
Local Residents' Deer Population Preferences

Results from a 2019 Survey of 8 Wildlife Management Unit Aggregates



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EXECUTIVE SUMMARY

The New York State Department of Environmental Conservation (DEC) has transitioned to a system of 24 wildlife management unit (WMU) aggregates for deer management. The aggregates combine multiple WMUs to create fewer, larger units that make better use of existing deer harvest data in deer management decisions. Aggregation of WMUs changed the geographic scale at which deer population goals are set, and that change necessitates modifications to the way stakeholders are engaged to inform deer management decisions. Program administrators in the DEC made a decision to collect stakeholder input via representative surveys of residents in aggregated WMUs. In 2019, DEC sponsored mail surveys in 8 aggregated wildlife management units (AWMUs) to learn more about AWMU residents' deer population preferences. Information from the surveys will inform DEC decisions about future deer population objectives in the AWMUs where those data were collected.

The purpose of this publication is to report findings from the 2019 surveys and results of analyses to understand reasons for deer population preference in 8 AWMUs.

Study objectives

1. Identify New York State residents' preference for future deer population in the AWMU in which they reside.
2. Improve understanding of the factors that influence New York State residents' preference for future deer population in the AWMU in which they reside.
3. Take advantage of statewide resident survey to document other perceptions related to deer population management.

METHODS

Survey instrument and implementation

In cooperation with a team of DEC wildlife professionals (hereafter referred to as the contact team), we developed a self-administered questionnaire to address our research objectives. The questionnaire characterized property owners': perception of change in local deer population over the previous 5 years, deer population preference, deer-related attitudes and beliefs, attribution of importance or urgency of deer management (i.e. salience as an issue needing attention), deer-related interests, perceived deer-management priorities, personal interest in using various methods to provide input on deer management decisions, opinions about methods DEC should use to gather public input for decisions about deer management in local areas, and personal and sociodemographic characteristics.

DEC identified 8 AWMUs to be surveyed in project year 2 (i.e., Catskills, Central Appalachian Plains, Northwest Appalachian Hills, Southeast Hudson, Southwest Hudson, Western Appalachian Hills, Western Appalachian Plateau, and Western Finger Lakes (WFL) (See page 5 for study area map). We sampled 1,250 property owners with mailing addresses in each of the

AWMUs surveyed in year 1 (i.e., total sample of 10,000). We drew the samples for each AWMU from the zip codes that DEC staff identified for each of the AWMUs. We sampled property owners in multiple property tax codes. The sample included owners of 1-family, 2-family, and 3-family year-round residences, rural residences with acreage, properties used in agricultural production that contained a primary residence, recreational use properties, estates, and mobile homes. We did not include owned property in the sample unless the address listed for the property owner was in the same zip code as the listed property. This step ensured that all persons contacted were residents of the AWMU being surveyed.

We implemented survey mailings between February 6, 2019 and March 6, 2019. We contacted each member of the sample up to 4 times (i.e., an initial letter and questionnaire, a reminder postcard a week later, a second reminder letter and replacement questionnaire 2 weeks after the first reminder, and a final reminder about 1 week after the third mailing). We contracted the Survey Research Institute at Cornell University (SRI) to complete follow-up telephone interviews with a sample of at least 25 nonrespondents in each of the aggregates sampled. SRI completed a total of 202 interviews with nonrespondents between April 2, 2019 and April 15, 2019. Interviews contained 19 key questions from the mail survey and took <5 minutes to complete.

Analysis

All analyses were completed using IBM SPSS Statistics for Windows, Version 24.0 (IBM Corp. 2016). We used chi square tests to identify respondent-nonrespondent differences and associations between categorical variables and deer population preference. We used binary logistic regression to develop models predicting deer population preference.

RESULTS

We received a total of 3,956 completed questionnaires from a pool of 9,157 deliverable questionnaires, yielding an overall response rate of 43%. Response rates varied by AWMU, ranging from a low of 34% in the Southwest Hudson AWMU to a high of 50% in the Western Finger Lakes AWMU.

Mean age of respondents was 60 years. In all AWMUs the majority of respondents were male (from 55% in the Southeast Hudson AWMU to 71% in the Western Appalachian Plateau AWMU). In most AWMUs, respondents were most likely to live in a rural area outside a village/hamlet. The percentage who lived in a rural area ranged widely across the 8 AWMUs surveyed, from 33% in the Southwestern Hudson AWMU to 74% in the Catskills AWMU. These characteristics suggest that respondents are older, more likely to be male, and more likely to be rural than the state population as a whole.

Nearly a third (31%) of all respondents participated in deer hunting, even though less than 10% of adult New York State residents hunt are estimated to hunt. The percentage of respondents who were deer hunters varied by aggregate: Central Appalachian Plains (26%), Catskills (36%), Northwest Appalachian Hills (33%), Southeast Hudson (15%), Southwest Hudson (15%), Western Appalachian Hills (37%), Western Appalachian Plateau (45%), Western Finger Lakes (35%).

Respondent-nonrespondent comparisons

Respondents and nonrespondents did not differ with regard to their level of concern about several deer-related impacts. For example, both respondents and nonrespondents expressed the highest levels of concern about Lyme or other tick-borne diseases and deer-vehicle collisions. Majorities of both respondents and nonrespondents believed it was very important or extremely important for DEC to consider tick-borne illnesses and deer-vehicle collisions when managing deer in their local area.

But we found a number of statistically-significant differences between respondents and nonrespondents. Respondents were more likely than nonrespondents to: be male (66% vs. 45%); hunt deer (31% vs. 24%); be concerned about deer damage to gardens (76% vs. 66%); be concerned about deer damage to forests and native plants (69% vs. 56%). Respondents were less likely to want the deer population to increase (34% vs. 44%)

During preliminary analysis, we explored whether respondent-nonrespondent differences could be addressed in part by weighting to adjust the male-female ratio. We found that weighting the data based on gender had little effect on the key variable from the survey (i.e., deer population preference). Therefore, the study contact team made a decision to not have us adjust the data based on gender. The results presented in this report have not been weighted to adjust for respondent-nonrespondent differences.

Deer population preference

Deer population preferences varied by AWMU. In all aggregates, a third or more of respondents desired no change in the local deer population.

The proportion of respondents who preferred a decrease in the local deer population ranged from 26% (Western Appalachian Plateau AWMU) to 53% (Southwest Hudson AWMU). The proportion of respondents who preferred an increase in the local deer population ranged from 11% (Southwest Hudson AWMU) to 33% (Western Appalachian Plateau AWMU). In the Southeast Hudson and Southwest Hudson AWMUs the proportion of respondents who desired a decrease in the deer population markedly exceeded the proportion who desired an increase.

Variables correlated with deer population preference

We used the chi square statistic to test relationships between deer population preference and other categorical variables measured in the survey. We found significant relationships between deer population preference and the following variables.

- Property owners wanting the deer population to change, whether they preferred an increase or decrease, expressed the sentiment that deer management was personally important to them. Desire for change was held with some conviction. Conversely, respondents who placed low personal importance on deer management were more likely than other respondents to prefer no change or have no preference regarding change in the size of the local deer population.

- Interest in viewing local deer. Most respondents who had high interest in viewing deer preferred that the local deer population stay about the same level or increase. Most respondents who had no interest in viewing deer preferred that the local deer population decrease.
- Participation in deer hunting. Hunters were much more likely than nonhunters to prefer a deer population increase.
- Concerns about local deer. Respondents who had high levels of concern about negative impacts of deer (i.e., damage to gardens, damage to farmers' crops, damage to forests, tick-borne diseases, or deer-vehicle collisions) were more likely than those with low levels of concern to prefer a decrease in deer population size.
- Perceived change in local deer population. Results show a strong correlation between perceived change in the deer population and deer population preference. AWMUs where substantial portions of respondents perceived a deer population increase also had a substantial proportion of respondents who preferred a reduction in deer population in their area. For example, in the Southeast Hudson AWMU about 50% of respondents believed that their local deer population had increased in the previous 5 years, and 53% of respondents in that area preferred that the deer population decrease in the future.
- Attitude toward local deer. Respondents who enjoyed deer without worry were more likely than other respondents to prefer a deer population increase. Those who worried about deer-related problems, or regarded deer as a nuisance, were more likely than others to prefer a deer population decrease.
- Perceived cost-benefit ratio of local deer population. Respondents who believed the benefits of deer outweighed the costs were more likely than other respondents to prefer a deer population stay the same or increase. Those who believed deer-related costs outweighed deer-related benefits were more likely than other respondents to want the deer population to go down.

Predictors of deer population preference

The correlational analysis presented above demonstrates associations between pairs of survey variables, but it does not allow the researcher to consider potential confounding effects or effect modifiers. Regression analysis makes it possible to measure the strength of association between multiple independent variables and a dependent variable adjusting for potential confounding effects. Thus, we conducted logistic regression analyses to identify factors that explain deer population preference.

Preference for a population decrease. Seven factors were significant predictors of preference for a deer population decrease in 1 or more AWMUs. In any given AWMU, as few as 2 and as many as 6 variables were significant predictors. Interest in deer viewing and concern about browse damage were predictive of a preference for deer population decrease in all AWMUs; concern about vehicle collisions with deer was predictive in 7 of 8 AWMUs.

Preference for a population increase. Eight factors were significant predictors of preference for a deer population increase in 1 or more AWMUs. In any given AWMU, as few as 2 and as many as 6 variables were significant predictors. Interest in deer viewing was predictive of a preference for deer population increase in 7 of 81 AWMUs, concern about browse damage and vehicle collisions was predictive in 4 AWMUs.

NEXT STEPS

Analysis of data from this survey was provided to DEC in summer 2019. This survey will be repeated in 2020 in 9 additional AWMUs. DEC personnel will use the data from these surveys, along with other information, to determine deer population goals in each AWMU.

ACKNOWLEDGMENTS

We extend our appreciation to residents of New York State 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 during all phases of this work, we express our thanks to Sue Booth-Binczik, Jeremy Hurst, Courtney LaMere, Leslie Lupo, and Ryan Rockefeller.

Sue Booth-Binczik created the maps used to define aggregated wildlife management units in the questionnaire used on our eight study areas. The Survey Research Institute (SRI) at Cornell University conducted nonrespondent follow-up interviews. Karlene Smith and other CCSS staff assisted with survey implementation and data coding.

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# 1101001927).

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INTRODUCTION

DEC has transitioned to a system of 24 wildlife management unit aggregates (AWMUs) for use in deer management decisions. The aggregates combine multiple WMUs to create fewer, larger units that make better use of existing deer harvest data in deer management decisions.

Aggregation of WMUs has changed the geographic scale at which deer population goals are set, and that change necessitates modifications to the way stakeholders are engaged to inform deer management decisions.

DEC made a decision to revise the input process to focus on collection of stakeholder input via representative surveys of residents in AWMUs. The purpose of this activity is to collect representative information from New York State residents that can inform deer management decisions in aggregated wildlife management units. Here we report results from year 2 of a 3-year project to survey all AWMUs in the state.

Project Objectives

1. Identify residents' deer population preference at the aggregated wildlife management unit (AWMU) level.
2. Improve understanding of the factors that influence deer population preference.
3. Take advantage of statewide resident survey to document other perceptions related to deer population management.

Our primary focus was on satisfying research objectives 1 and 2. But we also used the 2019 statewide resident survey as an opportunity to gain insights about stakeholders' preferred methods of providing input and their preferences related to the methods or processes DEC uses to gather public input for local deer management decisions.

CONCEPTUAL FOUNDATION

Wildlife Acceptance Capacity

Decker and Purdy (1988) defined the concept of wildlife acceptance capacity (WAC) as the maximum wildlife population level in an area that is acceptable to an individual or group of people. They suggested that stated preferences for a deer population level could be used as an indicator of WAC and they encouraged wildlife managers to focus on identifying WAC for key stakeholders (e.g., farmers, hunters, motorists) at appropriate geographic scales as a source of input to consider when evaluating deer population objectives for that area. DEC sponsored multiple studies in the 1980s and 1990s to identify WAC for key stakeholders and improve understanding of factors that influence WAC. For a review of other capacity concepts, refer to Siemer et al. 2018).

Metrics of Acceptance Capacity

Researchers have used a few different survey questions in stakeholder surveys to gauge acceptance capacity. The tactic that may be used most often by wildlife agencies is a variant of the question, “Do you want the population of [species name] to increase, decrease, or remain about the same in your [local area, county, region].” In 2017, CCSS staff conducted a comprehensive review of websites from all 50 state wildlife management agencies (Emily Pomeranz, unpublished data) to estimate how many agencies had recently conducted stakeholder research to measure WAC using this question. We found that 14 state wildlife agencies had collected information on stakeholder preferences for deer population changes or perceptions of the deer population size sometime during the past 5 years. Agencies had typically collected this information during the course of developing a long-term (e.g., 10-year) deer management plan or when reassessing local or regional deer population goals. Only 4 agency websites had content that clarified how deer population preference differed by stakeholder group (e.g., in Minnesota 94% of hunters wanted a deer population increase; farmers were evenly split with a third preferring more deer, a third preferring fewer deer, and a third preferring no change, MDNR 2015). Only 1 agency (Georgia Department of Natural Resources) described research to understand why survey respondents preferred a deer population increase or decrease (GDNR 2014). Georgia DNR found that preference for a deer population increase was best explained by an interest in increasing probability of harvesting deer (among hunters) or probability of seeing more deer (among nonhunting residents) (GDNR 2014). Preference for a deer population reduction was best explained by concerns about deer-vehicle collisions (among nonhunting and hunting residents) and concerns about crop, garden, and landscape damage (among landowners).

In addition to asking about deer population preferences, DEC-sponsored studies of deer-management stakeholders in New York have often included an item to assess respondents’ overall attitude toward deer. Responses to this question (i.e., *I enjoy deer without worry about deer-related problems; I enjoy deer but worry about problems deer may cause; I do not enjoy deer and regard them as a nuisance; I have no particular feelings about deer*) have been used as a general indicator of tolerance for deer-related problems. For example, this question has been used to gauge tolerance for deer in New York communities where disruptive deer-management issues had emerged (e.g., the Village of Cayuga Heights, communities adjacent to Fire Island National Seashore). The proportions of residents who did not enjoy deer and regarded them as a nuisance was 34% in the Village of Cayuga Heights in 1999 (Chase et al. 1999), 21% in the Village of Cayuga Heights in 2007 (Siemer et al. 2007a), and 30% in communities on Fire Island, New York in 2007 (Siemer et al. 2007b). By comparison, in 2015 we found that only 7% of property owners in the Central Finger Lakes Aggregated Wildlife Management Unit (AWMU) reported that they do not enjoy deer and regard them as a nuisance (Siemer et al. 2015). The Central Finger Lakes AWMU is a larger geographic area than Cayuga Heights or the Fire Island seashore, and had lower deer-related issue activity than what was known to exist in Cayuga Heights or Fire Island at the time that those communities were studied.

In recent studies in New York a deer-related costs/benefits question has been used as an indicator of acceptance capacity. This approach asks respondents whether they believe the costs of deer outweigh the benefits associated with deer, the benefits outweigh the costs, or deer-related costs and benefits are about an even tradeoff. Underlying this question is an assumption that stakeholders who believe costs of deer outweigh deer-related benefits will prefer a deer

population reduction, because their tolerance for negative deer-related impacts has been exceeded.

Factors Associated with Tolerance for Deer

Since the 1980s, tolerance for white-tailed deer populations, particularly in residential areas with high deer densities, has been explored repeatedly in surveys of deer management stakeholders. Across those studies, researchers have identified a range of factors that are associated with tolerance or intolerance for deer. For example, studies have revealed correlations between tolerance for a species and negative experiences with that species (Inskip et al. 2016), involvement in hunting or farming (Minnis and Peyton 1995), evaluative beliefs about wildlife (Riley and Decker 2000), real and perceived risks associated with wildlife (Stout et al. 1993; Riley and Decker 2000, Peyton et al. 2001), and perceived impacts associated with wildlife (Riley et al. 2002, Lischka et al. 2008, Johnson and Horowitz 2014)

We also know that different stakeholder groups (e.g., hunters, farmers, gardeners, motor vehicle operators) may have different levels of tolerance for the same population of animals (Decker and Purdy 1988), because such groups perceive themselves to be impacted differently by that species. Wide divergence in tolerance levels for deer is perhaps best documented for hunters and farmers (for examples see MDNR 2014, D'angelo and Grund 2014, ODNR 2016). In year 1 of the study reported here, we found that farming, managing forested lands, and driving in areas with many deer were significant predictors of deer population preference in one or more AWMUs (Siemer et al. 2019).

Sociodemographic characteristics, including age (Manfredo and Zinn 1996, Kleiven et al. 2004), gender (Zinn and Pierce 2002), and educational attainment (Riley and Decker 2000, Vaske et al. 2001), have been correlated with values toward and concerns about wildlife. Since general values toward wildlife influence evaluations of interactions with wildlife, researchers hypothesize that they may influence WAC (Zinn et al. 2000, Lischka et al. 2008). In year 1 of the study reported here, we found that age and place of residence were not significant predictors of deer population preference; gender was a significant predictor in a few AWMUs (Siemer et al. 2019).

In sum, the body of research on tolerance for deer suggests that understanding stakeholders' deer-related interests and concerns, deer-related activity involvement, and gender may help explain why residents in specific regions of New York State prefer that the deer population in their local area increases, decreases, or remains at about the same level. Based on previous research, including results from year 1 of this study (Siemer et al. 2018), we expected to find that high levels of concern about negative effects of human-deer interactions would be predictive of a preference for a deer population decrease. We expected to find that high levels of interest in seeing or hunting deer would mitigate preference for a deer population reduction. We also expected to find that residents who preferred a deer population decrease would be more likely than other respondents to perceive that the local deer population had increased, believe that costs of deer outweighed the benefits of deer, and report that they enjoy deer, but worry about deer-related problems.

METHODS

Survey Instrument

In cooperation with a DEC Contact Team, we developed a self-administered questionnaire to address our research objectives (Appendix A). The questionnaire characterized: perception of change in local deer population over the past 5 years, deer population preference, deer-related attitudes and evaluative beliefs, salience of deer management as an issue, deer-related interests, perceived deer-management priorities, personal interest in using various methods to provide input on deer management decisions, opinions about methods DEC should use to gather public input for decisions about deer management in local areas, and sociodemographic characteristics. The Cornell University Office of Research Integrity and Assurance (Institutional Review Board for Human Participants, Protocol ID#1101001927) approved the questionnaire for use with human subjects.

Survey Implementation

DEC identified eight aggregates to be surveyed in project year 2. We sampled 1,250 property owners with mailing addresses in each of the aggregates (i.e., total sample of 10,000) for the 8 aggregates surveyed in year 2 (Table 1). We drew the sample for each AWMU from the zip codes completely within each aggregate. The sampling approach was intended to exclude out-of-state property owners.

We sampled property owners in multiple residential property tax codes. The sample included owners of one-family, two-family, and three-family year-round residences, rural residences with acreage, properties used in agricultural production that contained a primary residence, recreational use properties, estates, and mobile homes.

We implemented survey mailings between February 6, 2019 and March 6, 2019. We contacted each member of the sample up to four times (i.e., an initial letter and questionnaire, a reminder postcard, a third reminder letter and replacement questionnaire, and a final reminder about one week after the third mailing).

We contracted the Survey Research Institute at Cornell University (SRI) to complete follow-up telephone interviews with a sample of at least 25 nonrespondents in each of the aggregates sampled. SRI completed a total of 202 interviews with nonrespondents between April 2, 2019 and April 15, 2019. Interviews contained 19 key questions from the mail survey and took <5 minutes to complete.

Analysis

We completed all analyses using IBM SPSS Statistics for Windows, Version 24.0 (IBM Corp. 2016). We calculated descriptive statistics (frequencies, means) to compare results for each variable in each AWMU. We used chi square tests to identify respondent-nonrespondent differences and associations between categorical variables and deer population preference.

Table 1. Wildlife management unit aggregates sampled in year 2, New York State deer management survey.

AWMU name	Wildlife management units (WMUs) in the aggregate	Counties entirely or partially in the AWMU
Catskills	WMU 3A, 4G, 4H, 4R	Delaware, Greene, Sullivan, Ulster, Albany, Schenectady, Schoharie
Central Appalachian Plateau	WMU 7R, 7S, 8X, 8Y, 9Y	Tioga, Tompkins, Broome, Chemung, Cortland, Schuyler, Steuben, Allegany
Northwest Appalachian Hills	WMU 9G, 9H, 9M, 9N	Cattaraugus, Chautauqua, Erie, Genesee, Wyoming, Allegany, Wyoming
Southeast Hudson	WMU 3F, 3G, 3N, 4Z	Columbia, Dutchess, Putnam, Westchester
Southwest Hudson	WMU 3C, 3J, 3M, 3P, 3R	Greene, Sullivan, Ulster, Columbia, Orange, Rockland
Western Appalachian Hills	WMU 9J, 9K, 9R	Chautauqua, Cattaraugus
Western Appalachian Plateau	WMU 8P, 8T, 8W, 9P, 9S, 9T, 9W, 9X	Ontario, Steuben, Yates, Chemung, Schuyler, Allegany, Livingston, Wyoming, Cattaraugus
Western Finger Lakes	WMU 8N, 8R	Livingston, Ontario, Steuben, Yates, Schuyler

We used binary logistic regression to develop models predicting a preference for a deer population decrease or increase in each AWMU. Before we conducted regression analysis, we assessed multicollinearity among continuous predictor variables (i.e., interests, concerns, age) using Pearson correlation coefficients. Pairs of variables with $r > 0.6$ were considered highly correlated. We estimated the proportion of explained variation in each regression model using Cox & Snell R^2 value and Nagelkerke R^2 value.

The independent variables considered in this analysis are described in Table 2. We developed 2 questions to assess deer-related interests (i.e., interest in deer viewing, interest in deer hunting). Interests were measured on a 5-point scale (1=not at all interested, 5=extremely interested). We assessed 5 areas of potential deer-related concerns (i.e., concern about garden damage, crop damage, forest damage, tick-borne diseases, and deer vehicle collisions). Concerns were measured on a 5-point scale (1=not at all concerned, 5=extremely concerned). We found that 3 concern items (i.e., concern about garden damage, crop damage, and forest damage) were highly correlated, so we combined those items into a single variable we labeled “BROWSE CON”). We

treated interests and concerns as continuous variables in regression analyses. We anticipated that strong deer-related interests would mitigate intolerance. We anticipated that strong deer-related concerns would be associated with deer intolerance.

Table 2. Description of survey questions and variables used to predict preference for a local deer population decrease or increase in aggregated wildlife management units (AWMUs).

Category	Variable	Survey question	Variable type
Interests and concerns	VIEW INT	How interested are you in deer viewing?	5 categories (Ref=very int)
	HUNT INT	How interested are you in deer hunting?	5 categories (Ref=very int)
	GARDEN CON ¹	How concerned are you about deer damage to gardens and plantings?	5 categories (Ref=very conc)
	CROP CON ¹	How concerned are you about crop losses experienced by local farmers?	5 categories (Ref=very conc)
	FOREST CON ¹	How concerned are you about deer damage to forests and native plants?	5 categories (Ref=very conc)
	DISEASE CON	How concerned are you about Lyme and other tick-borne diseases?	5 categories (Ref=very conc)
	DRVA CON	How concerned are you about deer-vehicle collisions?	5 categories (Ref=very conc)
Activities	DEER HUNT	Do you participate in deer hunting	Binary (yes or no)
	GARDEN	Do you participate in Gardening	Binary (yes or no)
	FARM	Do you participate in Farming	Binary (yes or no)
	FOREST MGT	Do you manage woodlots or forested land	Binary (yes or no)
	DRIVE	Do you drive in areas with lots of deer	Binary (yes or no)
	HIKE	Do you hiking/walk in natural areas	Binary (yes or no)
Demographic factors	GENDER	What is your gender?	2 categories (Ref=Male)

¹Concerns about damage to gardens, farmers' crops, and forests were highly correlated, so these 3 variables were combined into a single aggregate variable (called "BROWSE CON") based on grand mean that ranged from 1 (not at all concerned) to 5 (extremely concerned).

We developed 6 measures to explore how activity involvement might explain variance in deer tolerance (i.e., participation in deer hunting, gardening, farming, woodlot/forest management, “driving in areas with lots of deer”, and hiking/walking in natural areas). These were yes/no questions and were treated as categorical variables in regression analyses. We anticipated that participation in activities that could be adversely impacted by high deer populations (e.g., gardening, farming) would be associated with deer intolerance, and participation in deer hunting would be associated with tolerance for deer.

We included one variable to investigate how demographic factors influence tolerance. Gender was translated into a dichotomous variable (1=male, 0=female).

RESULTS

Residents returned a total of 3,956 questionnaires from a pool of 9,157 deliverable questionnaires, yielding an overall response rate of 43% (Table 3). Response rates varied by aggregate, ranging from a low of 34% in the Southwest Hudson aggregate to a high of 50% in the Western Finger Lakes.

Table 3. Summary of survey response by Wildlife Management Unit (WMU) aggregate, 2018 deer management survey.

	Aggregated wildlife management units (AWMUs) ¹								Total
	CAT	CAP	NWA	SEH	SWH	WAH	WAP	WFL	
Sample size	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	10,000
Unusable returns	6	5	4	4	6	5	9	2	41
Un-deliverable	173	100	73	106	94	104	97	96	843
Returns (usable)	510	465	516	408	394	554	533	576	3,956
Response rate	47.4	40.4	43.8	35.7	34.1	48.3	46.2	49.9	43.2

¹ Catskills (CAT), Central Appalachian Plains (CAP), Northwest Appalachian Hills (NWA), Southeast Hudson (SEH), Southwest Hudson (SWH), Western Appalachian Hills (WAH), Western Appalachian Plateau (WAP), Western Finger Lakes (WFL)

Nonresponse Bias Analysis

We present a comprehensive set of respondent-nonrespondent comparisons in Appendix B. We found a number of statistically-significant differences between respondents and nonrespondents (see Appendix B for a comprehensive set of respondent-nonrespondent comparisons). Key differences included the following:

- The proportion of men was higher in the respondent group (66% vs. 45%)
- The proportion of deer hunters was higher in the respondent group (31% vs. 24%)
- Respondents were more likely to say the issue of deer management was very or extremely important to them (48% vs. 38%)
- Respondents were more likely than nonrespondents to have concerns about deer damage to gardens (76% vs. 66%) and damage to forests and native plants (69% vs. 56%)
- Respondents were less likely than nonrespondents to want the deer population to stay about the same (34% vs. 44%)

Some response patterns were similar between respondents and nonrespondents. For example, when asked about deer-related impacts both respondents and nonrespondents expressed the highest levels of concern about Lyme or other tick-borne diseases and deer-vehicle collisions. Majorities of both respondents and nonrespondents believed it was very or extremely important for DEC to consider tick-borne illnesses and deer-vehicle collisions when managing deer in their local area.

During preliminary analysis, we explored whether respondent-nonrespondent differences could be addressed in part by weighting to adjust the male-female ratio. We found that weighting the data based on gender had little effect on the key variable from the survey (i.e., deer population preference). Thus, the study contact team made a decision to not have us adjust the data based on gender. The results presented in this report have not been weighted to adjust for respondent-nonrespondent differences.

Respondent Characteristics

We provide a comprehensive set of results tables for all WMU aggregates at the end of the report (Appendix C). Mean age of respondents was 60 years old. In all aggregates the majority of respondents were male (from 55% in Southeast Hudson to 71% in the Western Appalachian Plateau). In all aggregates, a majority of respondents lived in a rural area outside a village/hamlet or in a village or hamlet with <10,000 people. The percentage who lived in a rural area outside a village or hamlet ranged widely, from 33% in the Southwest Hudson aggregate to 74% in the Catskills aggregate. These characteristics suggest that residential property owners are older, more likely to be male, and more likely to be rural than the state population as a whole.

Opinions and intentions related to public input

We asked respondents what methods they would suggest that DEC use to gather public input for consideration in local deer management decisions. Patterns of response to this question were similar across all AWMUs. The most frequent suggestion in every AWMU was to use public meetings open to all (suggested by 59% – 64% per AWMU). From 49% – 55% of respondents

by AWMU suggested DEC gather public input through scientific mail or telephone surveys. Minorities of respondents suggested that DEC use unsolicited comments from citizens (21% – 29% of respondents by AWMU) or meetings open to select groups and invited individuals (18% – 21% of respondents by AWMU). Very few respondents in any AWMU suggested that DEC use no public input at all (suggested by 2% – 4% per AWMU) (Table C23).

We also asked respondents how likely they were to participate in any of 4 processes that DEC routinely uses to gather public input about deer management issues. Again, the patterns of response were similar across AWMUs. Majorities of respondents (69% – 75% of respondents by AWMU) indicated that they were likely (willing) to participate in a survey about deer impacts within the next 3 years (Table C24). Only minorities of respondents said they were likely to attend a public meeting on deer management (27% – 35% of respondents by AWMU), provide written comments on a deer management topic (18% – 28% of respondents by AWMU), or talk with DEC staff about deer impacts (20% – 26% of respondents by AWMU) (Tables C25-C27).

We explored relationships between intention to provide input to DEC and activity involvement, gender, area of residence, and deer population preference. Comprehensive results of those comparisons are provided in Appendix D. Intention to participate in any form of public input for deer management decisions was positively correlated with a range of activities impacted by deer (i.e., gardening, farming, managing woodlots, deer hunting, driving in areas with lots of deer, or hiking/walking in natural areas) (Tables D1-D6). For example, about twice as many farmers as nonfarmers said they were likely to talk with DEC staff about deer impacts. Intentions to participate in deer management surveys was higher among hunters than among nonhunters. Intentions to attend a public meeting about deer impacts were higher among respondents who drive in areas with lots of deer than among respondents who do not drive in such areas.

Intention to participate in all 4 processes for providing input was higher among men than among women (Table D7). Rural respondents had slightly higher intentions than small town or small city respondents to talk with DEC staff about deer impacts (Table D8). Preference for a deer population increase was associated with higher intention to participate in any form of public input for deer management decisions (Table D9).

Deer Population Preferences

The first objective of this study was to identify deer population preferences in specific AWMUs. In all aggregates a third or more of respondents desired no change in the local deer population. In 7 of 8 aggregates, the proportion of respondents who desired a deer population decrease was larger than the proportion who desired a deer population increase. In the Southeast Hudson and Southwest Hudson AWMUs the proportion of respondents who desired a decrease in the deer population markedly exceeded the proportion who desired an increase (Tables 4-5). A third or more of respondents in each AWMU reported that it was very or extremely important to them that the deer population level they preferred be attained within the next 5 years (Table 6).

Table 4. How respondents preferred the deer population in their local area to change in the next 5 years (response options collapsed into 4 categories).

	Aggregated wildlife management units (AWMUs) ¹							
	CAP n=418	CAT n=458	NWA n=460	SEH n=361	SWH n=362	WAH n=499	WAP n=475	WFL n=530
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Decrease moderately or greatly	36.6	30.8	36.1	50.7	52.5	36.3	26.1	35.7
Stay about the same	30.9	37.8	40.2	32.4	30.4	33.3	32.2	32.8
Increase moderately or greatly	22.0	25.1	20.0	12.5	11.3	25.1	32.8	25.7
No preference	10.5	6.3	3.7	4.4	5.8	5.4	8.8	5.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹ Central Appalachian Plains (CAP), Catskills (CAT), Northwest Appalachian Hills (NWA), Southeast Hudson (SEH), Southwest Hudson (SWH), Western Appalachian Hills (WAH), Western Appalachian Plateau (WAP), Western Finger Lakes (WFL)

Table 5. How respondents preferred the deer population in their local area to change in the next 5 years.

	Aggregated wildlife management units (AWMUs) ¹							
	CAP n=418	CAT n=458	NWA n=460	SEH n=361	SWH n=362	WAH n=499	WAP n=475	WFL n=530
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Decrease greatly	9.3	7.2	9.3	13.6	22.4	11.4	3.8	6.6
Decrease Moderately	27.3	23.6	26.7	37.1	30.1	24.8	22.3	29.1
Stay about the same	30.9	37.8	40.2	32.4	30.4	33.3	32.2	32.8
Increase moderately	16.7	22.1	16.3	9.4	8.3	18.2	26.5	22.1
Increase greatly	5.3	3.1	3.7	3.0	3.0	6.8	6.3	3.6
No preference	10.5	6.3	3.7	4.4	5.8	5.4	8.8	5.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹ Central Appalachian Plains (CAP), Catskills (CAT), Northwest Appalachian Hills (NWA), Southeast Hudson (SEH), Southwest Hudson (SWH), Western Appalachian Hills (WAH), Western Appalachian Plateau (WAP), Western Finger Lakes (WFL)

Table 6. The importance that the deer population in respondents' area change as desired in the next 5 years.

	Aggregated wildlife management units (AWMUs) ¹							
	CAP n=419	CAT n=456	NWA n=458	SEH n=360	SWH n=361	WAH n=497	WAP n=475	WFL n=530
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Not at all important	13.1	9.4	11.1	10.8	10.2	9.1	11.4	8.7
Slightly important	21.2	23.2	19.4	18.1	16.1	19.9	19.2	19.2
Moderately important	35.6	34.6	34.5	37.8	31.3	30.8	35.4	37.0
Very important	20.3	24.6	26.2	25.0	26.3	28.4	24.8	25.1
Extremely important	9.8	8.1	8.7	8.3	16.1	11.9	9.3	10.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹ Central Appalachian Plains (CAP), Catskills (CAT), Northwest Appalachian Hills (NWA), Southeast Hudson (SEH), Southwest Hudson (SWH), Western Appalachian Hills (WAH), Western Appalachian Plateau (WAP), Western Finger Lakes (WFL)

Variables Correlated with Deer Population Preference

The second objective of our study was to improve understanding of factors influencing local residents' preferences for future deer population. In this study we used 2 complementary methods—correlational analysis and regression analysis—to measure strength of association between deer population preference and respondents' personal characteristics and deer-related attitudes, interests, concerns, and behaviors.

First, we used the chi square statistic to identify significant relationships between deer population preference and specific categorical variables. We found significant relationships between deer population preference and: deer-related interests, deer-related concerns, participation in deer hunting, personal importance of deer management, overall attitudes toward deer, and perceptions of the cost-benefit ratio associated with local deer.

Interest in deer viewing

A third or more of respondents in every aggregate described themselves as very or extremely interested in deer viewing. In some aggregates (i.e., Catskills, Western Appalachian Plateau, Western Finger Lakes), at least half of respondents were very or extremely interested in deer viewing. Most respondents who had no interest in viewing deer preferred that the local deer population decrease. Most respondents who had high interest in viewing deer preferred that the local deer population stay about the same or increase. In the Catskills AWMU, for example, 79% of respondents who had no interest in viewing deer wanted a deer population reduction, while over 80% of those who were very or extremely interested in viewing deer wanted the deer population to stay about the same level or increase (Table 7).

Table 7. Differences in preference for future deer population across respondents with different levels of personal interest in deer viewing, for the Catskills AWMU.

Preference for future deer population in local area	Level of personal interest in viewing deer ¹			Total n=431
	Not interested n=38	Slightly/moderately interested n=172	Very/extremely interested n=221	
	(%)	(%)	(%)	(%)
Decrease mod./greatly	78.9	39.5	15.8	30.9
Stay about the same	2.6	39.5	40.7	36.9
Increase mod./greatly	2.6	14.0	39.8	26.2
No preference	15.8	7.0	3.6	6.0
Total	100.0	100.0	100.0	100.0

¹Chi square =104.03, df=6, p <0.001

Participation in deer hunting

Nearly a third of respondents participated in deer hunting. The percentage of respondents who were deer hunters varied by aggregate: Central Appalachian Plains (26%), Catskills (36%), Northwest Appalachian Hills (33%), Southeast Hudson (15%), Southwest Hudson (15%), Western Appalachian Hills (37%), Western Appalachian Plateau (45%), Western Finger Lakes (35%). Respondents who hunted were much more likely than nonhunting respondents to prefer a deer population increase. Nonhunters were more likely than hunters to prefer a deer population decrease, or to have no deer population preference. For example, in the Northwest Appalachian Hills AWMU, 41% of hunters but only 10% of nonhunters preferred an increase in the local deer population; only 19% of hunters but 44% of nonhunters preferred a decrease in the local deer population.

About 50% of respondents (nonhunters and hunters combined) believed it was very or extremely important for DEC to consider deer hunting when managing local deer. Deer hunters were much more likely than nonhunters to believe it was very or extremely important for DEC to consider deer hunting when managing local deer (86% vs. 34%).

Deer-Related Concerns

Respondents expressed the highest levels of concern about tick-borne diseases and deer-vehicle accidents (with two-thirds saying they were very or extremely concerned about those issues). The proportion of respondents who described themselves as very or extremely concerned about tick-borne diseases ranged from 61% in the Western Appalachian Hills to 80% in the Southeastern Hudson.

Respondents (including both hunters and nonhunters) viewed human health and safety as high priorities for management attention. In every AWMU majorities of respondents believed it was very or extremely important for DEC to address tick-borne illnesses (68% - 83%) and deer-vehicle accidents (61%-80%). In every AWMU respondents were most likely to say that tick-borne diseases were one of the issues that should receive the most weight in determining the future deer population in their local area (and in most aggregates deer-related vehicle collisions was the issue that was second or third most likely to be selected). Respondents who had high levels of concern about tick-borne diseases or deer-vehicle collisions were more likely than those with low levels of concern to prefer a decrease in deer population size.

Smaller proportions of respondents expressed high concern about deer damage to gardens or farmers' crops. Concern about damage to gardens and farmer's crops was highest in the Southeast Hudson and Southwest Hudson AWMUs. Respondents expressed the lowest levels of concern about damage to forests and natural plants. The proportion of respondents who described themselves as very or extremely concerned about damage to forests ranged from 17% in the Northwest Appalachian Hills to 32% in the Southeast Hudson. In every AWMU, concern about damage to forests was relatively low (in 6 of 7 AWMUs, less than 20% of respondents were very or extremely concerned about deer damage to forests). Less than 5% of respondents believed that deer damage to forests and natural plants was 1 of the 2 issues that should receive the most weight in deer population decisions. Nevertheless, respondents who had high levels of concern

about negative impacts of deer damage to gardens, farmers' crops, or forests were more likely than those with low levels of such concern to prefer a decrease in deer population size.

We found strong correlations between all concerns about deer and deer population preference. High levels of concern about deer-related problems were strongly correlated with preferences for a decrease in local deer population. This relationship was observed for all specific concerns (i.e., health, safety, or deer browsing concerns) and in all AWMUs. Table 8 shows how this relationship was expressed for concern about deer damage to gardens in the Southeast Hudson AWMU.

Table 8. Differences in preference for future deer population across respondents with different levels of concern about deer damage to gardens, for the Southeast Hudson AWMU.

Preference for future deer population in local area	Level of concern about deer damage to gardens ¹			Total n=348
	Not concerned n=49	Slightly/moderately concerned n=153	Very/extremely concerned n=146	
	(%)	(%)	(%)	(%)
Decrease mod./greatly	16.3	34.0	79.5	50.6
Stay about the same	40.8	47.1	13.7	32.2
Increase mod./greatly	30.6	13.1	6.2	12.6
No preference	12.2	5.9	0.7	4.6
Total	100.0	100.0	100.0	100.0

¹Chi square = 99.94, df=6, p <0.001

Salience of deer management

We found that deer population preference varied when respondents were grouped based on how salient deer management was for each respondent. Respondents who reported that the issue of deer management was very or extremely important were more likely than other respondents to desire a deer population change, whether that be an increase or a decrease (see illustration in Table 9). Similarly, respondents who reported that it was very or extremely important to them that their preferred deer population level was achieved were more likely than other respondents to desire a deer population change, whether that be an increase or a decrease (see illustration in Table 10).

Table 9. Deer population preference across respondents who placed different levels of importance on the issue of deer management, for the Western Appalachian Hills AWMU.

Preference for future deer population ¹	Personal importance placed on deer management			Total
	Not	Slightly/moderately	Very/extremely	
	n=19 (%)	n=215 (%)	n=243 (%)	n=477 (%)
Decrease moderately/greatly	5.3	34.0	41.2	36.5
Stay about the same	63.2	42.3	23.5	33.5
Increase moderately/greatly	15.8	14.9	33.7	24.5
No preference	15.8	8.8	1.6	5.5
Total	100.0	100.0	100.0	100.0

¹Chi square =56.05, df=6, p < 0.001

Table 10. Differences in preferences for future deer population level across respondents who placed different levels of importance on attaining their deer population preference, for the Western Appalachian Plateau AWMU.

	Importance that deer pop change as preferred ¹			Total
	Not	Slightly/moderately	Very/Extremely	
	n=54 (%)	n=259 (%)	n=162 (%)	n=475 (%)
Decrease moderately/greatly	5.6	27.0	31.5	26.1
Stay about the same	29.6	37.5	24.7	32.2
Increase moderately/greatly	9.3	30.9	43.8	32.8
No preference	55.6	4.6	0.0	8.8
Total	100.0	100.0	100.0	100.0

¹Chi square =1335.224, df=6, p < 0.001

Perceived change in the deer population

In all aggregates at least a quarter of respondents believed the deer population in their area had stayed about the same over the past 5 years. An additional 11% to 19% were not sure how the deer population had changed. The proportion of respondents who believed their local deer population had increased moderately or greatly was highest in the Southwest Hudson (50%), Western Appalachian Hills (40%), Southeast Hudson (38%), and Northwest Appalachian Hills (37%) (Table C4).

We found a strong relationship between perceived change in the deer population and deer population preference. Aggregates where substantial portions of respondents perceived a deer population increase also had a substantial proportion of respondents who preferred a reduction in deer population in their area. For example, in the Southwest Hudson aggregate about 50% of respondents believed that their local deer population had increased in the previous 5 years, and 53% of respondents in that area preferred that the deer population in their area decrease in the future. In that AWMU, 78% of respondents who thought their local deer population had increased over the previous 5 years also preferred a deer population decrease in their area over the next 5 years.

Overall attitude toward deer

Overall attitude toward deer presence and deer population preference were significantly correlated. Respondents who enjoyed deer without worry were more likely than other respondents to prefer a deer population increase. Those who worried about deer-related problems, or regarded deer as a nuisance were more likely than others to prefer a deer population decrease. This pattern is illustrated below with data from the Western Finger Lakes AWMU (Table 11).

Perceived cost-benefit ratio associated with local deer

Perception of cost/benefit ratio of deer was correlated with deer population preference. Respondents who believed the benefits of deer outweighed the costs were more likely than other respondents to want the deer population to stay the same level or increase. Those who believed costs outweighed benefits were more likely than other respondents to want the deer population to go down. For example, in the Catskills AWMU, nearly 90% of those who thought the benefits of deer outweighed the costs preferred that the local deer population stay the same or increase. Conversely, 88% of those who thought the costs of deer outweighed the benefits preferred a deer population reduction (Table 12).

Factors that Explain deer Population Preference

Correlational statistics (e.g., the chi square statistic, Pearson's correlation coefficient) provide an expedient way to identify associations between pairs of variables in SPSS, and are useful to identify potential independent variables to include in multivariate analyses. But correlation analysis does not allow the researcher to consider potential confounding effects or effect modifiers. Regression analysis makes it possible to measure the strength of association between

Table 11. Preference for future deer population by attitude toward local deer, for the Western Finger Lakes AWMU.

Preference for future deer population in local area	Attitude toward local deer ¹				Total n=526
	Enjoy deer, do not worry about problems n=185	Enjoy deer, but worry about problems n=301	Do not enjoy deer, regard them as a nuisance n=24	No particular feelings toward deer n=16	
	(%)	(%)	(%)	(%)	(%)
Decrease mod./greatly	5.4	49.8	87.5	37.5	35.6
Stay about the same	38.9	31.9	0.0	31.3	32.9
Increase mod./greatly	51.4	12.3	8.3	12.5	25.9
No preference	4.3	6.0	4.2	18.8	
Total	100.0	100.0	100.0	100.0	100.0

¹Chi square =, df=9, p < 0.001

Table 12. Differences in preference for future deer population across respondents who perceived a different balance of deer-related costs and benefits, for the Catskills AWMU.

Preference for future deer population in local area	Cost-benefit perception			Total n=447
	Benefits of deer outweigh problems n=148	Benefits and problems are about an even tradeoff n=95	Problems deer cause outweigh benefits of deer n=204	
	(%)	(%)	(%)	(%)
Decrease mod./greatly	6.1	20.1	88.4	30.0
Stay about the same	45.9	46.6	7.4	38.0
Increase mod./greatly	43.9	23.5	2.1	25.7
No preference	4.1	9.8	2.1	6.3
Total	100.0	100.0	100.0	100.0

¹Chi square =222.051, df=6, p < 0.001

multiple independent variables (e.g., deer-related concerns) and a dependent variable (e.g., deer population preference) adjusting for potential confounding effects. So to go beyond the insights provided by chi square comparisons above, we conducted logistic regression analyses to identify factors that explain a preference for a decrease or increase in local deer population.

We found that 3 concerns about deer were highly correlated (i.e., Pearson correlation about 0.6 or above) (Table 13), so those variables were combined into 1 variable labeled “BROWSE CON”. Participation in hiking, age, and urban-rural setting were not significant predictors in models for any AWMU in our 2018 analysis (Siemer et al. 2018), so we excluded those variables in our 2019 regression analyses. We excluded data from respondents who failed to provide valid responses on all predictor variables. That resulted in a loss of 8% to 14% of useable returns depending on the AWMU. All model results (i.e., including non-significant findings) in each AWMU are reported in Appendix E (dependent variable: preference for a deer population decrease) and Appendix F (dependent variable: preference for a deer population increase).

Table 13. Pearson correlations between items measuring deer-related interests and concerns.

	Interest: deer viewing	Interest: deer hunting	Concern: Garden damage	Concern: Crop damage	Concern: Forest, native plant damage	Concern: tick-borne diseases	Concern: Deer- vehicle collisions
Interest: Deer viewing	—						
Interest: Deer hunting	0.385**	—					
Concern: Garden damage	-0.291**	-0.153**	—				
Concern: Crop damage	-0.206**	-0.025**	0.652**	—			
Concern: Forest, native plant damage	-0.202**	-0.054**	0.598**	0.675**	—		
Concern: Tick-borne diseases	-0.126**	-0.049**	0.408**	0.439**	0.442**	—	
Concern: Deer- vehicle collisions	-0.228**	-0.197**	0.479**	0.481**	0.432**	0.542**	—

**Correlation is significant at the 0.01 level (2-tailed)

Preference for a deer population decrease

Depending on the AWMU, the models were able to correctly classify 77% – 82% of cases. Cox & Snell R^2 values and Nagelkerke R^2 values suggest that the models were able to explain somewhere between 27% and 57% of the variance in preference for a deer population decrease (Appendix E). Seven factors were significant predictors of preference for a deer population decrease in 1 or more AWMUs. In any given AWMU, as few as 2 and as many as 6 variables were significant predictors (Table 14).

Deer-related interests. Interest in deer viewing was a significant predictor variable in every AWMU, and was negatively correlated with preference for a deer population decrease. The odds ratio [$Exp(B)$] results indicated that the probability of preferring a reduced deer population decreased as level of interest in deer viewing increased.

Deer-related concerns. Concern about deer browsing damage (i.e., the aggregate variable that combined concern about damage to garden plants, farmers crops, or forests into a single variable) was a significant predictor variable in every AWMU, and was positively correlated with preference for a deer population decrease. In seven of eight AWMUs, the odds ratio [$Exp(B)$] results indicated that respondents who were highly concerned about browsing damage were twice as likely to prefer a deer population decrease compared with those who were least concerned.

Concern about deer-vehicle collisions was a significant predictor variable in 7 AWMUs, and was positively correlated with preference for a deer population decrease. The odds ratio [$Exp(B)$] results indicated that in some AWMUs respondents who were highly concerned about deer-vehicle collisions were twice as likely to prefer a deer population decrease compared with those who were least concerned about deer-vehicle collisions.

Gender. In the Northwest Appalachian Hills AWMU, gender was a significant predictor variable. Being male increased the likelihood of a preference for a deer population decrease.

Activity involvement. In 6 AWMUs, driving in areas with many deer was a predictor variable. The odds ratio [$Exp(B)$] results indicated that in some AWMUs respondents who drove a vehicle in areas “with lots of deer” were twice as likely to prefer a deer population decrease compared with those who did not operate a vehicle in such areas.

In the Southwest Hudson AWMU, participation in farming and deer hunting were significant predictor variables. The probability of preferring a deer population decrease was higher for farmers than nonfarmers, and higher for nonhunters than hunters.

Preference for a deer population increase

Depending on the AWMU, the models were able to correctly classify 79% – 89% of cases, and explain somewhere between 12% and 51% of the variance in preference for a deer population increase (Appendix F). In any given AWMU, as few as 2 and as many as 6 variables were significant predictors (Table 15).

Deer-related interests. In 7 of 8 AWMUs, high interest in deer viewing was predictive of, and positively correlated with, preference for a deer population increase. High interest in deer hunting was predictive of, and positively correlated with preference for a deer population increase in 6 AWMUs. The odds ratio [$Exp(B)$] results indicated that the probability of preferring an increased deer population increased as level of interest in deer viewing or hunting increased.

Deer-related concerns. Concern about deer browsing damage (damage to garden plants, farmer's crops, or forests) was a significant predictor variable in 4 AWMUs and concern about deer-vehicle collisions was predictive in 4 AWMUs. In all instances, concerns were negatively correlated with preference for a deer population increase. The odds ratio [$Exp(B)$] results indicated that as level of concern about negative deer-related impacts decreased, the odds of preferring a higher deer population increased.

Activity involvement. In two AWMUs, the odds of preferring a deer population increase were higher for respondents who reported they did not drive in areas with lots of deer. In three AWMUs, the odds of preferring a deer population increase were higher for respondents who hunted deer.

DISCUSSION

We used data from the 2019 survey of property owners in 8 AWMUs to identify predictors of a preference for a decrease or an increase in local deer population. We found that interest in deer viewing or hunting, and concerns about deer-related problems (i.e., browsing damage to gardens, farmers' crops, or forests; vehicle collisions with deer), were predictive of deer population preference. Results patterns and relationships between variables were very similar to those observed in data collected in different AWMUs in 2018 (Siemer et al. 2018).

The relationships we observed between deer population preference and deer-related interests and concerns are consistent with previous research with general audiences (e.g., property owners, suburban residents) (Decker and Gavin 1987, Siemer et al. 2015). Our findings are also consistent with previous research on specific stakeholder groups (e.g., farmers, orchardists) (Brown and Decker 1979, Brown et al. 1978, Decker and Brown 1982, Decker et al. 1981). Although the proportions of residents who wanted more or fewer deer varied by AWMU, we observed similar relationships across aggregates with regard to relationships between deer population preference or deer-related attitude, and deer-related concerns or interests. These findings increase confidence that relationships observed are not just confined to a specific geographic location.

Based on previous studies, including the pilot survey completed as the precursor to this study (Siemer et al. 2015), we anticipated that concern about tick-borne diseases would be a predictor variable in most AWMUs, but it was not a significant predictor in any of the 8 AWMUs surveyed. That finding may be explained by the fact that most respondents were very or extremely concerned about tick-borne illnesses. High concern about such illnesses was ubiquitous, so it did not serve as a trait that distinguished between respondents with different deer population preferences.

Table 14. Summary of logistic regression analysis for variables predicting preference for a deer population decrease (yes/no) in each AWMU.

	Aggregated Wildlife Management Unit (AWMU)							
	CAP	CAT	NWA	SEH	SWH	WAH	WAP	WFL
	(n=402) <i>B</i>	(n=450) <i>B</i>	(n=461) <i>B</i>	(n=372) <i>B</i>	(n=353) <i>B</i>	(n=509) <i>B</i>	(n=485) <i>B</i>	(n=518) <i>B</i>
Interest: deer viewing	-.481***	-.581***	-.392***	-.572***	-.630***	-.564***	-.284*	-.661***
Concern about browsing damage (to crops, gardens, or forests)	.470**	.753***	.969***	.742***	.846***	.793***	.657***	.847***
Concern: deer-vehicle collisions	.472**	.368*	.822***	.327	.593**	.648***	.603***	.612***
Gender: (male)	-.067	.556	.735*	.163	-.043	.531	-.083	-.034
Activities: Farm (group: do not)	-.256	.458	.318	.075	-2.093**	-.021	.340	.160
Activities: deer hunt	-.333	-.544	-.852	-.636	-1.604*	-1.584**	.075	-.672
Activities: Drive in areas with lots of deer (group: do not)	1.061**	.391	.877**	.355	.900*	.876*	.963**	.926**

*p< .05; **p< .01; ***p< .001

Table 15. Summary of logistic regression analysis for variables predicting preference for a deer population increase (yes/no) in each AWMU.

	Aggregated Wildlife Management Unit (AWMU)							
	CAP (n=402)	CAT (n=450)	NWA (n=461)	SEH (n=372)	SWH (n=353)	WAH (n=509)	WAP (n=485)	WFL (n=518)
	<i>B</i>	<i>B</i>	<i>B</i>	<i>B</i>	<i>B</i>	<i>B</i>	<i>B</i>	<i>B</i>
Interest: deer viewing	.742***	.574***	.518***	.237	.483*	.500***	.263*	.287*
Interest: deer hunting	.463*	.416*	.318	.459*	-.133	.346*	.466**	.333*
Concern about browsing damage (to crops, gardens, or forests)	-.372	-.730***	-.729***	-.729**	-.442	-.054	-.273	-.717***
Concern: deer-vehicle collisions	-.139	-.286*	-.136	-.062	-.068	-.376*	-.336**	-.353**
Gender: (male)	.849*	.083	-.313	-.382	.202	.972*	.137	.421
Activities: Manage forest land (group: do not)	-1.037*	-.195	-.501	-.074	.110	-.235	-.031	-.203
Activities: deer hunt	.742	1.210*	.716	.760	1.657*	1.041*	.566	.648
Activities: Drive in areas with lots of deer (group: do not)	.134	-.013	-.166	-.273	.039	-1.062**	-.639*	-.364

*p< .05; **p< .01; ***p< .001

CONCLUSIONS

The relationships we found between deer-related interests, deer-related concerns, and deer population preferences have been demonstrated previously by observing relationships between overall attitudes toward deer, or perceived benefits and costs of having deer in a region, and deer-related interests and concerns. Findings from this study suggest that deer population preference, overall attitude toward deer, and perceived benefit-cost ratio of deer presence can all be used as dependent variables by researchers interested in understanding the factors that predict tolerance for deer. All 3 measures (i.e., overall attitude toward deer, perceived cost-benefit ratio of deer presence, and deer population preference) yield insights about the degree to which tolerance for deer has been exceeded for a given population of residents or stakeholder group. We contend that all 3 variables yield similar insights about tolerance for deer because they are all tapping into the underlying concept of perceived impacts of deer, as described by Riley et al. (2002) and Lischka et al. (2008).

It is noteworthy that in every AWMU respondents expressed relatively low levels of concern about deer damaging forests through excessive browsing and were unlikely to regard damage to forests as a top priority for deer management. Given its importance to DEC as a consideration in setting deer population objectives, forest health and tree regeneration are topics that may warrant greater attention in communication from DEC to deer management stakeholders.

We were not surprised to find that many property owners were highly concerned about tick-borne diseases and deer-vehicle collisions, given that these concerns have appeared consistently in recent surveys in New York State. Given the level of public concern about these health and safety impacts, it will be important for DEC to communicate how deer population management does and does not address the incidence of deer-vehicle collisions and tick-borne illness across the state.

Results of this survey suggest that property owners almost unanimously believe that DEC should consider some form of public input when making local deer management decisions. While not surprising, it is useful to document that property owners perceive value in public input processes.

We also found that property owners were most willing (likely) to provide input in the easiest way possible (i.e., by participating in scientific surveys about deer management). While majorities of respondents in every AWMU suggested that DEC use public meetings open to all to gather input, majorities also indicated that they were unlikely to participate in such meetings in the next three years. These findings provide support for the decision to gather public input through surveys like the one reported here, which gather information from a random sample of stakeholders in the geographic area where deer management decisions will be implemented. But findings from this survey also suggest that many stakeholders expect DEC to offer opportunities to provide input through other mechanisms, such as public meetings open to all. The results illustrate trade-offs inherent in choosing a public input approach, and the continuing need to design context-specific input approaches that are fair and representative while also being practical (e.g., time- and cost-efficient processes that can be replicated across management units and over time).

Study Limitations

We sampled from the population of property owners in New York State. We used that sampling approach because it allows the researcher to identify and deliver mail directly to specific individuals and households. The mix of deer-related interests and concerns may differ in other populations (e.g., New York State residents who do not own residential property), so the proportion of residents who prefer a deer population increase or decrease may also differ from what was observed in this study. We did not use listed household sampling—the main alternative sampling approach—because it has limitations that make it less favorable in this context (i.e., it does not allow the researcher to identify all individuals, it excludes individuals who do not have a publicly-listed telephone number [i.e., a land line]).

We found that intentions to participate in future surveys on deer impacts were higher among hunters than among nonhunters. We also know that deer management is a salient topic for deer hunters. These conditions may help explain why the proportion of respondents who hunted deer was high in several AWMUs (i.e., it ranged from 15% to 45% hunters by AWMU even though the rate of hunting among all adult New York State residents is estimated to be <10% [USDI 2014]). We have observed this pattern repeatedly in past deer management surveys, including the pilot study that preceded this survey (Pomeranz et al. 2017) and in the 2018 implementation of this study (Siemer et al. 2018). Overrepresentation of hunters is a recurring challenge for agencies seeking to engage stakeholders in deer management decisions.

Although the differences between hunting and nonhunting respondents were the most pronounced, we also observed differences between other groups (e.g., farmer and nonfarmers, those who drive in areas with many deer and those who do not) with regard to willingness to engage in public involvement opportunities. Such differences are a reminder that issues of stakeholder representation are important to consider when designing public input processes, and when extrapolating results to the population of residents in any given geographic area.

The strength of our study approach was that it provided a useful snapshot of property owners generally. But this approach does not provide detailed profiles of specific stakeholder groups that may be important to consider in a given AWMU. For example, there may be AWMUs where managers want a deeper understanding of acceptance capacity for deer within specific agricultural production groups (e.g., row crop producers, orchardists). Managers would need to design targeted studies or monitoring processes to obtain detailed characterizations of specific stakeholder groups.

Next Steps

Analysis of data from this survey was provided to DEC in summer 2019. This survey will be repeated in 2020 in 9 additional AWMUs. DEC personnel will use the data from these surveys, along with other information, to determine deer population goals in each AWMU.

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APPENDIX A (Example Survey Instrument)

Deer in the Catskills: Residents' Interests and Concerns

Research conducted for the
NYS Department of Environmental Conservation
Division of Fish and Wildlife

by the
Center for Conservation Social Sciences
Department of Natural Resources, Cornell University

The New York State Department of Environmental Conservation (DEC) is sponsoring this survey to learn more about residents' interests and concerns regarding deer and deer management in a portion of the Catskills, shown as the shaded part of the map on the following page. DEC will use the information that you and other residents provide in this survey to help set deer population goals in the Catskills Aggregated Wildlife Management Unit.

We would like input from EVERYONE who receives this questionnaire, not just those who have strong opinions about deer. We want the results of the survey to reflect the perspectives of all area residents.

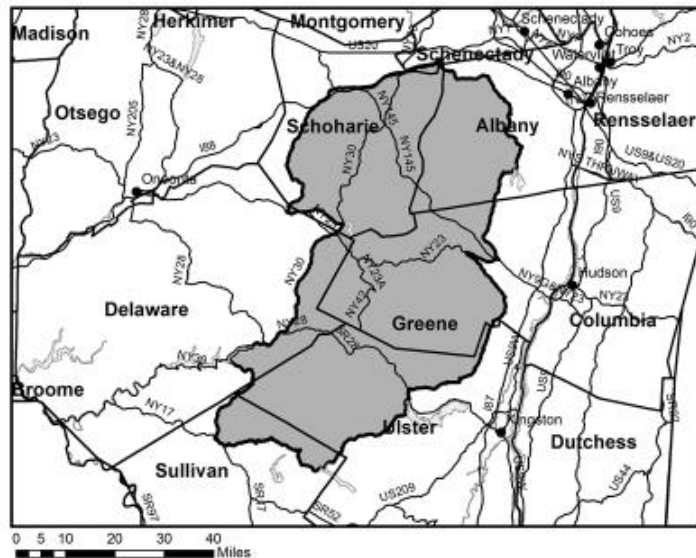
Please complete this questionnaire as soon as you can, seal it with the white re-sealable label provided, and drop it in any mailbox; ***return postage has been pre-paid***. Your identity will be kept confidential and the information you give us will never be associated with your name.

THANK YOU FOR YOUR HELP!

THE CATSKILLS AGGREGATED WILDLIFE MANAGEMENT UNIT

DEC has created 24 aggregated wildlife management units for the purpose of setting local deer population goals.

You are a resident of the shaded area of the map below (i.e., the Catskills Aggregated Wildlife Management Unit). It encompasses parts of Schenectady, Schoharie, Albany, Delaware, Greene, Ulster, and Sullivan counties.



Note: All questions in this questionnaire refer to your deer-related experiences and opinions in the shaded area indicated on the map above.

YOUR VIEWS ABOUT DEER

1. Over the last 12 months, how often have you discussed deer with your friends or family? (Circle one number.)

- 1 Never
- 2 Seldom
- 3 Occasionally
- 4 Fairly often
- 5 Very often

2. How important is the issue of deer management to you personally? (Circle one number.)

- 1 Not at all important to me
- 2 Slightly important
- 3 Moderately important
- 4 Very important
- 5 Extremely important

3. In your opinion, is the deer population in your area (refer to map on previous page) too large, about the right size, or too small? (Circle one number.)

- 1 Too large
- 2 About the right size
- 3 Too small
- 4 No opinion

4. Below are two interests you may have related to deer. Please indicate how interested you are in each in your area. (Circle one number for each interest.)

	Not at all interested	Slightly interested	Moderately interested	Very interested	Extremely interested
a. Deer viewing	1	2	3	4	5
b. Deer hunting	1	2	3	4	5

5. Below is a list of concerns you may have related to deer. Please indicate how concerned you are about each in your area. (Circle one number for each concern.)

	Not at all concerned	Slightly concerned	Moderately concerned	Very concerned	Extremely concerned
a. Deer damage to gardens and plantings around homes	1	2	3	4	5
b. Crop losses experienced by local farmers due to deer	1	2	3	4	5
c. Deer damage to forests and native plants	1	2	3	4	5
d. Lyme or other tick-borne diseases	1	2	3	4	5
e. Deer-vehicle collisions	1	2	3	4	5

6. How important is it to you that DEC considers the following deer-related interests and concerns when managing deer in your area? (Circle one number for each item.)

	Not at all important	Slightly important	Moderately important	Very important	Extremely important
a. Deer viewing	1	2	3	4	5
b. Deer hunting	1	2	3	4	5
c. Deer damage to gardens and plantings around homes	1	2	3	4	5
d. Crop losses experienced by local farmers due to deer	1	2	3	4	5
e. Deer damage to forests and native plants	1	2	3	4	5
f. Lyme or other tick-borne diseases	1	2	3	4	5
g. Deer-vehicle collisions	1	2	3	4	5

7. In your opinion, which two of the following factors should be given the most weight in determining the future deer population level in your area?

*(Circle **TWO** numbers from the list below.)*

- 1 Deer viewing
- 2 Deer hunting
- 3 Deer damage to gardens and plantings around homes
- 4 Crop losses experienced by local farmers due to deer
- 5 Deer damage to forests and native plants
- 6 Lyme and other tick-borne diseases
- 7 Deer-vehicle collisions
- 8 Physical condition of deer (nutrition and disease status)

8. Generally, how do you feel about deer in your area?

(Circle one number.)

- 1 I enjoy deer and I do not worry about problems deer may cause
- 2 I enjoy deer but I worry about problems deer may cause
- 3 I do not enjoy deer and I regard them as a nuisance
- 4 I have no particular feelings about deer

9. When you think about living with deer at their current population level, how would you weigh the benefits of deer against the problems deer cause in your area?

(Circle one number.)

- 1 The benefits of deer outweigh the problems they cause
- 2 The problems deer cause outweigh the benefits of deer
- 3 The benefits of deer and the problems deer cause are about an even trade off

YOUR DEER POPULATION PREFERENCE

10. To your knowledge, how has the deer population in your area changed over the last 5 years?

(Circle one number.)

- 1 Decreased greatly
- 2 Decreased moderately
- 3 Stayed about the same
- 4 Increased moderately
- 5 Increased greatly
- 6 Not sure

11. How would you prefer the deer population in your area to change in the next 5 years?

(Circle one number.)

- 1 Decrease greatly
- 2 Decrease moderately
- 3 Stay about the same
- 4 Increase moderately
- 5 Increase greatly
- 6 No preference

12. How important is it to you that the deer population level in your area change over the next 5 years as you indicated in Question #11 above? *(Circle one number.)*

- 1 Not at all important to me
- 2 Slightly important
- 3 Moderately important
- 4 Very important
- 5 Extremely important

PUBLIC INPUT ON DEER MANAGEMENT

13. How likely is it that you would do any of the following in the next 3 years? (*Circle one number for each item.*)

	Very unlikely	Unlikely	Likely	Very likely	Not sure
a. Talk with DEC staff about deer impacts	1	2	3	4	9
b. Provide written comments to DEC about a deer management plan or regulation proposal	1	2	3	4	9
c. Participate in a DEC survey about deer	1	2	3	4	9
d. Attend a public meeting about deer impacts	1	2	3	4	9

14. What methods would you suggest DEC use to gather public input for decisions about deer management in your local area? (*Circle all numbers that apply.*)

1	No public input should be used
2	Unsolicited comments from citizens to the DEC, such as letters and telephone calls
3	Scientific telephone and mail surveys
4	Meetings open to select groups and invited individuals
5	Public meetings open to all
6	Other (specify): _____

BACKGROUND INFORMATION

15. What is your gender? (*Circle one number.*)

- 1 Female
- 2 Male
- 3 Prefer not to say
- 4 Prefer to self-describe: _____

16. In what year were you born? (*Fill in the year.*) _ _ _ _

17. Which category best describes the place where you currently reside for most of the year? (*Circle one number.*)

- 1 A rural area, outside a village or hamlet
- 2 Village or hamlet (less than 10,000 people)
- 3 Small city (10,000 to 50,000 people)
- 4 Large city (over 50,000)

18. Which of the following activities do you participate in? (*Circle all that apply.*)

- 1 Gardening
- 2 Farming
- 3 Managing woodlots or forested land
- 4 Deer hunting
- 5 Driving in areas with lots of deer
- 6 Hiking/walking in natural areas
- 7 None of these describe me

THANK YOU FOR YOUR INPUT!

(Please use the space below to offer any comments.)

APPENDIX B (Respondent – Nonrespondent Comparisons)

Appendix B (Respondent – Nonrespondent)

Table B1. Outcome of contacts with nonrespondents, 2019 survey of residents in 8 AWMUs.

Outcome	Aggregated wildlife management units (AWMUs) ¹								Total
	CAP	CAT	NWA	SEH	SWH	WAH	WAP	WFL	
Completed	25	25	25	25	26	26	25	25	202
Refused	0	3	6	1	4	3	2	2	21
Pending (answering machine, callback appt., or no answer)	64	114	72	162	74	74	97	87	744
Ill/Deceased	0	0	0	0	0	0	0	0	0
Language problem	0	0	0	0	0	0	0	0	0
Non- working number	57	54	64	59	54	94	71	82	535
Mail survey returned	1	0	2	0	1	0	1	1	6
Wrong number	3	4	6	3	5	3	4	3	31
Total	150	200	175	250	164	200	200	200	1539

¹ Catskills (CAT), Central Appalachian Plains (CAP), Northwest Appalachian Hills (NWA), Southeast Hudson (SEH), Southwest Hudson (SWH), Western Appalachian Hills (WAH), Western Appalachian Plateau (WAP), Western Finger Lakes (WFL)

Table B2. Comparison of respondents to nonrespondents on gender, 2019 survey of residents in 7 AWMUs.

	Respondents (n) %	Nonrespondents ^a (n) %
Male	(2559) 65.6	(90) 44.6
Female	(1231) 31.5	(111) 55.0
Prefer not to say / self describe	(113) 2.9	(1) 0.5
Total	(3903) 98.7	(202) 100.0

^achi square=49.32 , df=2 , p<0.001

Table B3. Comparison of respondents to nonrespondents on participation in hunting, 2019 survey of residents in 7 WMU aggregates.

	Respondents (n) %	Nonrespondents ^a (n) %
Yes (hunter)	(1240) 31.4	(48) 23.8
No (nonhunter)	(2715) 68.6	(154) 76.2
Total	(3955) 100.0	(202) 100.0

^achi square=5.18 , df=1 , p=0.022

Table B4. Personal of importance deer management as an issue, respondents compared to nonrespondents.

	Respondents (n=) %	Nonrespondents ^a (n=) (%)
Not at all important	(246) 6.6	(26) 12.9
Slightly/moderately important	(1,687) 45.0	(99) 49.3
Very/extremely important	(1,813) 48.4	(76) 37.8
Total	(3,746) 100.0	(201) 100.0

^achi square=16.45 , df=2 , p<0.001

Table B5. Respondents' interest in deer viewing.

	Respondents (n=) %	Nonrespondents ^a (n=) (%)
Not at all interested	(436) 11.8	(28) 13.9
Slightly/moderately interested	(1,598) 43.2	(94) 46.5
Very/extremely interested	(1,667) 45.0	(80) 39.6
Total	(3701) 100.0	(202) 100.0

^achi square=2.46 , df=2 , p=0.29

Table B6. Respondents' interest in deer hunting.

	Respondents (n=) %	Nonrespondents ^a (n=) (%)
Not at all interested	(1825) 50.0	(122) 60.4
Slightly/moderately interested	(651) 17.8	(35) 17.3
Very/extremely interested	(1,176) 32.2	(45) 22.3
Total	(3,652) 100.0	(202) 100.0

^achi square=10.09 , df=2 , p=0.006

Table B7. Respondents' concern about deer damage to home gardens.

	Respondents (n=) %	Nonrespondents ^a (n=) (%)
Not at all concerned	(910) 24.4	(68) 33.7
Slightly/moderately concerned	(1,748) 46.8	(82) 40.6
Very/extremely concerned	(1,079) 28.9	(52) 25.7
Total	(3,737) 100.0	(202) 100.0

^achi square=8.92 , df=2 , p=0.012

Table B8. Respondents' concern about deer damage to forests/native plants.

	Respondents (n=) %	Nonrespondents ^a (n=) (%)
Not at all concerned	(1,134) 30.6	(89) 44.3
Slightly/moderately concerned	(1,805) 48.7	(89) 44.3
Very/extremely concerned	(768) 20.7	(23) 11.4
Total	(3,707) 100.0	(202) 100.0

^achi square=20.28 , df=2 , p<0.001

Table B9. Respondents' concern about Lyme or other tick borne illnesses.

	Respondents (n=) %	Nonrespondents ^a (n=) (%)
Not at all concerned	(160) 4.3	(15) 7.5
Slightly/moderately concerned	(969) 25.9	(51) 25.2
Very/extremely concerned	(2,609) 69.8	(136) 67.3
Total	(3,738) 100.0	(202) 100.0

^achi square=4.47 , df=2 , p=0.107

Table B10. Respondents' concern about deer-vehicle accidents.

	Respondents (n=) %	Nonrespondents ^a (n=) (%)
Not at all concerned	(164) 4.4	(18) 8.9
Slightly/moderately concerned	(1,080) 28.9	(77) 38.1
Very/extremely concerned	(2,496) 66.7	(107) 53.0
Total	(3,740) 100.0	(202) 100.0

^achi square=19.58 , df=2 , p<0.001

Table B11. Respondents' level of importance that DEC considers deer viewing in the area.

	Respondents (n=) %	Nonrespondents ^a (n=) (%)
Not at all important	(738) 19.1	(39) 19.4
Slightly/moderately important	(1,924) 49.9	(102) 50.7
Very/extremely important	(1,197) 31.0	(60) 29.8
Total	(3,859) 100.0	(202) 100.0

^achi square=0.122 , df=2 , p =0.940

Table B12. Respondents' level of importance that DEC considers deer hunting in the area.

	Respondents (n=) %	Nonrespondents ^a (n=) (%)
Not at all important	(747) 19.4	(24) 12.0
Slightly/moderately important	(1,167) 30.3	(71) 35.5
Very/extremely important	(1,939) 50.3	(105) 52.5
Total	(3853) 100.0	(202) 100.0

^achi square=7.32 , df=2 , p=0.025

Table B13. Respondents' level of importance that DEC considers deer garden damage in the area.

	Respondents (n=) %	Nonrespondents ^a (n=) (%)
Not at all important	(705) 18.2	(55) 27.5
Slightly/moderately important	(1,934) 50.0	(90) 45.0
Very/extremely important	(1,231) 31.8	(55) 27.5
Total	(3,870) 100.0	(202) 100.0

^achi square=10.84 , df=2 , p=0.004

Table B14. Respondents' level of importance that DEC considers deer forest/native plant damage in the area.

	Respondents (n=) %	Nonrespondents ^a (n=) (%)
Not at all important	(798) 20.7	(58) 29.0
Slightly/moderately important	(1,917) 49.8	(99) 49.5
Very/extremely important	(1,135) 29.5	(43) 21.5
Total	(3850) 100.0	(202) 100.0

^achi square=16.32 , df=2 , p=0.859

Table B15. Respondents' level of importance that DEC considers Lyme/tick borne diseases in the area.

	Respondents (n=) %	Nonrespondents ^a (n=) (%)
Not at all important	(145) 3.7	(9) 4.5
Slightly/moderately important	(810) 20.9	(43) 21.3
Very/extremely important	(2,920) 75.4	(150) 74.2
Total	(3,875) 100.0	(202) 100.0

^achi square=0.303 , df=2 , p=0.859

Table B16. Respondents' level of importance that DEC considers deer-vehicle collisions in the area.

	Respondents (n=) %	Nonrespondents ^a (n=) (%)
Not at all important	(185) 4.8	(17) 8.5
Slightly/moderately important	(1,037) 26.8	(69) 34.3
Very/extremely important	(2,653) 68.5	(115) 57.2
Total	(3,875) 100.0	(201) 100.0

^achi square=12.83 , df=2 , p=0.0016

Table B17. Respondents' general feelings about deer in their area.

	Respondents (n=) %	Nonrespondents ^a (n=) (%)
Enjoy deer and do not worry about damage	(1,347) 34.5	(77) 38.1
Enjoy deer but I worry about damage	(2,142) 54.9	(102) 50.6
Don't enjoy deer, regard as nuisance	(258) 6.6	(11) 5.4
No particular feeling about deer	(153) 3.9	(12) 5.9
Total	(3,900) 100.0	(202) 100.0

^achi square=3.74 , df=3 , p=0.290

Table B18. Costs/benefits of deer.

	Respondents (n=) %	Nonrespondents ^a (n=) (%)
Benefits of deer outweigh problems caused	(1,043) 27.1	(64) 31.7
Problems deer cause outweigh benefits	(1,092) 28.4	(38) 18.8
Deer benefits/problems are an even trade-off	(1,713) 44.5	(100) 49.5
Total	(3,848) 100.0	(202) 100.0

^achi square=8.83 , df=2 , p =0.012

Table B19. Comparison of respondents to nonrespondents on local deer population preference, 2018 survey of residents in 7 WMU aggregates.

Desired trend in local deer population in the next five years	Respondents (n=) %	Nonrespondents ^a (n) %
Decrease moderately or greatly	(1,327) 37.2	(57) 28.2
Stay about the same	(1,207) 33.9	(88) 43.6
Increase moderately or greatly	(802) 22.5	(31) 15.3
No preference	(227) 6.4	(26) 12.9
Total	(3,563) 100.0	(202) 100.0

^achi square=25.90 , df=3, p<0.001

Table B20. Comparison of respondents to nonrespondents on perception of change in local deer population, 2018 survey of residents in 7 WMU aggregates.

Perceived trend in local deer population in last five years	Respondents (n=) %	Nonrespondents ^a (n) %
Decreased moderately or greatly	(794) 22.3	(45) 22.3
Stayed about the same	(989) 27.7	(55) 27.2
Increased moderately or greatly	(1,254) 35.2	(72) 35.7
Not sure	(530) 14.9	(30) 14.8
Total	(3,567) 100.0	(202) 100.0

^achi square=0.030, df=3, p=0.998

APPENDIX C (Summary of Survey Results by Aggregated Wildlife Management Unit)

Table C1. Frequency with which respondents discussed deer with friends or family in the past year, by AWMU.

	Aggregated Wildlife Management Unit (AWMU) ¹							
	CAP	CAT	NWA	SEH	SWH	WAH	WAP	WFL
	n=436	n=485	n=481	n=394	n=375	n=527	n=514	n=544
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Never	5.7	2.9	4.6	5.3	2.7	2.5	5.4	2.6
Seldom	16.3	11.1	12.5	20.1	12.0	6.8	10.3	8.8
Occasionally	37.4	32.4	37.0	35.0	38.1	33.0	32.5	35.3
Fairly often	24.8	30.1	25.6	24.9	26.9	31.7	28.8	30.0
Very often	15.8	23.5	20.4	14.7	20.3	26.0	23.0	23.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹ Central Appalachian Plains (CAP), Catskills (CAT), Northwest Appalachian Hills (NWA), Southeast Hudson (SEH), Southwest Hudson (SWH), Western Appalachian Hills (WAH), Western Appalachian Plateau (WAP), Western Finger Lakes (WFL)

Table C2. Personal importance of deer management to respondents, by AWMU.

	Aggregated Wildlife Management Unit (AWMU) ¹							
	CAP	CAT	NWA	SEH	SWH	WAH	WAP	WFL
	n=435 (%)	n=481 (%)	n=480 (%)	n=393 (%)	n=372 (%)	n=527 (%)	n=515 (%)	n=543 (%)
Not at all important to me	8.7	4.8	8.1	9.4	7.5	4.4	6.4	4.6
Slightly important	18.2	16.8	13.1	17.6	14.8	13.5	15.9	10.5
Moderately important	32.6	27.7	29.8	32.3	28.5	30.6	26.8	33.1
Very important	27.8	31.6	32.3	26.5	31.5	30.4	35.7	35.2
Extremely Important	12.6	19.1	16.7	14.2	17.7	21.3	15.1	16.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹ Central Appalachian Plains (CAP), Catskills (CAT), Northwest Appalachian Hills (NWA), Southeast Hudson (SEH), Southwest Hudson (SWH), Western Appalachian Hills (WAH), Western Appalachian Plateau (WAP), Western Finger Lakes (WFL)

Table C3. Opinion of current deer population in their area, by AWMU.

	Aggregated Wildlife Management Unit (AWMU) ¹							
	CAP	CAT	NWA	SEH	SWH	WAH	WAP	WFL
	n=432	n=480	n=476	n=393	n=373	n=524	n=511	n=540
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Too large	29.9	26.9	28.6	39.9	51.2	34.7	24.3	29.1
About the right size	42.4	47.1	50.6	44.0	34.0	43.1	46.4	45.0
Too small	15.0	16.0	10.3	5.9	5.6	14.1	19.8	14.6
No opinion	12.7	10.0	10.5	10.2	9.1	8.0	9.6	11.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹ Central Appalachian Plains (CAP), Catskills (CAT), Northwest Appalachian Hills (NWA), Southeast Hudson (SEH), Southwest Hudson (SWH), Western Appalachian Hills (WAH), Western Appalachian Plateau (WAP), Western Finger Lakes (WFL)

Table C4. How respondents thought the deer population in their local area had changed (response options collapsed into 4 categories), by AWMU.

	Aggregated Wildlife Management Unit (AWMU) ¹							
	CAP	CAT	NWA	SEH	SWH	WAH	WAP	WFL
	n=419	n=460	n=459	n=360	n=363	n=500	n=475	n=531
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Decreased moderately or greatly	26.7	25.9	17.9	15.6	12.1	23.6	26.9	25.4
Stayed about the same	25.5	30.2	31.2	29.4	26.7	22.4	27.4	29.2
Increased moderately or greatly	29.1	30.0	37.3	38.3	49.9	39.8	30.7	29.9
Not sure	18.6	13.9	13.7	16.7	11.3	14.2	14.9	15.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹ Central Appalachian Plains (CAP), Catskills (CAT), Northwest Appalachian Hills (NWA), Southeast Hudson (SEH), Southwest Hudson (SWH), Western Appalachian Hills (WAH), Western Appalachian Plateau (WAP), Western Finger Lakes (WFL)

Table C5. How respondents thought the deer population in their local area had changed in the last 5 years, by AWMU.

	Aggregated Wildlife Management Unit (AWMU) ¹							
	CAP	CAT	NWA	SEH	SWH	WAH	WAP	WFL
	n=419	n=460	n=459	n=360	n=363	n=500	n=475	n=531
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Decreased greatly	9.1	9.1	4.6	5.8	3.6	6.8	9.9	8.5
Decreased moderately	17.7	16.7	13.3	9.7	8.5	16.8	17.1	16.9
Stayed about the same	25.5	30.2	31.2	29.4	26.7	22.4	27.4	29.2
Increased moderately	20.5	23.3	25.9	27.2	27.0	23.0	20.6	23.4
Increased greatly	8.6	6.7	11.3	11.1	22.9	16.8	10.1	6.6
Not sure	18.6	13.9	13.7	16.7	11.3	14.2	14.9	15.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹ Central Appalachian Plains (CAP), Catskills (CAT), Northwest Appalachian Hills (NWA), Southeast Hudson (SEH), Southwest Hudson (SWH), Western Appalachian Hills (WAH), Western Appalachian Plateau (WAP), Western Finger Lakes (WFL)

Table C6. Respondents interest in deer viewing and deer hunting.

	Aggregated wildlife management units (AWMUs) ¹							
	CAP (%)	CAT (%)	NWA (%)	SEH (%)	SWH (%)	WAH (%)	WAP (%)	WFL (%)
Interest in deer viewing	n=423	n=471	n=477	n=388	n=371	n=523	n=508	n=540
Not interested	14.4	8.7	11.1	17.5	19.4	11.3	7.3	8.3
Slightly/moderately interested	44.4	40.8	44.7	50.3	49.6	40.9	37.6	40.9
Very/extremely interested	41.1	50.5	44.2	32.2	31.0	47.8	55.1	50.7
Interest in deer hunting	n=418	n=470	n=469	n=381	n=360	n=521	n=501	n=532
Not interested	55.5	44.5	49.3	69.8	68.9	43.2	36.7	43.2
Slightly/moderately interested	16.7	20.4	18.3	12.1	13.3	18.4	19.8	20.7
Very/extremely interested	27.8	35.1	32.4	18.1	17.8	38.4	43.5	36.1

¹ Central Appalachian Plains (CAP), Catskills (CAT), Northwest Appalachian Hills (NWA), Southeast Hudson (SEH), Southwest Hudson (SWH), Western Appalachian Hills (WAH), Western Appalachian Plateau (WAP), Western Finger Lakes (WFL)

Table C7. Concern about deer damage to gardens, agricultural crops, and forests.

Concern about ...	Aggregated wildlife management units (AWMUs) ¹							
	CAP (%)	CAT (%)	NWA (%)	SEH (%)	SWH (%)	WAH (%)	WAP (%)	WFL (%)
Garden damage	n=431	n=480	n=480	n=393	n=373	n=527	n=510	n=543
Not concerned	26.9	24.6	27.9	14.0	16.9	23.9	32.0	24.9
Slightly/moderately concerned	44.8	51.3	45.8	44.3	40.5	44.8	49.2	51.0
Very/extremely concerned	28.3	24.2	26.3	41.7	42.6	31.3	18.8	24.1
Crop damage	n=430	n=474	n=477	n=389	n=365	n=525	n=511	n=537
Not concerned	17.9	19.2	22.9	13.6	13.7	16.4	20.0	18.2
Slightly/moderately concerned	53.3	53.2	52.6	45.8	48.2	55.4	56.2	54.7
Very/extremely concerned	28.8	27.6	24.5	40.6	38.1	28.2	23.9	27.0
Forest damage	n=427	n=476	n=476	n=386	n=371	n=525	n=507	n=539
Not concerned	26.9	34.0	31.9	22.8	21.8	30.9	38.3	33.4
Slightly/moderately concerned	51.8	45.0	50.8	44.8	46.9	51.8	48.5	48.8
Very/extremely concerned	21.3	21.0	17.2	32.4	31.3	17.3	13.2	17.8

¹ Central Appalachian Plains (CAP), Catskills (CAT), Northwest Appalachian Hills (NWA), Southeast Hudson (SEH), Southwest Hudson (SWH), Western Appalachian Hills (WAH), Western Appalachian Plateau (WAP), Western Finger Lakes (WFL)

Table C8. Concern about tick-borne diseases and deer-related vehicle accidents.

Concern about ...	Aggregated wildlife management units (AWMUs) ¹							
	CAP (%)	CAT (%)	NWA (%)	SEH (%)	SWH (%)	WAH (%)	WAP (%)	WFL (%)
Tick-borne diseases	n=433	n=485	n=477	n=393	n=373	n=523	n=512	n=542
Not concerned	4.2	4.3	5.7	3.6	2.9	5.9	3.7	3.5
Slightly/moderately concerned	20.3	21.6	30.8	16.8	18.0	33.5	29.7	31.2
Very/extremely concerned	75.5	74.0	63.5	79.6	79.1	60.6	66.6	65.3
Deer related vehicle accidents	n=432	n=483	n=480	n=393	n=373	n=525	n=511	n=543
Not concerned	4.4	4.6	5.0	3.3	2.1	5.3	5.3	4.2
Slightly/moderately concerned	31.5	30.8	30.4	20.1	19.6	30.3	35.2	29.1
Very/extremely concerned	64.1	64.6	64.6	76.6	78.3	64.4	59.5	66.7

¹ Central Appalachian Plains (CAP), Catskills (CAT), Northwest Appalachian Hills (NWA), Southeast Hudson (SEH), Southwest Hudson (SWH), Western Appalachian Hills (WAH), Western Appalachian Plateau (WAP), Western Finger Lakes (WFL)

Table C13. Importance of considering deer viewing when making local deer management decisions (response categories collapsed), by AWMU.

	Aggregated Wildlife Management Unit (AWMU) ¹							
	CAP n=453	CAT n=498	NWA n=508	SEH n=399	SWH n=380	WAH n=541	WAP n=515	WFL n=565
Importance of considering deer viewing...	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Not important	21.2	16.3	18.1	25.8	26.3	17.7	13.0	18.2
Slightly/mod important	53.4	47.8	49.2	48.6	51.1	49.5	48.9	50.6
Very/extremely important	25.4	35.9	32.7	25.6	22.6	32.7	38.1	31.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹ Central Appalachian Plains (CAP), Catskills (CAT), Northwest Appalachian Hills (NWA), Southeast Hudson (SEH), Southwest Hudson (SWH), Western Appalachian Hills (WAH), Western Appalachian Plateau (WAP), Western Finger Lakes (WFL)

Table C14. Importance of considering deer hunting when making local deer management decisions (response categories collapsed), by AWMU.

	Aggregated Wildlife Management Unit (AWMU) ¹							
	CAP n=452	CAT n=501	NWA n=503	SEH n=398	SWH n=375	WAH n=541	WAP n=519	WFL n=564
Importance of considering deer hunting...	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Not important	23.5	14.8	20.5	28.4	31.5	14.2	14.3	14.5
Slightly/mod important	31.9	31.1	31.6	33.2	31.2	26.8	28.9	29.1
Very/extremely important	44.7	54.1	47.9	38.4	37.3	59.0	56.8	56.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹ Central Appalachian Plains (CAP), Catskills (CAT), Northwest Appalachian Hills (NWA), Southeast Hudson (SEH), Southwest Hudson (SWH), Western Appalachian Hills (WAH), Western Appalachian Plateau (WAP), Western Finger Lakes (WFL)

Table C15. Importance of considering garden damage when making local deer management decisions (response categories collapsed), by AWMU.

	Aggregated Wildlife Management Unit (AWMU) ¹							
	CAP n=456	CAT n=502	NWA n=507	SEH n=398	SWH n=383	WAH n=541	WAP n=518	WFL n=565
Importance of considering garden damage...	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Not important	18.6	18.5	21.3	12.8	13.6	17.6	21.8	19.1
Slightly/mod important	50.4	54.0	48.7	44.5	43.1	47.1	55.0	53.8
Very/extremely important	30.9	27.5	30.0	42.7	43.3	35.3	23.2	27.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹ Central Appalachian Plains (CAP), Catskills (CAT), Northwest Appalachian Hills (NWA), Southeast Hudson (SEH), Southwest Hudson (SWH), Western Appalachian Hills (WAH), Western Appalachian Plateau (WAP), Western Finger Lakes (WFL)

Table C16. Importance of considering crop damage when making local deer management decisions (response categories collapsed), by AWMU.

	Aggregated Wildlife Management Unit (AWMU) ¹							
	CAP n=455	CAT n=500	NWA n=507	SEH n=396	SWH n=381	WAH n=538	WAP n=517	WFL n=565
Importance of considering crop damage...	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Not important	11.0	14.6	14.8	8.3	9.7	11.3	13.9	11.7
Slightly/mod important	47.3	47.8	50.3	41.4	40.7	48.3	52.6	51.7
Very/extremely important	41.8	37.6	34.9	50.3	49.6	40.3	33.5	36.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹ Central Appalachian Plains (CAP), Catskills (CAT), Northwest Appalachian Hills (NWA), Southeast Hudson (SEH), Southwest Hudson (SWH), Western Appalachian Hills (WAH), Western Appalachian Plateau (WAP), Western Finger Lakes (WFL)

Table C17. Importance of considering forest damage when making local deer management decisions (response categories collapsed), by AWMU.

	Aggregated Wildlife Management Unit (AWMU) ¹							
	CAP n=456	CAT n=499	NWA n=503	SEH n=396	SWH n=377	WAH n=540	WAP n=516	WFL n=563
Importance of considering forest damage...	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Not important	19.3	25.3	22.5	12.9	14.3	20.7	25.0	22.2
Slightly/mod important	49.3	46.9	52.9	45.5	43.8	52.6	52.1	52.2
Very/extremely important	31.4	27.9	24.7	41.7	41.9	26.7	22.9	25.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹ Central Appalachian Plains (CAP), Catskills (CAT), Northwest Appalachian Hills (NWA), Southeast Hudson (SEH), Southwest Hudson (SWH), Western Appalachian Hills (WAH), Western Appalachian Plateau (WAP), Western Finger Lakes (WFL)

Table C18. Importance of considering tick diseases when making local deer management decisions (response categories collapsed), by AWMU.

	Aggregated Wildlife Management Unit (AWMU) ¹							
	CAP n=457	CAT n=503	NWA n=507	SEH n=400	SWH n=382	WAH n=541	WAP n=519	WFL n=566
Importance of considering tick diseases...	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Not important	3.3	4.0	4.5	4.3	3.4	4.6	3.1	2.8
Slightly/mod important	17.5	16.1	27.0	13.0	13.9	27.0	23.5	24.6
Very/extremely important	79.2	79.9	68.4	82.8	82.7	68.4	73.4	72.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹ Central Appalachian Plains (CAP), Catskills (CAT), Northwest Appalachian Hills (NWA), Southeast Hudson (SEH), Southwest Hudson (SWH), Western Appalachian Hills (WAH), Western Appalachian Plateau (WAP), Western Finger Lakes (WFL)

Table C19. Importance of considering DRVAs when making local deer management decisions (response categories collapsed), by AWMU.

	Aggregated Wildlife Management Unit (AWMU) ¹							
	CAP n=458	CAT n=501	NWA n=508	SEH n=400	SWH n=383	WAH n=542	WAP n=518	WFL n=565
Importance of considering DRVAs...	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Not important	4.1	5.4	4.9	4.3	2.9	5.9	5.2	4.8
Slightly/mod important	26.6	27.9	28.5	19.8	17.5	27.7	33.8	28.1
Very/extremely important	69.2	66.7	66.5	76.0	79.6	66.4	61.0	67.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹ Central Appalachian Plains (CAP), Catskills (CAT), Northwest Appalachian Hills (NWA), Southeast Hudson (SEH), Southwest Hudson (SWH), Western Appalachian Hills (WAH), Western Appalachian Plateau (WAP), Western Finger Lakes (WFL)

Table C21. General feelings toward deer in my area, by AWMU.

	Aggregated Wildlife Management Unit (AWMU) ¹							
	CAP	CAT	NWA	SEH	SWH	WAH	WAP	WFL
	n=459	n=505	n=512	n=400	n=386	n=542	n=525	n=571
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Enjoy deer and don't worry about damage	32.0	38.4	37.5	21.3	21.8	41.3	41.7	35.4
Enjoy deer but I worry about damage	55.3	53.5	51.4	64.3	60.9	50.0	50.5	57.3
Don't enjoy deer, regard as nuisance	6.8	5.0	6.3	10.8	14.8	5.9	2.5	4.4
No particular feelings about deer	5.9	3.2	4.9	3.8	2.6	2.8	5.3	3.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹ Central Appalachian Plains (CAP), Catskills (CAT), Northwest Appalachian Hills (NWA), Southeast Hudson (SEH), Southwest Hudson (SWH), Western Appalachian Hills (WAH), Western Appalachian Plateau (WAP), Western Finger Lakes (WFL)

Table C22. How respondents weigh the benefits and costs of having deer in their area, by AWMU.

	Aggregated Wildlife Management Unit (AWMU) ¹							
	CAP	CAT	NWA	SEH	SWH	WAH	WAP	WFL
	n=455	n=496	n=505	n=398	n=376	n=535	n=515	n=568
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Benefits of deer outweigh problems caused	23.3	32.5	27.5	19.3	19.1	28.6	33.6	28.5
Problems deer cause outweigh benefits	31.6	21.6	23.6	43.5	47.1	26.5	17.1	25.0
Deer benefits/problems are an even tradeoff	45.1	46.0	48.9	37.2	33.8	44.9	49.3	46.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹ Central Appalachian Plains (CAP), Catskills (CAT), Northwest Appalachian Hills (NWA), Southeast Hudson (SEH), Southwest Hudson (SWH), Western Appalachian Hills (WAH), Western Appalachian Plateau (WAP), Western Finger Lakes (WFL)

Table C23. Methods respondents believe DEC should use to gather public input for decisions about deer management in their local area, by AWMU.

	Aggregated Wildlife Management Unit (AWMU) ¹							
	CAP n=453	CAT n=502	NWA n=506	SEH n=401	SWH n=391	WAH n=534	WAP n=518	WFL n=567
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Public meetings open to all	63.8	59.8	56.3	58.6	62.9	63.5	59.3	60.3
Scientific telephone and mail surveys	49.2	49.2	46.6	51.1	54.5	48.1	44.8	50.6
Unsolicited comments from citizens (e.g., letters, telephone calls)	25.8	26.9	22.1	21.2	26.3	27.5	28.6	24.7
Meetings open to select groups and invited individuals	21.2	20.5	20.0	17.0	18.2	22.1	18.5	17.8
No public input should be used	3.1	3.2	3.0	3.0	2.3	3.9	2.5	2.1

¹ Central Appalachian Plains (CAP), Catskills (CAT), Northwest Appalachian Hills (NWA), Southeast Hudson (SEH), Southwest Hudson (SWH), Western Appalachian Hills (WAH), Western Appalachian Plateau (WAP), Western Finger Lakes (WFL)

Table C24. Likelihood that respondents will participate in a DEC survey about deer within the next 3 years, by AWMU.

	Aggregated Wildlife Management Unit (AWMU) ¹							
	CAP n=413 (%)	CAT n=455 (%)	NWA n=454 (%)	SEH n=358 (%)	SWH n=353 (%)	WAH n=493 (%)	WAP n=471 (%)	WFL n=520 (%)
Very unlikely	16.9	11.4	14.3	11.7	10.5	13.6	14.0	11.7
Unlikely	11.9	9.0	11.7	8.1	9.6	11.4	12.5	12.9
Likely	36.6	40.4	35.9	38.3	36.5	35.7	38.2	36.2
Very likely	30.8	34.7	33.3	36.0	39.4	34.7	31.6	35.4
Not sure	3.9	4.4	4.8	5.9	4.0	4.7	3.6	3.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹ Central Appalachian Plains (CAP), Catskills (CAT), Northwest Appalachian Hills (NWA), Southeast Hudson (SEH), Southwest Hudson (SWH), Western Appalachian Hills (WAH), Western Appalachian Plateau (WAP), Western Finger Lakes (WFL)

Table C25. Likelihood that respondents will attend a public meeting about deer impacts within the next 3 years, by AWMU.

	Aggregated Wildlife Management Unit (AWMU) ¹							
	CAP	CAT	NWA	SEH	SWH	WAH	WAP	WFL
	n=407	n=453	n=452	n=354	n=349	n=487	n=457	n=520
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Very unlikely	38.1	29.1	35.4	27.7	30.1	32.2	30.6	32.1
Unlikely	29.7	27.2	28.3	33.9	24.6	28.5	28.9	31.2
Likely	19.4	27.6	20.1	25.4	25.8	22.6	23.2	21.2
Very likely	7.6	11.0	11.5	7.3	11.7	9.4	11.4	8.5
Not sure	5.2	5.1	4.6	5.6	7.7	7.2	5.9	7.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹ Central Appalachian Plains (CAP), Catskills (CAT), Northwest Appalachian Hills (NWA), Southeast Hudson (SEH), Southwest Hudson (SWH), Western Appalachian Hills (WAH), Western Appalachian Plateau (WAP), Western Finger Lakes (WFL)

Table C26. Likelihood that respondents will provide written comments to DEC about a deer management plan or regulation proposal within the next 3 years, by AWMU.

	Aggregated Wildlife Management Unit (AWMU) ¹							
	CAP	CAT	NWA	SEH	SWH	WAH	WAP	WFL
	n=407	n=450	n=449	n=352	n=346	n=485	n=460	n=516
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Very unlikely	43.0	38.4	42.3	38.4	34.1	39.8	40.7	40.7
Unlikely	34.2	29.8	29.0	30.7	31.2	32.4	28.7	34.3
Likely	12.3	16.4	15.4	17.0	19.1	15.7	18.0	13.6
Very likely	5.7	9.8	8.5	7.7	8.7	6.0	7.0	7.2
Not sure	4.9	5.6	4.9	6.3	6.9	6.2	5.7	4.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹ Central Appalachian Plains (CAP), Catskills (CAT), Northwest Appalachian Hills (NWA), Southeast Hudson (SEH), Southwest Hudson (SWH), Western Appalachian Hills (WAH), Western Appalachian Plateau (WAP), Western Finger Lakes (WFL)

Table C27. Likelihood that respondents will talk with DEC staff about deer impacts within the next 3 years, by AWMU.

	Aggregated Wildlife Management Unit (AWMU) ¹							
	CAP	CAT	NWA	SEH	SWH	WAH	WAP	WFL
	n=407 (%)	n=449 (%)	n=448 (%)	n=352 (%)	n=348 (%)	n=485 (%)	n=462 (%)	n=514 (%)
Very unlikely	39.3	34.1	38.8	37.2	35.3	38.8	37.0	35.8
Unlikely	34.2	32.5	28.8	33.5	31.9	33.4	31.6	33.9
Likely	14.5	16.7	18.8	16.8	14.1	13.6	16.2	16.9
Very likely	5.4	8.7	7.1	7.1	9.8	7.0	7.8	6.8
Not sure	6.6	8.0	6.5	5.4	8.9	7.2	7.4	6.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹ Central Appalachian Plains (CAP), Catskills (CAT), Northwest Appalachian Hills (NWA), Southeast Hudson (SEH), Southwest Hudson (SWH), Western Appalachian Hills (WAH), Western Appalachian Plateau (WAP), Western Finger Lakes (WFL)

Table C28. Description of participants' residences, by AWMU.

Residence description:	Aggregated Wildlife Management Unit (AWMU) ¹							
	CAP	CAT	NWA	SEH	SWH	WAH	WAP	WFL
	n=454 (%)	n=504 (%)	n=512 (%)	n=397 (%)	n=392 (%)	n=553 (%)	n=527 (%)	n=568 (%)
Rural area outside village/hamlet	42.5	73.8	54.3	41.6	33.4	53.5	60.9	69.7
Village/hamlet (<10,000 people)	21.1	24.8	33.6	38.8	44.1	28.0	30.2	11.6
Small city (10,000-50,000 people)	33.3	0.8	10.9	17.6	20.2	18.4	8.5	18.0
Large city (>50,000 people)	3.1	0.6	1.2	2.0	2.3	0.0	0.4	0.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹ Central Appalachian Plains (CAP), Catskills (CAT), Northwest Appalachian Hills (NWA), Southeast Hudson (SEH), Southwest Hudson (SWH), Western Appalachian Hills (WAH), Western Appalachian Plateau (WAP), Western Finger Lakes (WFL)

Table C29. Percentage of respondents who participated in activities where they may be impacted positively or negatively by deer.

		Aggregated Wildlife Management Unit (AWMU) ¹							
		CAP	CAT	NWA	SEH	SWH	WAH	WAP	WFL
		n=465	n=510	n=516	n=408	n=394	n=554	n=532	n=576
		(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Garden	Yes	64.1	71.2	72.7	75.2	70.6	67.3	65.0	69.1
	No	35.9	28.8	27.3	24.8	29.4	32.7	35.0	30.9
Drive in areas with lots of deer	Yes	66.0	71.8	71.7	73.5	71.6	76.4	70.9	76.0
	No	34.0	28.2	28.3	26.5	28.4	23.6	29.1	24.0
Hike, walk in natural areas	Yes	63.0	72.9	66.9	68.4	62.4	65.0	62.2	66.7
	No	37.0	27.1	33.1	31.6	37.6	35.0	37.8	33.3
Deer hunt	Yes	25.8	35.9	32.8	15.4	14.7	37.4	45.1	34.7
	No	74.2	64.1	67.2	84.6	85.3	62.6	54.9	65.3
Manage woodlots, forested land	Yes	13.1	23.1	16.7	8.6	7.9	21.7	24.2	19.4
	No	86.9	76.9	83.3	91.4	92.1	78.3	75.8	80.6
Farm	Yes	8.0	14.1	14.7	6.4	5.3	14.8	18.6	14.8
	No	92.0	85.9	85.3	93.6	94.7	85.2	81.4	85.2
None of these	Yes	8.8	3.1	5.0	5.6	5.8	4.2	6.2	4.5
	No	91.2	96.9	95.0	94.4	94.2	95.8	93.8	95.5
Total		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹ Central Appalachian Plains (CAP), Catskills (CAT), Northwest Appalachian Hills (NWA), Southeast Hudson (SEH), Southwest Hudson (SWH), Western Appalachian Hills (WAH), Western Appalachian Plateau (WAP), Western Finger Lakes (WFL)

Table C30. Percentage of male and female respondents, by AWMU.

	Aggregated Wildlife Management Unit (AWMU) ¹							
	CAP	CAT	NWA	SEH	SWH	WAH	WAP	WFL
	n=459	n=504	n=512	n=395	n=392	n=551	n=521	n=569
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Female	33.8	30.2	30.9	39.7	39.0	27.9	25.5	29.7
Male	63.2	68.1	66.0	55.4	57.4	70.4	71.4	67.5
Prefer not to say	2.8	1.6	2.3	4.6	2.6	1.5	2.5	2.5
Prefer to self-describe	0.2	0.2	0.8	0.3	1.0	0.2	0.6	0.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹ Central Appalachian Plains (CAP), Catskills (CAT), Northwest Appalachian Hills (NWA), Southeast Hudson (SEH), Southwest Hudson (SWH), Western Appalachian Hills (WAH), Western Appalachian Plateau (WAP), Western Finger Lakes (WFL)

APPENDIX D (Likelihood of participating in public involvement opportunities)

Table D1. Comparison of gardeners and nongardeners on likelihood of providing input to DEC through various means over the next 3 years.

	Non Gardeners %	Gardeners %	df	χ^2
Talk with DEC staff about deer impacts	(n=1026)	(n=2438)	2	40.25***
Unlikely	77.0	66.4		
Likely	16.9	26.2		
Not sure	6.1	7.5		
Provide written comments to DEC about deer management plans or proposals	(n=1027)	(n=2437)	2	19.71***
Unlikely	76.3	69.0		
Likely	18.7	25.3		
Not sure	5.0	5.7		
Participate in a DEC survey about deer management	(n=1037)	(n=2479)	2	45.15***
Unlikely	31.1	21.2		
Likely	63.6	74.8		
Not sure	5.3	4.0		
Attend a public meeting about deer impacts	(n=1031)	(n=2447)	2	42.19***
Unlikely	69.1	57.7		
Likely	25.1	36.1		
Not sure	5.8	6.2		

*p < 0.05; **p < 0.01; ***p < 0.001

Table D2. Comparison of farmers and nonfarmers on likelihood of providing input to DEC through various means over the next 3 years.

	Non Farmers %	Farmers %	df	χ^2
Talk with DEC staff about deer impacts	(n=3025)	(n=439)	2	82.01***
Unlikely	72.0	52.6		
Likely	21.0	40.3		
Not sure	7.1	7.1		
Provide written comments to DEC about deer management plans or proposals	(n=3026)	(n=438)	2	53.19***
Unlikely	73.1	57.5		
Likely	21.3	37.0		
Not sure	5.5	5.5		
Participate in a DEC survey about deer management	(n=3070)	(n=446)	2	23.96***
Unlikely	25.4	15.0		
Likely	70.2	80.9		
Not sure	4.4	4.0		
Attend a public meeting about deer impacts	(n=3037)	(n=441)	2	45.73***
Unlikely	63.0	47.6		
Likely	30.8	46.9		
Not sure	6.2	5.4		

*p < 0.05; **p < 0.01; ***p < 0.001

Table D3. Comparison of respondents who manage woodlots to those who do not on likelihood of providing input to DEC through various means over the next 3 years.

	Do not manage woodlots	Manage woodlots	df	χ^2
	%	%		
Talk with DEC staff about deer impacts	(n=2852)	(n=612)	2	110.53***
Unlikely	72.8	54.1		
Likely	19.9	39.7		
Not sure	7.3	6.2		
Provide written comments to DEC about deer management plans or proposals	(n=2852)	(n=612)	2	81.46***
Unlikely	73.8	59.0		
Likely	20.3	37.3		
Not sure	5.9	3.8		
Participate in a DEC survey about deer management	(n=2889)	(n=627)	2	***
Unlikely	26.7	12.1		
Likely	68.7	84.5		
Not sure	4.6	3.3		
Attend a public meeting about deer impacts	(n=2863)	(n=615)	2	45.73***
Unlikely	63.9	47.8		
Likely	29.9	46.8		
Not sure	6.2	5.4		

*p < 0.05; **p < 0.01; ***p < 0.001

Table D4. Comparison of respondents who drive in areas with many deer to those who do not on likelihood of providing input to DEC through various means over the next 3 years.

	Do not drive In areas with Lots of deer %	Drive in areas with Lots of deer %	df	χ^2
Talk with DEC staff about deer impacts	(n=940)	(n=2524)	2	33.56***
Unlikely	76.0	67.1		
Likely	16.6	26.0		
Not sure	7.4	6.9		
Provide written comments to DEC about deer management plans or proposals	(n=940)	(n=2524)	2	20.00***
Unlikely	75.7	69.5		
Likely	18.1	25.3		
Not sure	6.2	5.3		
Participate in a DEC survey about deer management	(n=952)	(n=2564)	2	159.87***
Unlikely	38.9	18.6		
Likely	56.4	77.1		
Not sure	4.7	4.2		
Attend a public meeting about deer impacts	(n=942)	(n=2536)	2	27.44***
Unlikely	67.9	58.5		
Likely	26.2	35.3		
Not sure	5.8	6.2		

*p < 0.05; **p < 0.01; ***p < 0.001

Table D5. Comparison of hikers and nonhikers on likelihood of providing input to DEC through various means over the next 3 years.

	Non hikers	Hikers	df	χ^2
	%	%		
Talk with DEC staff about deer impacts	(n=1136)	(n=2358)	2	67.56***
Unlikely	76.8	65.9		
Likely	15.0	27.5		
Not sure	8.2	6.5		
Provide written comments to DEC about deer management plans or proposals	(n=1137)	(n=2327)	2	81.22***
Unlikely	79.5	67.1		
Likely	14.1	27.8		
Not sure	6.4	5.1		
Participate in a DEC survey about deer management	(n=1154)	(n=2362)	2	195.64***
Unlikely	38.1	17.3		
Likely	56.7	78.8		
Not sure	5.2	3.9		
Attend a public meeting about deer impacts	(n=1143)	(n=2335)	2	105.53***
Unlikely	72.4	55.5		
Likely	21.3	38.5		
Not sure	6.4	5.9		

*p < 0.05; **p < 0.01; ***p < 0.001

Table D6. Comparison of deer hunters and nonhunters on likelihood of providing input to DEC through various means over the next 3 years.

	Non Hunters %	Hunters %	df	χ^2
Talk with DEC staff about deer impacts	(n=2366)	(n=1098)	2	138.60***
Unlikely	75.4	56.8		
Likely	17.8	35.5		
Not sure	6.8	7.7		
Provide written comments to DEC about deer management plans or proposals	(n=2366)	(n=1098)	2	122.22***
Unlikely	76.0	60.7		
Likely	17.9	35.0		
Not sure	6.0	4.4		
Participate in a DEC survey about deer management	(n=2396)	(n=1120)	2	112.05***
Unlikely	29.0	13.6		
Likely	66.1	83.2		
Not sure	4.9	3.2		
Attend a public meeting about deer impacts	(n=2375)	(n=1103)	2	157.75***
Unlikely	67.5	47.2		
Likely	26.1	47.2		
Not sure	6.4	5.3		

*p < 0.05; **p < 0.01; ***p < 0.001

Table D7. Comparison of male and female respondents on likelihood of providing input to DEC through various means over the next 3 years.

	Female	Male	df	χ^2
	%	%		
Talk with DEC staff about deer impacts	(n=1064)	(n=2264)	2	22.81***
Unlikely	71.9	68.2		
Likely	19.3	25.8		
Not sure	8.8	6.0		
Provide written comments to DEC about deer management plans or proposals	(n=1060)	(n=2267)	2	21.09***
Unlikely	72.5	70.6		
Likely	20.0	25.0		
Not sure	7.5	4.4		
Participate in a DEC survey about deer management	(n=1080)	(n=2292)	2	11.88***
Unlikely	26.6	22.9		
Likely	68.0	73.3		
Not sure	5.5	3.8		
Attend a public meeting about deer impacts	(n=1075)	(n=2262)	2	38.24***
Unlikely	65.4	58.6		
Likely	26.5	36.4		
Not sure	8.1	5.0		

*p < 0.05; **p < 0.01; ***p < 0.001

Table D8. Comparison of respondents by area of residence on likelihood of providing input to DEC through various means over the next 3 years.

	Rural area Outside village	Village <10,000 people	Small city (10,000 to 50,000)	df	χ^2
	%	%	%		
Talk with DEC staff about deer impacts	(n=1887)	(n=962)	(n=540)	4	16.21**
Unlikely	66.8	71.7	73.9		
Likely	25.3	21.6	21.1		
Not sure	7.9	6.7	5.0		
Provide written comments to DEC about deer management plans or proposals	(n=1885)	(n=963)	(n=541)	4	8.21 ^{NS}
Unlikely	69.2	72.1	75.0		
Likely	25.0	22.3	20.7		
Not sure	5.7	5.6	4.3		
Participate in a DEC survey About deer management	(n=1908)	(n=982)	(n=544)	4	7.42 ^{NS}
Unlikely	22.3	25.1	27.4		
Likely	73.5	70.4	68.6		
Not sure	4.2	4.6	4.0		
Attend a public meeting About deer impacts	(n=1888)	(n=972)	(n=541)	4	7.71 ^{NS}
Unlikely	59.2	61.6	65.6		
Likely	34.5	32.4	28.8		
Not sure	6.3	6.0	5.5		

*p < 0.05; **p < 0.01; ***p < 0.001

Table D9. Likelihood that respondents will provide input to DEC through various means over the next 3 years, among respondents with different preferences for future deer population size.

	Preference for future deer population size				df	χ^2
	Decrease ¹	Stay the same	Increase ²	No Preference		
	%	%	%	%		
Talk with DEC staff about deer impacts	(n=1286)	(n=1172)	(n=777)	(n=220)	6	135.03***
Unlikely	66.6	76.9	57.9	86.8		
Likely	25.9	16.6	34.9	5.9		
Not sure	7.5	6.6	7.2	7.3		
Provide written comments to DEC about deer management plans or proposals	(n=1284)	(n=1176)	(n=776)	(n=219)	6	112.34***
Unlikely	68.9	77.0	61.3	86.3		
Likely	24.5	18.3	34.1	5.9		
Not sure	6.5	4.7	4.5	7.8		
Participate in a DEC survey about deer management	(n=1305)	(n=1189)	(n=791)	(n=221)	6	149.56***
Unlikely	20.5	28.0	16.7	49.8		
Likely	75.6	67.8	79.5	40.7		
Not sure	4.0	4.2	3.8	9.5		
Attend a public meeting about deer impacts	(n=1291)	(n=1181)	(n=778)	(n=219)	6	129.74***
Unlikely	57.6	67.7	50.3	84.5		
Likely	35.6	26.8	44.1	9.6		
Not sure	6.8	5.6	5.7	5.9		

¹Decrease moderately or decrease greatly

²Increase moderately or increase greatly

*p < 0.05; **p < 0.01; ***p < 0.001

APPENDIX E (Predictors of preference for deer population decrease by AWMU)

Table E1. Summary of logistic regression analysis for variables predicting preference for a deer population decrease (yes/no) by respondents in the Catskills AWMU.

	<i>B</i>	<i>SE</i>	Wald	<i>Exp(B)</i>
Interest: deer viewing	-.581***	.124	21.789	.560
Interest: deer hunting	-.043	.163	.071	.958
Concern: deer damage to crops, gardens, or forests (aggregated variable: BrowseConcern)	.753***	.149	25.591	2.124
Concern: tick-borne diseases	.235	.185	1.616	1.265
Concern: deer-vehicle collisions	.368*	.174	4.455	1.445
Gender: response group 1 (male)	.556	.309	3.243	1.744
Activities: Garden (group: do not)	.107	.302	.125	1.113
Activities: Farm (group: do not)	.458	.456	1.008	1.581
Activities: Manage forest land (group: do not)	.028	.357	.006	1.029
Activities: Hunt deer (group: nonhunters)	-.544	.512	1.130	.581
Activities: Drive in areas with lots of deer (group: do not)	.391	.321	1.486	1.479
Constant	-4.309	1.032	17.415	.013
Model χ^2	162.162	P < 0.001		
Cox & Snell R^2	0.303			
Nagelkerke R^2	0.436			
Number of cases (n)	450			
% who preferred deer population decrease	28.0			
% of cases correctly classified by model	81.3			

*p< .05; **p< .01; ***p< .001

Table E2. Summary of logistic regression analysis for variables predicting preference for a deer population decrease (yes/no) by respondents in the Central Appalachian AWMU.

	<i>B</i>	<i>SE</i>	Wald	<i>Exp(B)</i>
Interest: deer viewing	-.481***	.116	17.142	.618
Interest: deer hunting	-.028	.147	.037	.972
Concern: deer damage to crops, gardens, or forests (aggregated variable: BrowseConcern)	.470**	.152	9.531	1.600
Concern: tick-borne diseases	.033	.166	.040	1.034
Concern: deer-vehicle collisions	.472**	.161	8.651	1.604
Gender: response group 1 (male)	-.067	.266	.063	.935
Activities: Garden (group: do not)	.204	.281	.523	1.226
Activities: Farm (group: do not)	-.256	.548	.218	.774
Activities: Manage forest land (group: do not)	-.165	.414	.159	.848
Activities: Hunt deer (group: nonhunters)	-.333	.505	.436	.717
Activities: Drive in areas with lots of deer (group: do not)	1.061**	.309	11.801	2.890
Constant	-3.303	.768	18.480	.037
Model χ^2	123.603	P < 0.001		
Cox & Snell R^2	0.265			
Nagelkerke R^2	0.366			
Number of cases (n)	402			
% who preferred deer population decrease	34.1			
% of cases correctly classified by model	76.6			

*p < .05; **p < .01; ***p < .001

Table E3. Summary of logistic regression analysis for variables predicting preference for a deer population decrease (yes/no) by respondents in the Northwestern Appalachian Hills AWMU.

	<i>B</i>	<i>SE</i>	Wald	<i>Exp(B)</i>
Interest: deer viewing	-.392***	.121	10.523	.676
Interest: deer hunting	-.154	.140	1.200	.857
Concern: deer damage to crops, gardens, or forests (aggregated variable: BrowseConcern)	.969***	.156	38.416	2.635
Concern: tick-borne diseases	-.271	.141	3.708	.763
Concern: deer-vehicle collisions	.822***	.177	21.500	2.275
Gender: response group 1 (male)	.735*	.295	6.199	2.086
Activities: Garden (group: do not)	-.037	.313	.014	.964
Activities: Farm (group: do not)	.318	.392	.657	1.374
Activities: Manage forest land (group: do not)	.629	.409	2.362	1.876
Activities: Hunt deer (group: nonhunters)	-.852	.487	3.058	.426
Activities: Drive in areas with lots of deer (group: do not)	.877**	.329	7.093	2.403
Constant	-5.231	.860	36.976	.005
Model χ^2	199.588	P < 0.001		
Cox & Snell R^2	0.351			
Nagelkerke R^2	0.495			
Number of cases (n)	461			
% who preferred deer population decrease	31.1			
% of cases correctly classified by model	82.2			

*p < .05; **p < .01; ***p < .001

Table E4. Summary of logistic regression analysis for variables predicting preference for a deer population decrease (yes/no) by respondents in the Southeast Hudson AWMU.

	<i>B</i>	<i>SE</i>	Wald	<i>Exp(B)</i>
Interest: deer viewing	-.572***	.123	21.527	.564
Interest: deer hunting	.008	.141	.003	1.008
Concern: deer damage to crops, gardens, or forests (aggregated variable: BrowseConcern)	.742***	.150	24.531	2.100
Concern: tick-borne diseases	.287	.199	2.081	1.333
Concern: deer-vehicle collisions	.327	.182	3.230	1.387
Gender: response group 1 (male)	.163	.278	.342	1.177
Activities: Garden (group: do not)	-.534	.319	2.803	.586
Activities: Farm (group: do not)	.075	.538	.019	1.077
Activities: Manage forest land (group: do not)	.357	.491	.528	1.429
Activities: Hunt deer (group: nonhunters)	-.636	.546	1.356	.530
Activities: Drive in areas with lots of deer (group: do not)	.355	.318	1.250	1.426
Constant	-3.424	.914	14.042	.033
Model χ^2	149.277	P < 0.001		
Cox & Snell R^2	0.331			
Nagelkerke R^2	0.442			
Number of cases (n)	372			
% who preferred deer population decrease	45.7			
% of cases correctly classified by model	76.9			

*p < .05; **p < .01; ***p < .001

Table E5. Summary of logistic regression analysis for variables predicting preference for a deer population decrease (yes/no) by respondents in the Southwest Hudson AWMU.

	<i>B</i>	<i>SE</i>	Wald	<i>Exp(B)</i>
Interest: deer viewing	-.630***	.141	20.002	.533
Interest: deer hunting	.361	.192	3.514	1.434
Concern: deer damage to crops, gardens, or forests (aggregated variable: BrowseConcern)	.846***	.180	22.110	2.331
Concern: tick-borne diseases	.246	.208	1.397	1.279
Concern: deer-vehicle collisions	.593**	.216	7.567	1.810
Gender: response group 1 (male)	-.043	.313	.019	.958
Activities: Garden (group: do not)	.041	.342	.014	1.042
Activities: Farm (group: do not)	-2.093**	.759	7.599	.123
Activities: Manage forest land (group: do not)	1.065	.580	3.378	2.901
Activities: Hunt deer (group: nonhunters)	-1.604*	.720	4.960	.201
Activities: Drive in areas with lots of deer (group: do not)	.900*	.350	6.604	2.460
Constant	-5.512	1.123	24.073	.004
Model χ^2	197.625	P < 0.001		
Cox & Snell R^2	0.429			
Nagelkerke R^2	0.572			
Number of cases (n)	353			
% who preferred deer population decrease	50.1			
% of cases correctly classified by model	81.9			

*p < .05; **p < .01; ***p < .001

Table E6. Summary of logistic regression analysis for variables predicting preference for a deer population decrease (yes/no) by respondents in the Western Appalachian Hills AWMU.

	<i>B</i>	<i>SE</i>	Wald	<i>Exp(B)</i>
Interest: deer viewing	-.564***	.117	23.053	.569
Interest: deer hunting	.120	.133	.816	1.128
Concern: deer damage to crops, gardens, or forests (aggregated variable: BrowseConcern)	.793***	.149	28.117	2.209
Concern: tick-borne diseases	-.099	.140	.508	.905
Concern: deer-vehicle collisions	.648***	.179	13.148	1.911
Gender: response group 1 (male)	.531	.288	3.406	1.701
Activities: Garden (group: do not)	.355	.272	1.699	1.426
Activities: Farm (group: do not)	-.021	.426	.002	.979
Activities: Manage forest land (group: do not)	-.232	.380	.372	.793
Activities: Hunt deer (group: nonhunters)	-1.584**	.474	11.182	.205
Activities: Drive in areas with lots of deer (group: do not)	.876*	.345	6.464	2.401
Constant	-4.517	.797	32.100	.011
Model χ^2	235.955	P < 0.001		
Cox & Snell R^2	0.371			
Nagelkerke R^2	0.516			
Number of cases (n)	509			
% who preferred deer population decrease	33.0			
% of cases correctly classified by model	82.1			

*p < .05; **p < .01; ***p < .001

Table E7. Summary of logistic regression analysis for variables predicting preference for a deer population decrease (yes/no) by respondents in the Western Appalachian Plateau AWMU.

	<i>B</i>	<i>SE</i>	Wald	<i>Exp(B)</i>
Interest: deer viewing	-.284*	.122	5.440	.753
Interest: deer hunting	-.160	.155	1.061	.852
Concern: deer damage to crops, gardens, or forests (aggregated variable: BrowseConcern)	.657***	.145	20.427	1.930
Concern: tick-borne diseases	-.087	.154	.321	.916
Concern: deer-vehicle collisions	.603***	.166	13.216	1.828
Gender: response group 1 (male)	-.083	.294	.080	.920
Activities: Garden (group: do not)	.047	.285	.027	1.048
Activities: Farm (group: do not)	.340	.366	.862	1.405
Activities: Manage forest land (group: do not)	.134	.345	.152	1.144
Activities: Hunt deer (group: nonhunters)	.075	.502	.022	1.078
Activities: Drive in areas with lots of deer (group: do not)	.963**	.330	8.494	2.620
Constant	-4.458	.883	25.471	.012
Model χ^2	120.337	P < 0.001		
Cox & Snell R^2	0.220			
Nagelkerke R^2	0.332			
Number of cases (n)	485			
% who preferred deer population decrease	23.3			
% of cases correctly classified by model	80.8			

*p < .05; **p < .01; ***p < .001

Table E8. Summary of logistic regression analysis for variables predicting preference for a deer population decrease (yes/no) by respondents in the Western Finger Lakes AWMU.

	<i>B</i>	<i>SE</i>	Wald	<i>Exp(B)</i>
Interest: deer viewing	-.661***	.118	31.198	.516
Interest: deer hunting	.000	.121	.000	1.000
Concern: deer damage to crops, gardens, or forests (aggregated variable: BrowseConcern)	.847***	.148	32.850	2.332
Concern: tick-borne diseases	.003	.134	.001	1.003
Concern: deer-vehicle collisions	.612***	.158	14.988	1.845
Gender: response group 1 (male)	-.034	.262	.017	.967
Activities: Garden (group: do not)	-.250	.279	.801	.779
Activities: Farm (group: do not)	.160	.368	.188	1.173
Activities: Manage forest land (group: do not)	-.145	.365	.158	.865
Activities: Hunt deer (group: nonhunters)	-.672	.428	2.462	.511
Activities: Drive in areas with lots of deer (group: do not)	.926**	.329	7.908	2.524
Constant	-3.737	.793	22.219	.024
Model χ^2	224.082	P < 0.001		
Cox & Snell R^2	0.351			
Nagelkerke R^2	0.486			
Number of cases (n)	518			
% who preferred deer population decrease	34.0			
% of cases correctly classified by model	78.8			

*p < .05; **p < .01; ***p < .001

APPENDIX F (Predictors of preference for deer population increase by AWMU)

Table F1. Summary of logistic regression analysis for variables predicting preference for a deer population increase (yes/no) by respondents in the Catskills AWMU.

	<i>B</i>	<i>SE</i>	Wald	<i>Exp(B)</i>
Interest: deer viewing	.574***	.153	14.042	1.775
Interest: deer hunting	.416*	.170	5.982	1.515
Concern: deer damage to crops, gardens, or forests (aggregated variable: BrowseConcern)	-.730***	.192	14.502	.482
Concern: tick-borne diseases	.080	.141	.326	1.084
Concern: deer-vehicle collisions	-.286*	.145	3.901	.751
Gender: response group 1 (male)	.083	.401	.043	1.086
Activities: Garden (group: do not)	-.061	.338	.032	.941
Activities: Farm (group: do not)	-.352	.409	.739	.703
Activities: Manage forest land (group: do not)	-.195	.350	.312	.822
Activities: Hunt deer (group: nonhunters)	1.210*	.523	5.360	3.355
Activities: Drive in areas with lots of deer (group: do not)	-.013	.328	.002	.987
Constant	-2.635	.946	7.764	.072
Model χ^2	189.840	P < 0.001		
Cox & Snell R ²	0.344			
Nagelkerke R ²	0.513			
Number of cases (n)	450			
% who preferred deer population increase	24.4			
% of cases correctly classified by model	84.7			

*p < .05; **p < .01; ***p < .001

Table F2. Summary of logistic regression analysis for variables predicting preference for a deer population increase (yes/no) by respondents in the Central Appalachian Plateau AWMU.

	<i>B</i>	<i>SE</i>	Wald	<i>Exp(B)</i>
Interest: deer viewing	.742***	.175	18.051	2.101
Interest: deer hunting	.463*	.188	6.066	1.589
Concern: deer damage to crops, gardens, or forests (aggregated variable: BrowseConcern)	-.372	.222	2.796	.690
Concern: tick-borne diseases	-.242	.180	1.809	.785
Concern: deer-vehicle collisions	-.139	.197	.494	.871
Gender: response group 1 (male)	.849*	.404	4.415	2.338
Activities: Garden (group: do not)	.359	.367	.953	1.432
Activities: Farm (group: do not)	.014	.519	.001	1.014
Activities: Manage forest land (group: do not)	-1.037*	.495	4.382	.355
Activities: Hunt deer (group: nonhunters)	.742	.586	1.600	2.100
Activities: Drive in areas with lots of deer (group: do not)	.134	.374	.128	1.143
Constant	-3.989	.970	16.917	.019
Model χ^2	150.128	P < 0.001		
Cox & Snell R^2	0.312			
Nagelkerke R^2	0.496			
Number of cases (n)	402			
% who preferred deer population increase	19.7			
% of cases correctly classified by model	87.1			

*p < .05; **p < .01; ***p < .001

Table F3. Summary of logistic regression analysis for variables predicting preference for a deer population increase (yes/no) by respondents in the Northwest Appalachian Hills AWMU.

	<i>B</i>	<i>SE</i>	Wald	<i>Exp(B)</i>
Interest: deer viewing	.518***	.135	14.720	1.678
Interest: deer hunting	.318	.164	3.752	1.375
Concern: deer damage to crops, gardens, or forests (aggregated variable: BrowseConcern)	-.729***	.187	15.264	.482
Concern: tick-borne diseases	.091	.135	.452	1.095
Concern: deer-vehicle collisions	-.136	.141	.936	.873
Gender: response group 1 (male)	-.313	.366	.733	.731
Activities: Garden (group: do not)	-.350	.318	1.208	.705
Activities: Farm (group: do not)	.666	.366	3.303	1.946
Activities: Manage forest land (group: do not)	-.501	.377	1.765	.606
Activities: Hunt deer (group: nonhunters)	.716	.536	1.784	2.046
Activities: Drive in areas with lots of deer (group: do not)	-.166	.328	.255	.847
Constant	-2.245	.763	8.655	.106
Model χ^2	115.690	P < 0.001		
Cox & Snell R^2	0.222			
Nagelkerke R^2	0.359			
Number of cases (n)	461			
% who preferred deer population increase	18.7			
% of cases correctly classified by model	83.3			

*p < .05; **p < .01; ***p < .001

Table F4. Summary of logistic regression analysis for variables predicting preference for a deer population increase (yes/no) by respondents in the Southeast Hudson AWMU.

	<i>B</i>	<i>SE</i>	Wald	<i>Exp(B)</i>
Interest: deer viewing	.237	.162	2.139	1.267
Interest: deer hunting	.459*	.181	6.454	1.582
Concern: deer damage to crops, gardens, or forests (aggregated variable: BrowseConcern)	-.729**	.223	10.704	.482
Concern: tick-borne diseases	-.095	.223	.180	.910
Concern: deer-vehicle collisions	-.062	.212	.086	.940
Gender: response group 1 (male)	-.382	.448	.727	.682
Activities: Garden (group: do not)	.006	.425	.000	1.006
Activities: Farm (group: do not)	.458	.635	.520	1.581
Activities: Manage forest land (group: do not)	-.074	.597	.016	.928
Activities: Hunt deer (group: nonhunters)	.760	.655	1.348	2.139
Activities: Drive in areas with lots of deer (group: do not)	-.273	.420	.422	.761
Constant	-1.115	.937	1.417	.328
Model χ^2	59.819	P < 0.001		
Cox & Snell R^2	0.149			
Nagelkerke R^2	0.294			
Number of cases (n)	372			
% who preferred deer population increase	11.3			
% of cases correctly classified by model	89.2			

*p < .05; **p < .01; ***p < .001

Table F5. Summary of logistic regression analysis for variables predicting preference for a deer population increase (yes/no) by respondents in the Southwest Hudson AWMU.

	<i>B</i>	<i>SE</i>	Wald	<i>Exp(B)</i>
Interest: deer viewing	.483*	.192	6.359	1.621
Interest: deer hunting	-.133	.239	.309	.875
Concern: deer damage to crops, gardens, or forests (aggregated variable: BrowseConcern)	-.442	.242	3.348	.643
Concern: tick-borne diseases	-.123	.209	.347	.884
Concern: deer-vehicle collisions	-.068	.204	.111	.934
Gender: response group 1 (male)	.202	.469	.185	1.223
Activities: Garden (group: do not)	.196	.453	.188	1.217
Activities: Farm (group: do not)	-.219	.894	.060	.804
Activities: Manage forest land (group: do not)	.110	.699	.025	1.117
Activities: Hunt deer (group: nonhunters)	1.657*	.811	4.177	5.244
Activities: Drive in areas with lots of deer (group: do not)	.039	.437	.008	1.040
Constant	-2.202	1.152	3.651	.111
Model χ^2	44.474	P < 0.001		
Cox & Snell R^2	0.118			
Nagelkerke R^2	0.242			
Number of cases (n)	353			
% who preferred deer population increase	10.5			
% of cases correctly classified by model	89.2			

*p < .05; **p < .01; ***p < .001

Table F6. Summary of logistic regression analysis for variables predicting preference for a deer population increase (yes/no) by respondents in the Western Appalachian Hills AWMU.

	<i>B</i>	<i>SE</i>	Wald	<i>Exp(B)</i>
Interest: deer viewing	.500***	.139	12.875	1.649
Interest: deer hunting	.346*	.147	5.562	1.413
Concern: deer damage to crops, gardens, or forests (aggregated variable: BrowseConcern)	-.054	.167	.105	.947
Concern: tick-borne diseases	-.067	.137	.240	.935
Concern: deer-vehicle collisions	-.376*	.147	6.530	.687
Gender: response group 1 (male)	.972*	.427	5.181	2.643
Activities: Garden (group: do not)	.332	.303	1.205	1.394
Activities: Farm (group: do not)	.544	.361	2.276	1.723
Activities: Manage forest land (group: do not)	-.235	.339	.479	.791
Activities: Hunt deer (group: nonhunters)	1.041*	.471	4.887	2.833
Activities: Drive in areas with lots of deer (group: do not)	-1.062**	.326	10.635	.346
Constant	-3.269	.823	15.783	.038
Model χ^2	193.676	P < 0.001		
Cox & Snell R^2	0.316			
Nagelkerke R^2	0.482			
Number of cases (n)	509			
% who preferred deer population increase	22.6			
% of cases correctly classified by model	85.3			

*p < .05; **p < .01; ***p < .001

Table F7. Summary of logistic regression analysis for variables predicting preference for a deer population increase (yes/no) by respondents in the Western Appalachian Plateau AWMU.

	<i>B</i>	<i>SE</i>	Wald	<i>Exp(B)</i>
Interest: deer viewing	.263*	.124	4.526	1.301
Interest: deer hunting	.466**	.151	9.489	1.593
Concern: deer damage to crops, gardens, or forests (aggregated variable: BrowseConcern)	-.273	.144	3.603	.761
Concern: tick-borne diseases	.027	.117	.054	1.027
Concern: deer-vehicle collisions	-.336**	.124	7.393	.715
Gender: response group 1 (male)	.137	.321	.181	1.146
Activities: Garden (group: do not)	.150	.257	.341	1.162
Activities: Farm (group: do not)	-.244	.309	.620	.784
Activities: Manage forest land (group: do not)	-.031	.288	.011	.970
Activities: Hunt deer (group: nonhunters)	.566	.474	1.423	1.761
Activities: Drive in areas with lots of deer (group: do not)	-.639*	.267	5.744	.528
Constant	-1.602	.679	5.568	.201
Model χ^2	139.606	P < 0.001		
Cox & Snell R^2	0.250			
Nagelkerke R^2	0.354			
Number of cases (n)	485			
% who preferred deer population increase	30.3			
% of cases correctly classified by model	78.6			

*p < .05; **p < .01; ***p < .001

Table F8. Summary of logistic regression analysis for variables predicting preference for a deer population increase (yes/no) by respondents in the Western Finger Lakes AWMU.

	<i>B</i>	<i>SE</i>	Wald	<i>Exp(B)</i>
Interest: deer viewing	.287*	.124	5.328	1.332
Interest: deer hunting	.333*	.132	6.341	1.395
Concern: deer damage to crops, gardens, or forests (aggregated variable: BrowseConcern)	-.717***	.164	19.092	.488
Concern: tick-borne diseases	.229	.123	3.425	1.257
Concern: deer-vehicle collisions	-.353**	.127	7.797	.702
Gender: response group 1 (male)	.421	.313	1.813	1.524
Activities: Garden (group: do not)	-.215	.269	.637	.807
Activities: Farm (group: do not)	-.142	.361	.155	.868
Activities: Manage forest land (group: do not)	-.203	.320	.404	.816
Activities: Hunt deer (group: nonhunters)	.648	.432	2.253	1.913
Activities: Drive in areas with lots of deer (group: do not)	-.364	.296	1.512	.695
Constant	-1.222	.716	2.911	.295
Model χ^2	153.334	P < 0.001		
Cox & Snell R ²	0.256			
Nagelkerke R ²	0.386			
Number of cases (n)	518			
% who preferred deer population increase	23.6			
% of cases correctly classified by model	81.1			

*p < .05; **p < .01; ***p < .001