences each strategy may have on hunter satisfaction, deer population growth, and costs for deer program administration. We designed the 2013 statewide deer hunter survey to address the following research objectives:

> *Objective 1:* Collect information needed to place relative weights on facets of hunter satisfaction that may be affected differentially by deer management alternatives taken to protect yearling (1.5 year old) bucks.

`

Objective 2: Collect demographic and activity-involvement information necessary to compare hunting-related satisfaction among deer hunting subgroups.

SUBSET OF HUNTER SATISFACTIONS ADDRESSED IN THIS STUDY

Satisfactions (and dissatisfactions) are outcomes of engaging in a behavior like hunting (Vaske and Manfredo 2012). Satisfactions are regarded as evaluations (attitudes) that are generated in the participant's mind after an experience (Vaske and Manfredo 2012). Meeting expectations related to one's underlying motivations results in satisfaction; failure to meet expectations leads to dissatisfaction.

In the 1970's and 1980s, human dimensions researchers drew from social psychology and other fields to create a foundation for studying hunting motivations and satisfactions, two closely linked, but separate concepts. Motivations are psychological goals that drive people to engage in hunting (i.e., motivations are what initiates behavior). Decker et al. (1984) suggested that most hunting satisfactions related to three underlying motivations: (1) achievement (i.e., hunting primarily to meet some self-determined standard of performance, such as shooting a deer with large antlers), (2) affiliation (i.e., hunting primarily to share time with others and strengthen personal relationships), and (3) appreciation (hunting primarily to relax and escape from everyday concerns). More recently, studies have suggested other categories of hunting motivations, including contributing to a conservation purpose (i.e., deer hunting to benefit local communities where abundant deer are negatively impacting residents (Siemer et al. 2012). For this project, we focused on a subset of satisfactions generated from deer harvest expectations and experiences, which relate to underlying achievement motivations.

Hunters generally derive a range of satisfactions from hunting involvement that fall into multiple broad categories (Hendee 1974, Decker et al. 1980, Hammitt et al. 1990), and research by Enck and Decker (1991) documented that to be the case for New York State deer hunters. Researchers and managers have come to recognize that a multiple satisfactions approach is helpful for understanding and creating conditions that enhance hunter satisfactions (Hammitt et al. 1990). Our study focused mainly on satisfactions related to opportunities to see and take shots at deer, experiences known to have considerable influence on overall deer hunter satisfaction (Enck and Decker 1990).

Wildlife management agencies can think of hunter satisfactions as tangible outcomes that can be made more or less available depending on the hunting opportunities created through regulatory packages. Wildlife management agencies cannot influence all of the conditions that affect deer hunting satisfactions. Heberlein and Kuentzel (2002, page 230) point out that wildlife agencies do have the ability to influence hunter satisfactions through one variable: "the season framework employed to manage a deer herd within desired management goals and parameters." The regulatory framework defines when and where hunting occurs, what qualifies as a legal buck, and how many antlered and antlerless deer can be taken per hunter. For this project, we assessed the importance of those kinds of regulatory parameters on hunter satisfaction.

`

METHODS

Sampling

The target population for this study was New York State hunters 18 or older who held a license permitting them to hunt deer during the 2012/13 hunting license year. NYSDEC provided access to a listing of all 2012/13 big game hunting license holders in New York, from which we drew a stratified random sample of 7,000 hunters. We sampled big game hunters from four geographic strata (Table 1). The sample size differed by stratum (i.e., 1,000 per stratum in the Nassau, Suffolk, and Westchester County stratum, Adirondack stratum, and Northwestern stratum; and 4,000 in the remainder of New York State stratum). The "remainder of New York State" stratum was larger because we anticipated dividing responses from that stratum into several subgroups representing hunters from particular buck management zones (BMZs). Although boundaries of the BMZs were not available at the time of data collection, the DEC contact team for this research indicated that the area would likely be divided into several BMZs. These strata were used for sampling purposes only; subsequent analyses were based on where survey respondents said they hunted most.

Survey Instrument

In cooperation with a DEC contact team and NYCFWRU personnel, we developed a survey instrument (Appendix A) to address stated research objectives and two other information needs identified by the study contact team. The instrument was reviewed and approved by the Cornell University Office of Research Integrity and Assurance (Institutional Review Board for Human Participants, Protocol ID#1006001472).

Table 1. Definition of geographic survey strata, based on wildlife management units (WMUs) in which hunters resided. (Note: These strata were used for sampling purposes only; subsequent analyses were based on where survey respondents said they hunted most.)

Stratum label	Wildlife Management Unit (WMU) of residence
Adirondack	5A, 5C, 5F, 5G, 5H, 5J, 6F, 6J, 6N
Northwestern	6A, 6C, 6G, 6H, 6K
Nassau/Suffolk/Westchester	1A, 1C, 3S
Remainder of New York State	2A, 3A, 3C, 3F, 3G, 3H, 3J, 3K, 3M, 3N, 3P, 3R, 5R, 5S, 5T, 6P, 6R, 6S, All WMUs in Regions 4, 7-9

`

Identifying factors that affect satisfaction with deer-harvest opportunities

For purposes of quantitative analysis, staff with the NYCFWRU conceptualized hunter satisfaction as a fundamental objective of deer management. They divided that objective into four component parts: (1) maximizing opportunity to take a big-antlered buck; (2) maximizing opportunity to take any buck; (3) maximizing opportunity to take any deer; and (4) maximizing other aspects of deer harvest opportunity. The final component was comprised of: (4a) maximizing opportunity to be in the field; and (4b) minimizing regulatory complexity.

To determine and rank conditions that contribute to hunter satisfaction with deer harvest opportunities, we assessed the importance of multiple conditions pertaining to: opportunity to take a big buck (three items), opportunity to take any buck one chooses (three items), opportunity to take more than one buck (one item), opportunity to take at least one deer (four items), overall opportunity to be in the field (two items), consistency in buck harvest rules/regulations (two items), and being able to easily see if a buck is legal to shoot (one item). Hunters were asked to rate how important each condition was to their satisfaction with deer harvest opportunities in the wildlife management unit they hunt most often (scale 0–4; 0 = not important, 4 = very important). Then, the 16 individual conditions were aggregated into seven dimensions of hunting satisfaction, and hunters were asked to rank the dimensions from most important (ranking = 1) to least important (ranking = 7) in determining their personal satisfaction with deer harvest opportunities. Satisfactions dimensions were developed collaboratively during a set of working sessions with a team of DEC wildlife managers, HDRU researchers, and NYCFWRU researchers.

Deer hunting activity involvement

To place hunters into subgroups for comparison, we asked multiple questions about hunting involvement, including: primary WMU hunted, years of deer hunting; number of days hunted per season; interest in harvesting antlerless deer; interest in and use of antlerless deer permits; level of satisfaction with various aspects of deer hunting in New York; whether respondents considered themselves to be primarily a bow hunter, gun hunter, muzzleloader hunter, or multi-season hunter (i.e., hunter identity type); and whether they had ever hunted in a deer management unit with mandatory antler restrictions (MARS). We obtained information on hunters' age from license data.

Behavioral intentions related to voluntary protection of young bucks

We developed a set of six questions to assess hunters' willingness to voluntarily pass up shots at small-antlered bucks in a variety of scenarios (e.g., "if it was the last day of the season and you had not taken a buck"). All items used a seven-point response scale (response options: never, rarely, sometimes, often, very often, always, and unsure). We also asked how often they had voluntarily passed up shots at small-antlered bucks in the past five years, when they had a clear shot and an unfilled tag allowing them to harvest such a deer legally (response options: never, rarely, sometimes, often, very often, always, and "does not apply to me").

`

Views about reducing the proportion of young bucks in the harvest

We developed three items to assess hunters' views about the proportion of yearling bucks in the total buck harvest. First we asked how important it was to them to further reduce the proportion of young bucks in the buck harvest (response scale 0-4 and "unsure"; 0 = not important, 4 = very important). Then, we asked hunters how willing they were to accept some limitations on their buck hunting opportunity, and how willing they were to accept some restrictions on their freedom to shoot a buck of any size/age, in order to achieve an overall reduction in yearling bucks in the harvest (response scale 0-4 and "unsure"; 0 = not willing, 4 = very willing).

Survey Implementation

The Survey Research Institute at Cornell University (SRI) conducted survey mailings for HDRU. The mail survey was implemented in October 15, 2013. Each member of the sample was contacted up to four times (i.e., (1) an initial letter and questionnaire, (2) a reminder letter, (3) a third reminder letter and replacement questionnaire, and (4) a final reminder about one week after the third mailing). All survey mailings were completed between October 15, 2013 and November 13, 2013. To encourage survey response, several characteristics of the Dillman (2000) Total Design Method were incorporated, including a brief, respondent-friendly questionnaire, multiple contacts, and cover letter elements that personalized correspondence. Completed questionnaires were returned to HDRU for coding.

SRI completed 260 nonrespondent interviews with a random sample of nonrespondents between December 14, 2013 and January 18, 2014. The nonrespondent telephone interview contained a set of 14 questions from the mail survey instrument.

Analysis

We used IBM SPSS Statistics 21.0 (SPSS 2012) software to calculate frequencies and measures of central tendency (e.g., mean). We placed respondents into subgroups (e.g., hunter identity type, buck management zone where respondents hunted deer most often) for comparison. Hunters were grouped into regions where they hunted based on the wildlife management unit (WMU) that they reportedly hunted in most often during the previous five years. We used the chi-square statistic, t-tests, and one-way analysis of variance (ANOVA) to test for significant differences between groups of hunters at the $P \leq 0.05$ level.

Ranking importance of satisfactions

We aggregated 16 individual attributes of satisfaction into seven dimensions of hunting satisfaction, and asked hunters to rank the dimensions from most important (ranking = 1) to least important (ranking 7) in determining their personal satisfaction with deer harvest opportunities in the wildlife management unit they had hunted in most often in the past five years. Only respondents who provided a ranking for all seven dimensions, and provided rankings within the range of offered values (i.e., 1–7) were included in the analysis.

`

Some respondents incorrectly assigned the same ranking to multiple dimensions (essentially, they gave each dimension a rating from 1 to 7, instead of ranking the items from 1 to 7). For example, a respondent may have assigned a number 1 ranking to "opportunity to take any buck I choose," and "opportunity to take more than 1 buck." In order to retain these respondents in our analysis, we assigned an average score to dimensions with the same ranking. The average score assigned depended on the number of duplicate rankings and their place value. For example, if a hunter gave two dimensions a rank of 1, both dimensions were assigned a rank of 1.5. If a hunter gave two dimensions a rank of 7, both dimensions were assigned a rank of 6.5.

To create means that would later be used to model the effects of various deer management approaches on hunter satisfactions, we combined four of the seven dimensions of satisfaction into one aggregate factor labeled "other hunting satisfactions." The mean score for other hunter satisfactions was calculated by taking the grand mean of the following satisfactions dimensions: opportunity to take more than 1 buck, overall opportunity to be in the field, consistency in buck harvest rules/regulations, and being able to easily see if a buck is legal to shoot. These dimensions were combined because they collectively represented attributes of a single fundamental objective (i.e., maximizing other aspects of deer harvest opportunity). We refer to this factor as "other hunting satisfactions" because changes in these variables do not affect the age structure of buck population when modeling the effects of different management approaches.

We created four new variables to recode ranking information into four categories (i.e., importance of opportunity to harvest a large-antlered buck, opportunity to harvest any buck, opportunity to harvest any deer, and other hunting satisfactions). The dimension ranked highest was assigned a score of 1. The lowest-ranked dimension was assigned a score of 4. We assigned an average score to dimensions with the same ranking. For example, if two dimensions were given the highest ranking (1), both dimensions were assigned a rank of 1.5. If a hunter gave two dimensions the lowest ranking (4), both dimensions were assigned a rank of 3.5.

Weighting to address sampling bias

Big game license holders are not equally distributed across the strata we defined for this study (77% of big game license holders reside in counties in the remainder of NYS stratum). This raises the possibility of sampling bias. To address that possibility, we developed weighting factors for each geographic stratum using the formula:

$WT_i = (\%PERMITSinSTRATUM_i \times TOTALRESP) / STRATUM_iRESP,$

where,

WT_i = weighting factor for respondents living in $STRATUM_i$

$\%PERMITSinSTRATUM_i$ = proportion of all NY State resident big game hunting permit holders age 18 and older who live in $STRATUM_i$

TOTALRESP = total number of respondents from all stratum combined, and

$STRATUM_iRESP$ = number of respondents living in $STRATUM_i$.

`

We applied the following weight factors based on county of residence: 0.575 for Nassau/Suffolk/Westchester stratum; 0.576 for the Adirondack stratum; 0.536 for the Northwestern stratum; and 1.302 for the remainder of New York State stratum (Appendix B, Table B1)

Assigning respondents to buck management zones

In 2015, DEC finalized the boundary definitions for a new set of buck management zones (BMZs) that divide New York State into seven regions for analyzing hunter preferences and potentially modifying antlered buck harvest regulations. The southern zone was divided into four BMZs labeled: Mohawk Valley, Southern Tier, Southeastern, and Lake Plains. The northern zone was divided into two BMZs labeled Adirondack and Northwestern. Westchester and Suffolk Counties were grouped into a BMZ labeled Westchester/Suffolk. The study contact team and NYCFWRU researchers requested an analysis of survey results with hunter groups based on the BMZ where hunters had spent the most time deer hunting in the past five years. We assigned hunters to a BMZ based on the wildlife management unit (WMU) in which they said they had hunted most often.

RESULTS

A total of 2,720 questionnaires was returned from a pool of 6,729 deliverable questionnaires, yielding a response rate of 40.4% after deleting undeliverable questionnaires (n=271) (Table 2). Response by stratum was used to calculate weight factors (Appendix B, Table B1).

Table 2. Summary of survey response by geographic stratum for the 2013 survey of big game license holders in New York State.

	Geographic strata				
	Adirondack	Northwestern	Nassau/Suffolk/ Westchester	Remainder of state	Total
Total sample	976	960	968	3,825	6,729
Useable returns	377	331	401	1,610	2,720
Undeliverable	24	40	32	175	271
Return unusable	3	9	4	26	42
Return rate	38.6%	34.5%	41.4	42.1%	40.4%

Nonresponse Bias Analysis

Telephone interviews were completed with a sample of 260 nonrespondents (sampled from all geographic stratum combined) to assess differences between respondents and nonrespondents on key traits. We present the outcome of nonrespondent contacts in Appendix C.

`

Nonrespondents were similar to respondents with regard to whether they had gone deer hunting in New York State in the past 5 years (90.0% vs. 93%). They also were similar to respondents in the rate at which they identified themselves as primarily bowhunters, regular firearms season hunters, muzzleloader season hunters, or multi-season hunters (Appendix C, Table C4).

Nonrespondents differed from respondents on several other measures. On average, nonrespondents had deer hunted fewer years (21.9 years vs. 32.2 years, t=9.448, df=2,917, p <0.001) and were younger than respondents (48.1 years old vs. 54.9 years old, t=6.605, df=2,965, p <0.001) (Appendix C, Tables C1-C2). Nonrespondents were less likely to have hunted 1 or more days during early archery season (40.1% vs. 60.9%, $\chi^2_1 = 34.76$, P <0.001) or late archery/muzzleloader season (46.1 vs. 65.2%, $\chi^2_1 = 34.15$, P <0.001) (Appendix C, Table C3). Nonrespondents were more likely than respondents to be satisfied with 7 current hunting conditions in New York State, including opportunity to: be in the field, take at least 1 deer, take at least 1 buck, take more than 1 buck and take a big-antlered deer (Appendix C, Table C5).

In order to explore how differences in age affected statewide survey results, we analyzed satisfactions rankings within 4 age cohorts (i.e., age 18–44, 45–55, 56–66, and 66 or more years of age). We found few differences between age cohorts; all cohorts assigned very similar rank order among satisfactions dimensions. Given the outcome of those comparisons, statewide results were not adjusted for age differences between respondents and nonrespondents.

In the following text and tables, results are reported by regional strata after weighting (i.e., weighting to adjust for the proportion of deer hunters who live in the geographic region represented by a respondent).

Overall Satisfactions with Deer Hunting Conditions

We asked hunters to rate how satisfied they were with eight current conditions in the WMU where they hunted deer most often. Statewide, majorities of hunters were moderately or very satisfied with levels of opportunity to be in the field (82%), to take at least one deer (67%), or to take at least one buck (62%). More than half of all deer hunters across the state were moderately or very satisfied with *buck* hunting rules/regulations (58%) and *deer* hunting rules/regulations (59%) in 2013. Satisfaction with opportunities to take more than one buck or to take a big-antlered buck was lower; only 41% of hunters were moderately or very satisfied with opportunities to take a big-antlered deer (Table 3).

On four conditions we found significant differences between hunters grouped by BMZ where the respondent had hunted most often (Table 4). Adirondack BMZ hunters were more likely than other hunter groups to be dissatisfied with their current opportunities to take at least one deer. Those who hunted most often in the Southeastern BMZ were more likely than those who hunted most often in the Mohawk Valley, Southern Tier, or Lake Plains to be dissatisfied with their opportunity to take at least one buck, and to be dissatisfied with current buck hunting rules/regulations in the WMU where they hunted most often.

`

Table 3. Level of hunter satisfaction with current hunting conditions in the wildlife management unit (WMU) where they hunted most often in 2012.

		Satisfied			Dissatisfied	
		Very	Moderately	Neither	Moderately	Very
	n			(%)		
Overall opportunity to be in the field	2496	58.2	23.9	10.6	4.2	3.1
Opportunity to take at least 1 deer (any kind)	2487	41.2	26.0	17.8	7.6	7.3
Opportunity to take at least 1 buck (any size)	2488	31.4	30.1	20.5	10.9	7.2
Deer hunting rules/ regulations	2495	27.8	30.7	25.2	10.3	6.0
Buck hunting rules/ regulations	2498	28.7	29.6	25.4	9.7	6.6
Opportunity to take more than 1 buck	2471	24.8	20.4	33.7	10.9	10.2
Opportunity to take a big-antlered deer	2496	17.4	23.8	33.6	15.0	10.2

`

Table 4. Level of hunter satisfaction with current hunting conditions in the wildlife management unit (WMU) where they hunted most often in 2012, by buck management zone.

	n	Satisfied	Neither	Dissatisfied	Chi square	P value
		(%)				
Opportunity to take at least 1 deer (any deer)						
Mohawk Valley	198	76.3	15.7	8.0	74.41	<0.001
Southern Tier	614	72.8	17.1	10.1		
Southeastern	603	63.2	18.2	18.6		
Lake Plains	244	80.7	10.3	9.0		
Adirondack	138	47.8	25.4	26.8		
Northwestern	143	65.7	18.9	15.4		
Opportunity to take at least 1 buck (any size)						
Mohawk Valley	201	70.7	14.9	14.4	29.23	0.001
Southern Tier	610	63.9	18.9	17.2		
Southeastern	601	55.1	21.8	23.1		
Lake Plains	242	65.7	19.0	15.3		
Adirondack	140	64.3	19.3	16.4		
Northwestern	143	69.2	20.3	10.5		
Deer hunting rules / regulations						
Mohawk Valley	202	62.4	20.8	16.8	22.69	0.012
Southern Tier	609	61.6	26.1	12.3		
Southeastern	606	58.4	22.3	19.3		
Lake Plains	243	52.7	32.5	14.8		
Adirondack	140	57.1	24.3	18.6		
Northwestern	145	62.0	22.8	15.2		
Buck hunting rules / regulations						
Mohawk Valley	201	64.7	18.4	16.9	51.76	<0.001
Southern Tier	611	62.2	26.7	11.1		
Southeastern	608	56.2	21.4	22.4		
Lake Plains	244	48.8	35.6	15.6		
Adirondack	140	62.1	24.3	13.6		
Northwestern	145	61.4	25.5	13.1		

`

Ratings for Conditions that may affect Satisfaction with Deer Harvest Opportunities

We asked hunters to rate the importance of 16 conditions to their satisfaction with deer harvest opportunities in the WMU where they hunted most often in 2012. Specific conditions were listed under seven headings. Ratings for opportunity to take at least one deer, opportunity to take a big-antlered buck, and opportunity to take any buck I choose are reported in Table 5. Ratings for other hunting satisfactions (i.e., opportunity to take more than one buck, opportunity to be in the field, consistency in buck harvest regulations, and being able to easily see if a buck is legal for harvest) are reported in Table 6.

Results confirm that for most deer hunters, multiple factors contribute to level of satisfaction with deer harvest opportunities. More than half of all respondents considered 11 conditions to be moderately to very important to their satisfaction with deer harvest opportunities (i.e., they rated the conditions a 3 or 4 on a scale of 0 to 4; where 0=not important and 4=very important) (Table 5-6).

On multiple items, the hunter population was divided in terms of the importance they placed on dimensions of deer hunting satisfaction. For example, approximately 45% of hunters placed no or low importance on having a better chance of taking a buck with big antlers, while 55% of hunters placed moderate to high importance on that opportunity. Approximately 43% of hunters placed no or low importance on continuing to be allowed to use a buck tag to take any legal antlered deer they choose; 57% of hunters placed moderate to high importance on that opportunity (Table 5).

Rankings for Conditions that may affect Satisfaction with Deer Harvest Opportunities

In Table 7 we present weighted statewide mean rankings for dimensions of satisfaction with deer harvest opportunities. The top-ranked dimension of satisfaction with deer harvest opportunity in New York State was "opportunity to take at least one deer." "Opportunity to take any buck I choose" and "opportunity to take a big-antlered deer" received the next highest ranking (their ranking level was statistically the same). Collectively, hunters gave the lowest ranking to other hunting satisfactions (a combination factor that grouped opportunity to be afield and complexity or regulations) (Table 7). These patterns were similar for all BMZs, except in the Adirondacks where opportunity to take any deer was less important than opportunity to take any buck or a big-antlered deer.

In Tables 8-11, we report mean rankings for satisfactions among subgroups of hunters. The results in those tables demonstrate that the relative importance of satisfactions dimensions can differ markedly between hunter subgroups. For example, respondents who had no or low interest in harvesting antlerless deer, those who had hunted in a mandatory antler restriction (MARS) zone, and those who self-identified as primarily bowhunters, ranked "opportunity to take a big-antlered deer" as the most important factor influencing their satisfaction with deer harvest opportunities (Tables 8-11). Hunters with a moderate to high interest in taking antlerless deer, and those who applied for a deer management permit (DMP), ranked "opportunity to take at least one deer" as the most important factor influencing their satisfaction with deer harvest opportunities. (Tables 9-10).

`

Table 5. Hunter importance ratings assigned to conditions that may determine satisfaction with deer harvest opportunities, for categories of conditions that can influence the structure of the buck population.

Conditions	n	Mean[1]	Importance to satisfaction in WMU hunted most often (%)		
			Not important	Low Importance	Mod to high importance
Opportunity to take at least one deer					
See more deer (antlered and antlerless) than I have typically seen in the last 5 years	2557	2.88	7.3	25.9	66.8
Be allowed to take at least 1deer of any age (antlered or antlerless)	2557	2.53	16.5	26.2	57.3
Be allowed to take an antlerless deer during the regular firearms season	2552	2.64	15.6	23.1	61.3
Not have to spend any more effort hunting than I typically do to harvest at least 1 deer (antlered or antlerless)	2539	2.06	23.3	36.0	40.7
Opportunity to take any buck I choose					
See more bucks of any size (age) when I am hunting than I have typically seen in the last 5 years	2561	2.70	9.4	29.5	61.1
Continue to be allowed to use a buck tag to take any legal antlered deer that I choose	2566	2.58	15.4	27.2	57.3
Not have to spend any more effort hunting than I typically do to harvest at least 1 antlered deer	2549	1.97	24.6	37.9	37.5
Opportunity to take a big-antlered buck					
See more bucks with big antlers than I have typically seen in the last 5 years	2565	2.51	14.8	29.7	55.5
Have a better chance of taking a buck with big antlers	2561	2.47	15.1	29.8	55.1
Spend less effort hunting than I typically do to harvest at least 1 big-antlered buck	2547	1.77	28.4	40.0	31.6

[1] Response options 0-4; 0=not important; 1-2=low importance; 3-4=moderate-high importance.

`

Table 6. Hunter importance ratings assigned to conditions that may determine satisfaction with deer harvest opportunities, for categories of conditions that don't directly influence the structure of the buck population (referred to as other hunting satisfactions).

Conditions	n	Mean[1]	Importance to satisfaction in WMU hunted most often (%)		
			Not important	Low Importance	Mod to high importance
Opportunity to be in the field					
Keep the regular firearms season at least as long as it is now in the zone I hunt	2557	3.30	6.9	12.2	80.9
Keep at least as many weekends in the regular firearms season as there are now in the zone I hunt	2551	3.13	9.8	14.3	75.9
Opportunity to take more than one buck					
Continue to be allowed to take at least 2 antlered deer across all seasons (regular gun, archery and muzzle-loader seasons)	2567	2.47	18.4	27.6	54.0
Consistency in buck harvest rules/regulations					
Have the same buck harvest rules/ regulations in all areas of the state	2559	2.07	22.7	37.3	40.0
Have the same buck harvest rules/ regulations during all hunting seasons	2540	2.30	18.4	33.7	47.9
Being able to easily see if a buck is legal to shoot					
Have rules that make it easy in the field to see whether a buck is legal to harvest	2552	2.80	10.5	25.5	64.0

[1] Response options 0-4; 0=not important; 1-2=low importance; 3-4=moderate-high importance.

`

Table 7. Mean importance rankings for dimensions of satisfaction with deer harvest opportunities, statewide and by buck management zone (BMZ) where the respondent hunted deer most often in 2012.

Dimension of hunting satisfaction	n	Mean importance ranking[1]	Standard error	95% Confidence interval	
				lower	upper
Opportunity to take at least one deer					
Statewide total	2,561	2.29	0.020	2.25	2.33
Mohawk Valley	209	2.20	0.073		
Southern Tier	646	2.16	0.039		
Southeastern	612	2.27	0.041		
Lake Plains	235	2.25	0.067		
Adirondack	140	2.68	0.088		
Northwestern	155	2.27	0.079		
Opportunity to take any buck I choose					
Statewide total	2,561	2.46	0.023	2.41	2.51
Mohawk Valley	209	2.36	0.081		
Southern Tier	646	2.42	0.045		
Southeastern	612	2.58	0.047		
Lake Plains	235	2.54	0.079		
Adirondack	140	2.14	0.095		
Northwestern	155	2.33	0.093		
Opportunity to take big-antlered deer					
Statewide total	2,561	2.52	0.025	2.47	2.56
Mohawk Valley	209	2.63	0.086		
Southern Tier	646	2.62	0.050		
Southeastern	612	2.46	0.050		
Lake Plains	235	2.50	0.080		
Adirondack	140	2.43	0.104		
Northwestern	155	2.61	0.103		
Combined (other hunting satisfactions)					
Statewide total	2,561	2.76	0.016	2.73	2.80
Mohawk Valley	209	2.82	0.054		
Southern Tier	646	2.84	0.031		
Southeastern	612	2.73	0.034		
Lake Plains	235	2.72	0.055		
Adirondack	140	2.80	0.630		
Northwestern	155	2.83	0.065		

[1]The dimension ranked highest was assigned a score of 1. The lowest-ranked dimension was assigned a score of 4. We assigned an average score to dimensions with the same ranking.

`

Table 8. Mean importance rankings for dimensions of satisfaction with deer harvest opportunities in wildlife management unit (WMU) where the respondent hunted deer most often in 2012, grouped by self-reported hunter identity.

Dimension of hunting satisfaction	n	Mean importance ranking[1]	Standard error
Opportunity to take at least one deer			
Primarily a regular firearms season hunter	1,221	2.31	0.030
Multi-season hunter	1,082	2.26	0.031
Primarily a bowhunter	237	2.25	0.062
Opportunity to take any buck I choose			
Primarily a regular firearms season hunter	1,221	2.36	0.034
Multi-season hunter	1,082	2.49	0.035
Primarily a bowhunter	237	2.86	0.076
Opportunity to take big-antlered deer			
Primarily a regular firearms season hunter	1,221	2.56	0.035
Multi-season hunter	1,082	2.55	0.038
Primarily a bowhunter	237	2.18	0.081
Combined (other hunting satisfactions)			
Primarily a regular firearms season hunter	1,221	2.79	0.024
Multi-season hunter	1,082	2.73	0.025
Primarily a bowhunter	237	2.77	0.051

[1]The dimension ranked highest was assigned a score of 1. The lowest-ranked dimension was assigned a score of 4. We assigned an average score to dimensions with the same ranking.

`

Table 9. Mean importance rankings for dimensions of satisfaction with deer harvest opportunities in wildlife management unit (WMU) where the respondent hunted deer most often in 2012, grouped by level of hunter interest in harvesting antlerless deer.

Dimension of hunting satisfaction	n	Mean importance ranking[1]	Standard error
Opportunity to take at least one deer			
No-low interest in harvesting antlerless deer	571	2.75	0.042
Moderate-high interest	1981	2.15	0.022
Opportunity to take any buck I choose			
No-low interest in harvesting antlerless deer	571	2.59	0.048
Moderate-high interest	1981	2.42	0.260
Opportunity to take big-antlered deer			
No-low interest in harvesting antlerless deer	571	2.08	0.050
Moderate-high interest	1981	2.65	0.028
Combined (other hunting satisfactions)			
No-low interest in harvesting antlerless deer	571	2.63	0.036
Moderate-high interest	1981	2.81	0.018

[1]The dimension ranked highest was assigned a score of 1. The lowest-ranked dimension was assigned a score of 4. We assigned an average score to dimensions with the same ranking.

`

Table 10. Mean importance rankings for dimensions of satisfaction with deer harvest opportunities in wildlife management unit (WMU) where the respondent hunted deer most often in 2012, grouped by whether hunter applied for a deer management permit in 2012.

Dimension of hunting satisfaction	n	Mean importance ranking[1]	Standard error
Opportunity to take at least one deer			
Applied for a DMP in 2012	1,918	2.23	0.023
Did not apply for a DMP in 2012	622	2.46	0.043
Opportunity to take any buck I choose			
Applied for a DMP in 2012	1,918	2.46	0.027
Did not apply for a DMP in 2012	622	2.48	0.045
Opportunity to take a big-antlered deer			
Applied for a DMP in 2012	1,918	2.26	0.029
Did not apply for a DMP in 2012	622	2.42	0.050
Combined (other hunting satisfactions)			
Applied for a DMP in 2012	1,918	2.79	0.019
Did not apply for a DMP in 2012	622	2.68	0.034

[1]The dimension ranked highest was assigned a score of 1. The lowest-ranked dimension was assigned a score of 4. We assigned an average score to dimensions with the same ranking.

`

Table 11. Mean importance rankings for dimensions of satisfaction with deer harvest opportunities in wildlife management unit where the respondent hunted deer most often in 2012, grouped by whether hunters had experience hunting in a mandatory antler restriction (MARs) zone.

Dimension of hunting satisfaction	n	Mean importance ranking[1]	Standard error
Opportunity to take at least one deer			
Hunted in a WMU with MARs in 2012	343	2.34	0.056
Hunted in other WMUs in 2012	1957	2.26	0.023
Opportunity to take any buck I choose			
Hunted in a WMU with MARs in 2012	343	2.68	0.061
Hunted in other WMUs in 2012	1957	2.42	0.026
Opportunity to take a big-antlered deer			
Hunted in a WMU with MARs in 2012	343	2.26	0.064
Hunted in other WMUs in 2012	1957	2.57	0.029
Combined (other hunting satisfactions)			
Hunted in a WMU with MARs in 2012	343	2.75	0.047
Hunted in other WMUs in 2012	1957	2.78	0.018

[1]The dimension ranked highest was assigned a score of 1. The lowest-ranked dimension was assigned a score of 4. We assigned an average score to dimensions with the same ranking.

Attitudes and Behaviors Related to Passing up Shots at Legal Bucks

One possible means of reducing harvest pressure on young bucks is for hunters to voluntarily pass up shots at bucks with few antler points (sometimes referred to as "voluntary restraint"). We included a set of questionnaire items to estimate levels of voluntary restraint practiced by hunters during the previous five years. Statewide, about 17% of hunters had never voluntarily passed up a shot at a legal buck; about 27% had rarely or sometimes passed up a shot; slightly more than half of hunters said that they had often passed up a shot on a small-antlered buck during the previous five years (Table 12). We did not find significant differences in voluntary restraint based on BMZ where respondents hunted deer most often.

We asked hunters how likely they were to practice voluntary restraint under a set of six scenarios. Hunters reported that they would be most likely to practice voluntary restraint if most other hunters were doing the same (Table 13). They were least likely to practice voluntary restraint in scenarios where it was the last day of the season and they had not yet taken a buck or any deer (Table 13).

`

Table 12. Frequency with which hunters voluntarily passed up a chance to shoot a small-antlered buck (over the past 5 years) when they had a clear shot and an unfilled tag.

Frequency with which a shot at a small-antlered buck[1] was passed up		n (n=2481)	%
Never	(0%)	424	17.1
Rarely	(less than 25% of the time)	275	11.1
Sometimes	(less than half the time)	387	15.6
Often	(more than half the time)	378	15.2
Very often	(more than three-fourths of the time)	433	17.4
Always	(100% of the time)	448	18.1
Does not apply to me (I did not have an unfilled tag and a clear shot at a small-antlered buck in the last 5 years)		111	4.5
Does not apply to me (I did not have landowner/club permission to shoot at small-antlered deer where I hunt)		24	1.0

[1] A *"small-antlered buck"* was defined as a buck with less than 3 points on either antler [e.g., a spike or fork].)

`

Table 13. Frequency with which hunters would pass up a shot at a small-antlered buck.

How often would you pass up a shot at a small-antlered buck[1] if…	n	Mean[2]	Never	Rarely	Some-times	Often	Very often	Always	Unsure
						(%)			
Most other hunters were also voluntarily passing up shots at small-antlered bucks	2500	4.08	9.9	10.5	16.1	13.5	18.0	28.1	3.9
Voluntary restraint was promoted (by DEC or local hunting organizations) to result in more big-antlered bucks in the area you hunt most often	2479	3.93	13.4	8.6	15.5	12.9	12.8	26.7	10.1
Deer density was low with few buck encounters	2498	3.91	11.3	11.5	16.2	15.3	14.6	25.0	6.1
Deer density was high with frequent buck encounters	2500	3.51	16.3	16.9	17.6	11.6	11.7	20.9	5.0
It was the last day of the hunting season and you had not taken a buck	2504	3.27	24.8	14.4	16.4	10.4	11.7	18.7	3.6
It was the last day of hunting season and you had not taken any deer	2499	3.02	29.2	17.5	14.1	9.0	9.4	16.7	4.1

[1] A *"small-antlered buck"* was defined as a buck with less than 3 points on either antler [e.g., a spike or fork].)
[2] Range 1 to 6; 1 = never, 6 = always.

Views on Further Reducing Harvest of Young Bucks

We asked hunters three questions to assess their interest in further reducing the proportion of young bucks in the overall annual buck harvest. Responses indicate a split in hunter perspectives on this topic. Statewide, approximately 31% of hunters placed no or low importance on further reducing the proportion of young bucks in the total buck harvest; 46% said it was moderately or very important to them to further reduce the proportion of young bucks in the overall buck harvest. Similarly, about a third of hunters expressed no or low willingness to accept some limitations on buck hunting opportunity or freedom to take any buck; approximately half of all hunters expressed moderate to high willingness to make those tradeoffs (Table 14).

Table 14. Importance hunters placed on further reducing the proportion of young bucks in the harvest, and willingness to accept some limitations and restrictions to achieve that end, among 2012 hunters in New York State.

		Level of importance					
	n	Not (0)	(1)	(2)	(3)	Very (4)	Unsure
Importance that proportion of young bucks in the harvest be further reduced	2681	22.8	8.1	15.3	18.3	27.7	7.8
		Level of willingness					
	n	Not				Very	Unsure
Willingness to accept some limitations on buck hunting opportunity to achieve an overall reduction of yearling bucks in the harvest	2683	21.7	10.0	12.9	18.3	31.7	5.4
Willingness to accept some restrictions on freedom to shoot a buck of any age or size to achieve an overall reduction of yearling bucks in the harvest	2687	25.0	10.3	12.0	18.2	29.3	5.2

We also detected some differences between hunters who spent the most time hunting in the Southeastern BMZ and hunters in some other BMZs. Specifically, hunters using the Southeastern BMZ most often:

- were more likely than hunters from the Southern Tier BMZ to view further reduction of young bucks in the harvest as very important (Table 15).

- were more likely than hunters from the Southern Tier BMZ or the Northwestern BMZ to accept some limitations on opportunity to further reduce the proportion of young bucks in the harvest (Table 16).

- were more likely than hunters from the Southern Tier BMZ, the Adirondack BMZ, and the Northwestern BMZ to accept some limitations on freedom to take any buck in order to achieve further reduction in the proportion of young bucks in the harvest (Table 17).

Table 15. Importance hunters placed on further reducing the proportion of young bucks in the harvest, by buck management zone hunted most often.

	Buck Management Zone					
Importance	Mohawk Valley	Southern Tier	Southeastern	Lake Plains	Adirondack	Northwestern
	(n=210) %	(n=659) %	(n=639) %	(n=253) %	(n=147) %	(n=158) %
Not important (0)	23.3	25.2	20.2	20.6	25.8	27.8
1	8.1	7.5	8.8	9.1	7.5	8.9
2	19.5	16.8	12.5	15.4	15.0	12.7
3	16.7	20.0	17.8	20.1	21.1	21.5
Very important (4)	26.7	23.5	34.7	25.7	23.8	24.1
Unsure	5.7	7.0	6.0	9.1	6.8	5.0

Table 16. Hunter willingness to accept some limitations on buck hunting opportunity to achieve a reduction in harvest of young bucks, by buck management zone hunted most often.

	Buck Management Zone					
Willingness	Mohawk Valley	Southern Tier	Southeastern	Lake Plains	Adirondack	Northwestern
	(n=212)	(n=661)	(n=639)	(n=253)	(n=147)	(n=158)
	%	%	%	%	%	%
Not willing (0)	22.1	25.0	19.1	18.2	29.3	32.3
1	14.2	11.8	8.5	9.1	10.9	7.0
2	12.7	13.6	12.2	14.6	10.9	13.9
3	17.5	17.2	20.3	22.9	14.3	14.6
Very willing (4)	29.7	28.2	35.7	32.4	30.5	28.5
Unsure	3.8	4.2	4.2	2.8	4.1	3.7

Table 17. Hunter willingness to accept some limitations on freedom to take any buck to achieve a reduction in harvest of young bucks, by buck management zone hunted most often.

	Buck Management Zone					
Willingness	Mohawk Valley	Southern Tier	Southeastern	Lake Plains	Adirondack	Northwestern
	(n=210)	(n=663)	(n=641)	(n=253)	(n=147)	(n=158)
	%	%	%	%	%	%
Not willing (0)	24.8	28.4	21.4	24.9	34.0	31.0
1	13.8	10.0	8.3	11.1	11.6	9.5
2	11.0	13.0	12.5	13.0	9.5	13.9
3	19.5	19.0	20.1	16.6	13.6	15.8
Very willing (1)	29.0	25.5	33.9	32.4	26.5	26.6
Unsure	1.9	4.1	3.8	2.0	4.8	3.2

SUMMARY AND CONCLUSIONS

The primary purpose of this study was to obtain data on hunter satisfactions needed for a quantitative analysis that will evaluate strategies for reducing harvest of yearling bucks. Each strategy has implications for hunter satisfaction, deer population growth, and costs for deer program administration. Our findings support the assumption that deer hunter satisfaction in New York is determined by a range of factors. For example, many deer hunters reported that keeping the current number of days and weekends in the regular firearms deer season, continuing to have the opportunity to take any buck they choose, seeing more deer, and seeing and having a chance to take more large-antlered deer were all important to their level of satisfaction with deer hunting in New York.

Statewide, "opportunity to take at least one deer" was ranked as the most important dimension of hunter satisfaction. Opportunity to take a big-antlered buck and opportunity to take any buck one chooses were ranked second in importance; non-buck satisfaction (i.e., overall hunting opportunity, complexity of regulations) ranked third in importance. The finding that "opportunity to take a big-antlered buck" and "opportunity to take any buck I choose" were ranked similarly reflects the division of opinion about these topics in the hunter community. Findings on these topics are similar to those from the 2010 statewide survey of New York deer hunters (Enck et al. 2011), which found that the hunter population was about evenly split on whether they favored freedom to choose any buck, versus restricting freedom of choice to increase the odds of encountering and shooting a big-antlered buck.

The findings indicate high interest in opportunity to see and shoot more big-antlered bucks, especially in the Southeastern BMZ, but a mix of views on whether those opportunities are worth tradeoffs in personal freedom to take any currently-defined legal buck.

Study Limitations

The fact that a portion of respondents did not correctly complete the question where they were asked to rank seven dimensions of deer harvest satisfaction from most important (rank #1) to least important (rank #7) raises questions about using ranking items in future deer hunter surveys. In this case, we are confident that the ranking information is an accurate reflection of respondents' views, because findings from the ranking analysis are generally consistent with those found when we analyzed how respondents rated the 16 individual elements of deer hunting satisfaction. Nevertheless, in future studies of hunter satisfaction, we recommend that respondents be asked to rank fewer dimensions of satisfaction.

A portion of respondents did not report the WMU where they had hunted deer most often over the previous five years. That reduced sample size available for analysis of results by BMZ. Moreover, sample sizes were reduced further because the original sampling strategy was selected without knowledge of the boundaries that would later be set for BMZs. Some BMZs were over-sampled and others were under sampled. Though we were able to assess ratings and rankings of hunter satisfaction components within and between BMZs, varying sample intensity precluded comparison between hunter groups by BMZ on multiple variables (e.g, importance rankings by self-reported hunter identity, interest in harvesting antlerless deer, or DMP application history).

Next Steps

Results from analysis of the satisfaction ranking data were provided to NYCFWRU researchers and are being used as inputs for a quantitative decision-making framework. The framework involves a process of modeling the effects that implementing any of several deer management alternatives would have on three fundamental objectives for deer management (i.e., maximizing hunter satisfaction, minimizing the impact on DEC's ability to monitor and control deer populations, and minimizing program administration costs to DEC). NYCFWRU researchers are currently finalizing their analysis, in collaboration with a DEC project contact team. DEC staff will present results of that analysis to hunters in various venues.

LITERATURE CITED

Decker, D. J., T. L. Brown, and R. J. Gutierrez. 1980. Further insights into the multiple-satisfactions approach for hunter management. Wildlife Society Bulletin 8(4):323-331.

Decker, D. J., J. W. Enck, and J.P. O'Pezio. 1992. What makes New York's deer hunters tick? The Conservationist 46(4):40-43.

Decker, D. J., and G. F. Mattfeld.1988a. Beyond the guns and game: Hunters and hunting in New York. The Conservationist 43(3):2-7.

Decker, D. J., and G. F. Mattfeld. 1988b. Hunters and hunting in New York. HDRU Publication Series 88-7. Department of Natural Resources, Cornell University, Ithaca, New York. 28 pp.

Decker, D. J., R. W. Provencher, and T. L. Brown. 1984. Antecedents to hunting participation: An exploratory study of the social-psychological determinants of initiation, continuation, and desertion in hunting. Outdoor Recreation Research Unit, Department of Natural Resources, Cornell University, Ithaca, New York. 175pp.

Dillman, D. A. 2000. Mail and internet surveys: The total design method (second edition). John Wiley & Sons, New York, New York, USA.

Enck, J. W., and T.L. Brown. 2001. Attitudes and beliefs of deer hunters participating in an "Earn-a-buck" program at Cornell University's Arnot Forest. HDRU Publication Series 01-10. Department of Natural Resources, Cornell University, Ithaca, New York. 25pp.

Enck, J. W., and T. L. Brown. 2007. Opinions of deer hunters in wildlife management units 7F, 7H, and 7J about possible changes in buck harvest management. HDRU Publication Series 07-2. Department of Natural Resources, Cornell University, Ithaca, New York. 42 pp.

Enck, J. W., and T. L.Brown. 2008. 2007 Statewide deer hunter survey: Participation during the '06 seasons, opinions about hot-button issues, and trends in characteristics of hunters.

HDRU Publication Series 08-5. Department of Natural Resources, Cornell University, Ithaca, New York. 81 pp.

Enck, J. W., and D. J. Decker. 1991. Hunters' Perspectives on Satisfying and Dissatisfying Aspects of the Deer-Hunting Experience in New York. HDRU Publication Series 91-4. Department of Natural Resources, Cornell University, Ithaca, New York. 83 pp.

Enck, J. W., R. C. Stedman, and D. J Decker**.** 2011. Final Report: Statewide Deer Hunter Survey - 2010. HDRU Publication Series 11-1. Department of Natural Resources, Cornell University, Ithaca, New York. 77 pp.

Hammitt, W. E., C. D. McDonald, and M. E. Patterson. 1990. Determinants of Multiple Satisfaction for Deer Hunting. Wildlife Society Bulletin 18(3): 331-337.

Heberlein, T. A., and W. F. Kuentzel. 2002. Too many hunters or not enough deer? Human and biological determinants of hunter satisfaction and quality. Human Dimensions of Wildlife 7(4): 229-250, DOI: 10.1080/10871200214753

Hendee, J. C. 1974. A Multiple-Satisfaction Approach to Game Management. Wildlife Society Bulletin 2 (3): 104-113.

NYSDEC. 2011. Management Plan for White-tailed Deer in New York State 2012-2016. Bureau of Wildlife (BOW), Division of Fish, Wildlife, and Marine Resources, New York State Department of Environmental Conservation. Avalaible: http://www.dec.ny.gov/docs/wildlife_pdf/deerplan2012.pdf

IBM SPSS Statistics for Windows, Version 21.0. 2012. IBM Corp., Armonk, New York, USA.

Lauber, T. B., and T. L. Brown. 2000. Hunters' Attitudes Toward Regulatory Changes. HDRU Publication Series 00-10. Department of Natural Resources, Cornell University, Ithaca, New York. 42pp.

Siemer, W. F., D. J. Decker, and R. C. Stedman. 2012. Cornell University lands deer hunting program: Profile of participants in 2011. Human Dimensions Research Unit Series Publication 12-04. Department of Natural Resources, Cornell University, Ithaca, New York. 42pp.

Stedman, R. C., D. J. Decker, and W. F. Siemer. 1993. Exploring the Social World of Hunting: Expanding the Concepts of Hunters and Hunting. HDRU Publication Series 93-7. Department of Natural Resources, Cornell University, Ithaca, New York. 111 pp.

Vaske, J. J., and M. J. Manfredo. 2012. Social and psychological considerations in wildlife management. Pages 43-57 (chapter 4) in Decker, D. J., S. J. Riley, and W. F. Siemer (Editors) Human Dimensions of Wildlife Management. Second edition. The Johns Hopkins University Press. Baltimore, MD.

APPENDIX A (SURVEY INSTRUMENT)

Deer Hunting in New York:

Hunters' views on deer harvest opportunities

PART I:
GENERAL DEER HUNTING QUESTIONS

1. About how many total years have you hunted deer? *(If none, write in "0".)* _____ years

2. Have you gone afield to hunt deer in New York State at least once during the last 5 years? *(Please check [√] one box.)*

☐ Yes → IF YES, CONTINUE TO NEXT QUESTION

☐ No → IF NO, SKIP TO QUESTION 6

3. In which wildlife management unit (WMU) have you deer hunted *most often* during the last 5 years? (*Please write the number of the WMU. If you do not know the number, write the name of the county and town where you hunted most often.)*

WMU number: _____

4. New York has mandatory antler restrictions in WMUs 3A, 3C, 3H, 3J, 3K, 4G, 4O, 4P, 4R, 4S and 4W. Do you currently hunt deer in a WMU with mandatory antler restrictions? *(Please check [√] one box.)*

☐ Yes

☐ No

5. Over the last 5 years, how many days per year did you typically hunt during the following seasons? *(Please check [√] one box per line.)*

Deer hunting seasons	Number of days you hunted			
	0	1-2	3-7	8+
A. Archery seasons	☐	☐	☐	☐
B. Regular firearms seasons	☐	☐	☐	☐
C. Muzzleloader seasons	☐	☐	☐	☐

PART II:
YOUR VIEWS ON DEER HARVEST OPPORTUNITIES

These questions will help DEC understand how maintaining or changing deer harvest opportunities would affect your satisfaction with deer hunting in NY. (**Note**: In these questions a *"big-antlered buck"* means a buck with at least 3 points on either antler [e.g., a 6-point or larger].)

6. How important are the following to your satisfaction with deer harvest opportunities in the wildlife management unit you hunt most often? (*0= "not important" and 4 = "very important." Check [√] one box per row.)*

	Not important				Very important
	0	1	2	3	4
Opportunity to take a big-antlered buck **How important is it to …**					
See more bucks with big antlers than I have typically seen in the last 5 years	☐	☐	☐	☐	☐
Have a better chance of taking a buck with big antlers	☐	☐	☐	☐	☐
Spend less effort hunting than I typically do to harvest at least 1 big-antlered buck	☐	☐	☐	☐	☐
Opportunity to take any buck I choose **How important is it to …**					
See more bucks of any size (age) when I am hunting than I have typically seen in the last 5 years	☐	☐	☐	☐	☐
Continue to be allowed to use a buck tag to take any legal antlered deer that I choose	☐	☐	☐	☐	☐
Not have to spend any more effort hunting than I typically do to harvest at least 1 antlered deer	☐	☐	☐	☐	☐
Opportunity to take more than 1 buck **How important is it to …**					
Continue to be allowed to take at least 2 antlered deer across all seasons (regular gun, archery and muzzle-loader seasons)	☐	☐	☐	☐	☐

6. (continued)

	Not important				Very important
	0	1	2	3	4
Opportunity to take at least one deer **How important is it to …**					
See more deer (antlered and antlerless) than I have typically seen in the last 5 years	☐	☐	☐	☐	☐
Be allowed to take at least 1 deer of any age (antlered or antlerless)	☐	☐	☐	☐	☐
Be allowed to take an antlerless deer during the regular firearms season	☐	☐	☐	☐	☐
Not have to spend any more effort hunting than I typically do to harvest at least 1 deer (antlered or antlerless)	☐	☐	☐	☐	☐
Overall opportunity to be in the field **How important is it to …**					
Keep the regular firearms season at least as long as it is now in the zone I hunt	☐	☐	☐	☐	☐
Keep at least as many weekends in the regular firearms deer season as there are now in the zone I hunt	☐	☐	☐	☐	☐
Consistency in buck harvest rules/regulations **How important is it to …**					
Have the same buck harvest rules/regulations in all areas of the state	☐	☐	☐	☐	☐
Have the same buck harvest rules/regulations during all hunting seasons	☐	☐	☐	☐	☐
Being able to easily see if a buck is legal to shoot **How important is it to …**					
Have rules that make it easy in the field to see whether a buck is legal to harvest	☐	☐	☐	☐	☐

7. **The items you rated in the last question have been grouped into 7 broad categories below. Please RANK the categories from 1 to 7 according to how important they are to your satisfaction with deer harvest opportunities <u>in the wildlife management unit you hunt most often</u>.** *(Give the <u>most important</u> category a rank of "1." Give the <u>least important</u> category a rank of "7." Then, assign a rank of 2 through 6 to the remaining categories. Use each number only once.)*

Conditions that could affect your satisfaction with deer harvest opportunities in the wildlife management unit you hunt most often	**Importance to you**
Opportunity to take a <u>big-antlered buck</u> (see more bucks with big antlers than I have typically seen in the last 5 years, have a better chance of taking a buck with big antlers, spend less effort hunting to harvest a big-antlered buck)	Rank: ___
Opportunity to <u>take any buck I choose</u> (see more bucks of any size/age than I have typically seen in the last 5 years, continue to be allowed to use a buck tag to take any legal antlered deer I choose, not have to spend any more effort hunting to harvest at least 1 antlered deer)	Rank: ___
Opportunity to take more than 1 buck (Continue to be allowed to take at least 2 antlered deer across all hunting seasons)	Rank: ___
Opportunity to take at least one deer (see more deer [antlered or antlerless] than I have typically seen in the last 5 years; be allowed to take at least 1 deer of any age [antlered or antlerless], be allowed to take an antlerless deer during the regular firearms season, not have to spend any more effort hunting to harvest at least 1 deer)	Rank: ___
Overall opportunity to be in the field (Keep at least as many days and weekends in the regular firearms deer season as there are now in the zone where I hunt deer)	Rank: ___
Consistency in buck harvest rules/regulations (Have the same buck harvest rules/regulations in all areas of the state, and during all hunting seasons)	Rank: ___
Being able to easily see if a buck is legal to shoot (Have rules that make it easy in the field to see whether a buck is legal to harvest)	Rank: ___

PART III:
YOUR DEER HARVEST ACTIONS AND VIEWS

8. Do you consider yourself to be primarily a bowhunter, gun hunter, muzzleloader, or multi-season deer hunter? *(Please check [√] one box.)*

I consider myself primarily a:

- ☐ Bowhunter
- ☐ Gun hunter (regular firearms season)
- ☐ Muzzleloader hunter
- ☐ Multi-season hunter (2 or more seasons are equally important to me)

9. How would you describe your personal level of interest in harvesting antlerless deer? (*Check [√] one box per row.)*

No interest	Low interest	Moderate interest	High interest
☐	☐	☐	☐

10. Please indicate whether you applied for an antlerless deer management permit or harvested an antlerless deer in the 2012 hunting season. (*Check [√] one box per row.)*

	Yes	No
A. I applied for one or more antlerless deer (doe) management permits in 2012	☐	☐
B. I harvested one or more antlerless deer in 2012 during a regular firearms season	☐	☐
C. I harvested one or more antlerless deer in 2012 during an archery season	☐	☐
D. I harvested one or more antlerless deer in 2012 during a muzzleloader season	☐	☐

11. How satisfied are you with each of the following current conditions <u>in the wildlife management unit you hunt most often</u>? (*Check [√] one box per row.)*

Current hunting conditions:	Very satisfied	Moderately satisfied	Neither satisfied nor dissatisfied	Moderately dissatisfied	Very dissatisfied
Opportunity to take a <u>big-antlered deer</u>	☐	☐	☐	☐	☐
Opportunity to take <u>at least 1 buck</u> (any size)	☐	☐	☐	☐	☐
Opportunity to take <u>more than 1 buck</u>	☐	☐	☐	☐	☐
Opportunity to take <u>at least 1 deer (any kind)</u>	☐	☐	☐	☐	☐
Overall opportunity to be in the field	☐	☐	☐	☐	☐
Buck hunting rules/regs	☐	☐	☐	☐	☐
Deer hunting rules/regs	☐	☐	☐	☐	☐

12. Over the last 5 years, how often have you <u>voluntarily</u> passed up a chance to shoot a <u>small-antlered</u> buck when you have had a clear shot and an unfilled tag. *(Please check [√] one box.)*
(**<u>Note</u>**: a *"small-antlered buck"* means a buck with less than 3 points on either antler [e.g., a spike or fork].)

- ☐ Never (0%)
- ☐ Rarely (less than 25% of the time)
- ☐ Sometimes (less than half the time)
- ☐ Often (more than half the time)
- ☐ Very often (more than three-fourths of the time)
- ☐ Always (100% of the time)
- ☐ Does not apply to me (I did not have an unfilled tag and a clear shot at a small-antlered buck in the last 5 years)
- ☐ Does not apply to me (I did not have landowner/club permission to shoot at small-antlered deer where I hunt)

13. How often would you voluntarily pass up a shot <u>at a small-antlered buck</u> under the following conditions? *(Check [√] one box per line.)*

(*Never* = 0% of time; *Rarely* = less than 25% of the time;
Sometimes = less than half the time; *Often* = more than half the time; *Very often* = more than three-fourths of the time)
Always = 100% of the time.)

How often would you pass up a shot at a small-antlered buck if…	Never	Rarely	Sometimes	Often	Very often	Always	Unsure
Most other hunters were also voluntarily passing up shots at small-antlered bucks	☐	☐	☐	☐	☐	☐	☐
It was the last day of hunting season and you had not taken <u>any deer</u>	☐	☐	☐	☐	☐	☐	☐
It was the last day of the hunting season and you had not taken <u>a buck</u>	☐	☐	☐	☐	☐	☐	☐
Voluntary restraint was promoted (by DEC or local hunting organizations) to result in more big-antlered bucks in the area you hunt most often	☐	☐	☐	☐	☐	☐	☐
Deer density was low with few buck encounters	☐	☐	☐	☐	☐	☐	☐
Deer density was high with frequent buck encounters	☐	☐	☐	☐	☐	☐	☐

PART V:

YOUR VIEWS ON THE PROPORTION OF YEARLING BUCKS IN THE TOTAL BUCK HARVEST

Note: In recent years, yearling bucks (1.5 year olds that average about 4 total antler points) have comprised just over half (57%) of the total buck harvest in New York (excluding pilot antler restriction areas), down from over 70% in the 1990s. In other words, older bucks (≥2.5 years old that average about 7 total antler points) have increased in the population and in the harvest.

14. How important is it to you that the proportion of young bucks in the harvest be reduced further? (*0= "not important" and 4 ="very important." Check [√] one box.)*

Not important				Very important	Unsure
0	1	2	3	4	
☐	☐	☐	☐	☐	☐

15. **How willing are you to accept some limitations on your buck hunting opportunity to achieve an overall reduction of yearling bucks in the harvest?** *(Please check [√] one box.)*

Not willing				Very willing	Unsure
0	1	2	3	4	
☐	☐	☐	☐	☐	☐

16. How willing are you to accept some restrictions on your freedom to shoot a buck of any age or size to achieve an overall reduction of yearling bucks in the harvest? *(Please check [√] one box.)*

Not willing				Very willing	Unsure
0	1	2	3	4	
☐	☐	☐	☐	☐	☐

APPENDIX B (CALCULATION OF WEIGHT FACTORS)

Table B1. Calculation of stratum weight factors.

Stratum label	Responses	Non respondents	Total	% of licenses	Respondents in proportion	Weight Factor
Nassau/Suffolk/ Westchester	331	637	968	0.07	190	0.575
Adirondack	377	599	976	0.08	217	0.576
Northwestern	401	559	960	0.08	215	0.536
Remainder of NYS	1610	2215	3825	0.77	2096	1.302
Total	2719	4,010	6,729		2719	

APPENDIX C (RESPONDENT – NONRESPONDENT COMPARISONS)

Table C1. A comparison of respondents to the 2013 deer hunter survey to a sample of nonrespondents on number of years deer hunting.

	Respondents	Non-respondents
n	2659	260
Mean number of years hunted	32.2	21.9
Median number of years hunted	34.0	20.0
Range	0 – 75 years	0 – 65 years

Table C2. A comparison of respondents to the 2013 deer hunter survey to a sample of nonrespondents.

	Respondents (n=2656)	Nonrespondents (n=241)	χ^2	P value
Have hunted deer in NY in the last 5 years				
Yes	92.7	90.0	2.165	NS
No	7.3	10.0		

Table C3. Number of days per year respondents and nonrespondents typically hunted deer during archery, regular firearms, or muzzleloader seasons, during the last 5 years. (Note: includes only those who reported having hunted deer sometime in the last 5 years.)

Deer hunting seasons		Number of days hunted/year					P
	n	0	1-2	3-7	8+	χ^2	value
Archery seasons							
Respondents	1957	39.1	6.9	17.6	36.3	43.959	<0.001
Nonrespondents	217	59.9	5.1	12.9	22.1		
Regular firearms seasons							
Respondents	2425	0.9	6.0	28.3	64.9	41.735	<0.001
Nonrespondents	217	2.3	9.7	30.4	57.6		
Muzzleloader seasons							
Respondents	1988	34.8	17.2	31.2	16.9	43.836	<0.001
Nonrespondents	217	53.9	18.0	19.8	8.3		

Table C4. Comparison of respondents and nonrespondents on self-reported hunter type. (Note: includes only those who reported having hunted deer sometime in the last 5 years.)

I consider myself primarily a…	Respondents (n=2405)		Nonrespondents (n=216)			P
	n	%	n	%	χ^2	value
Bowhunter	218	9.1	25	11.6	4.501	NS
Gun hunter (regular firearms season)	1105	45.9	112	51.9		
Muzzleloader hunter	15	0.6	2	0.9		
Multi-season hunter	1067	44.4	77	35.6		

Table C5. Level of hunter satisfaction with current hunting conditions in the WMU where they hunted most often in 2012.

	n	Satisfied	Neither (%)	Dissatisfied	χ^2	P value
Overall opportunity to be in the field						
Respondents	2491	81.8	10.9	7.3	7.470	0.024
Nonrespondents	241	85.9	5.4	8.7		
Opportunity to take at least 1 deer (any kind)						
Respondents	2479	65.3	18.3	16.3	27.554	<0.001
Nonrespondents	241	81.3	7.1	11.6		
Opportunity to take at least 1 buck (any size)						
Respondents	2487	61.0	20.9	18.1	31.122	<0.001
Nonrespondents	241	77.6	7.5	14.9		
Deer hunting rules/regulations						
Respondents	2494	58.7	24.9	16.4	37.771	<0.001
Nonrespondents	241	74.3	7.5	18.3		
Buck hunting rules/regulations						
Respondents	2492	58.4	24.8	16.8	46.303	<0.001
Nonrespondents	241	80.5	9.1	10.4		
Opportunity to take more than 1 buck						
Respondents	2469	45.2	33.5	21.4	31.750	<0.001
Nonrespondents	241	58.1	15.8	26.1		
Opportunity to take a big-antlered deer						
Respondents	2493	41.6	32.9	25.8	40.138	<0.001
Nonrespondents	241	61.0	15.8	23.2		