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Local Residents' Deer Population Preferences

Results from a 2020 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 aggregated wildlife management units (AWMUs) for deer management. Between 2018 and 2020 DEC sponsored mail surveys to obtain stakeholder input in every AWMU. The main purpose of these surveys was to identify residents' preference for future deer population in the AWMU in which they reside and improve understanding of the factors that influence residents' deer population preferences. Information from the surveys is considered in DEC decisions about future deer population objectives in the AWMUs where those data were collected.

In this report we present findings from the deer management surveys DEC sponsored in 8 AWMUs in 2020.

METHODS

We developed a self-administered questionnaire to address our research objectives. 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.

DEC identified 8 aggregates to be surveyed in 2020 (i.e., Delaware-Otsego, Delaware-Sullivan, Eastern Appalachian Plateau, Northeast Appalachian Hills, Northeast Hudson, Northwest Hudson, St. Lawrence Valley, and Adirondack AWMUs). We sampled 1,250 residential property owners with mailing addresses in each aggregate (i.e., total sample of 10,000). We implemented survey mailings between January and March, 2020. We contracted the Survey Research Institute at Cornell University (SRI) to complete follow-up telephone interviews with a sample of 200 nonrespondents. SRI completed nonrespondent interviews in March and April, 2020.

We used chi square tests to identify differences and associations between categorical variables and deer population preference. We used binary logistic regression to develop models predicting a preference for a deer population decrease or increase in each AWMU.

RESULTS HIGHLIGHTS

Response rates varied by aggregate, ranging from a low of 37% in the Northwest Hudson aggregate to a high of 47% in the Delaware-Otsego aggregate.

Mean age of respondents was 63 years old. The majority of respondents (from 61% to 75% depending on the AWMU) were male. In 6 of 8 AWMUs more than a third of all respondents participated in deer hunting, even though less than 10% of adult New York State residents are estimated to hunt. Across AWMUs the rate of participation in deer hunting varied from 14% (Northwest Hudson) to 44% (Eastern Appalachian Plateau). In all AWMUs, a majority of respondents lived in a rural area outside a village/hamlet or in a village or hamlet with <10,000 people. These characteristics suggest that residential property owners are older, more likely to be male, more likely to hunt deer, and more likely to be rural than the state population as a whole.

Deer Population Preferences. In all aggregates a third or more of respondents desired no change in the local deer population. In 5 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 most (6 of 8) AWMUs a third or more of respondents reported that it was very or extremely important to them that the deer population level they preferred be attained within the next 5 years.

Predictors of Preference for Future Deer Population. Predictors of deer population preference for the 2020 surveys were very similar to those we observed in survey data collected in different AWMUs in 2018 and 2019.

Depending on the AWMU, logistic regression models were able to explain somewhere between 24% and 64% of the variance in preference for a deer population decrease. Seven factors were significant predictors of preference for a deer population decrease in 1 or more AWMUs. In every AWMU, interest in deer and concern about browse damage (to crops, gardens or forests was predictive. Driving in areas with lots of deer was predictive in 5 AWMUs. Concern about deer-related vehicle collisions was predictive in 4 AWMUs.

Depending on the AWMU, logistic regression models were able to explain between 25% and 49% of the variance in preference for a deer population increase. Six factors were significant predictors of preference for a deer population increase in 1 or more AWMUs. In every AWMU, interest in deer was predictive. Concern about browse damage was a predictive variable in 7 of 8 AWMUs. In 6 of 8 AWMUs interest in deer hunting or participation in deer hunting were predictive of preference for a deer population increase.

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

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. Between 2018 and 2020 DEC sponsored mail surveys to obtain stakeholder input in every aggregated wildlife management unit (AWMU). Information from the surveys is considered in DEC decisions about future deer population objectives in the AWMUs where those data were collected. In this report we present findings from the deer management surveys DEC sponsored in 8 AWMUs in 2020.

Study Objectives

- Identify residents' deer population preference at the AWMU level.
- Improve understanding of the factors that influence deer population preference.
- 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 2020 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.

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 8 aggregates to be surveyed in 2020. We sampled 1,250 property owners with mailing addresses in each aggregate (i.e., total sample of 10,000) (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 January 29, 2020 and March 3, 2020. 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 200 interviews with nonrespondents between March 30, 2020 and April 24, 2020. 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.

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.

Table 1. Wildlife management unit Aggregates sampled in 2020, New York State deer management survey.

Aggregate name	Wildlife Management Units (WMUs) and counties in aggregate
Delaware-Otsego	WMU 4F, 4O (Chenango, Delaware, Herkimer, Madison, Oneida, Otsego, Schoharie, Broome)
Delaware-Sullivan	WMU 3H, 3K, 4P, 4W (Sullivan, Ulster, Orange, Delaware, Schoharie)
Eastern Appalachian Plateau	WMU 7M, 7P (Broome, Chenango, Cortland, Madison, Oneida, Onondaga)
Northeast Appalachian Hills	WMU 7J (Cayuga, Cortland, Madison, Oneida, Onondaga, Tompkins)
Northeast Hudson	WMU 4C, 4K, 4L, 4U, 5S, 5T (Rensselaer, Washington, Columbia, Saratoga)
Northwest Hudson	WMU 4B, 4J, 4S, 4T, 4Y, 5R (Albany, Greene, Schenectady, Columbia, Rensselaer, Dutchess, Saratoga)
St. Lawrence Valley	WMU 6A, 6C, 6H (Franklin, Jefferson, Lewis, St. Lawrence)
Adirondack	WMU 5A, 5C, 5F, 5G, 5H, 5J, 6F, 6J, 6N (Clinton, Essex, Franklin, Hamilton, St. Lawrence, Saratoga, Warren, Washington, Fulton, Herkimer, Oneida, Lewis, Jefferson, Oswego)

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 (i.e., 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)

[1]Concerns 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 3,658 questionnaires from a pool of 8,857 deliverable questionnaires, yielding an overall response rate of 41% (Table 3). Response rates varied by aggregate, ranging from a low of 37% in the Northwest Hudson aggregate to a high of 47% in the Delaware-Otsego aggregate.

Table 3. Summary of survey response by aggregated wildlife management unit, 2020 deer management survey.

	Aggregated wildlife management units (AWMUs)[1]								Total
	DELOT	DELSUL	EAP	NEAH	NEH	NWH	STLV	ADK	
Sample size	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	10,000
Unusable returns	5	4	4	2	2	3	2	4	26
Un-deliverable	160	155	157	119	133	130	146	143	1,143
Returns (usable)	509	442	484	511	437	412	455	408	3,658
Response rate	46.7	40.4	44.3	45.2	39.1	36.8	41.2	36.9	41.4

[1] Delaware-Otsego (DELOT), Delaware-Sullivan (DELSUL), Eastern Appalachian Plateau (EAP), Northeast Appalachian Hills (NEAH), Northeast Hudson (NEH), Northwest Hudson (NWH), St. Lawrence Valley (STLV), Adirondack (ADK).

Nonresponse Bias Analysis

Respondents differed from nonrespondents on most variables (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 (70% vs. 47%);
- The proportion of deer hunters was higher in the respondent group (35% vs. 14%);
- Nonrespondents were more likely than respondents to have no deer population preference (21% vs. 7%).
- Respondents were more likely than nonrespondents to:
    - say the issue of deer management was very or extremely important to them (47% vs. 30%);
    - be very/extremely interested in deer viewing (47% vs. 27%);
    - be very/extremely interested in deer hunting (33% vs. 19%);
    - have some concern about deer damage to gardens (71% vs. 60%) or forests/native plants (66% vs. 50%);
    - want the deer population to decrease (31% vs. 16%).

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., no statistically significant differences in deer population preferences in each AWMU when unweighted and weighted data were compared). 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 AWMUs at the end of the report (Appendix C). Mean age of respondents was 63 years old. In all aggregates the majority of respondents were male (from 61% in Northwest Hudson to 75% in the Eastern 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 26% in Northwest Hudson to 70% in the Eastern Appalachian Plateau 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 61% – 68% per AWMU). From 42% – 54% 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 (25% – 34% of respondents by AWMU) or meetings open to select groups and invited individuals (19% – 28% of respondents by AWMU). Very few respondents in any AWMU suggested that DEC use no public input at all (suggested by 2% – 6% per AWMU) (Table C14).

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 (64% – 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 C15). Only minorities of respondents said they were likely to attend a public meeting on deer management (26% – 36% of respondents by AWMU), provide written comments on a deer management topic (19% – 26% of respondents by AWMU), or talk with DEC staff about deer impacts (18% – 31% of respondents by AWMU) (Tables C16-C18).

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, farmers were more likely than nonfarmers to say they may talk with DEC staff about deer impacts within the next 3 years. Intentions to participate in deer management surveys were 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 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 5 of 8 aggregates, the proportion of respondents who desired a deer population decrease was larger than the proportion who desired a deer population increase (Tables 4-5). In most (6 of 8) AWMUs a third or more of respondents 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).

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., Delaware-Otsego, Delaware-Sullivan, St. Lawrence Valley), 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 Delaware-Sullivan AWMU, for example, 67% of respondents who had no interest in viewing deer wanted a deer population reduction, while 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 4. How respondents preferred the deer population in their local area to change in the next 5 years (collapsed response categories), by AWMU.

	Strata[1]							
	DELOT (n=472)	DELSUL (n=405)	EAP (n=443)	NEAH (n=467)	NEH (n=395)	NWH (n=372)	STLV (n=417)	ADK (n=375)
	%	%	%	%	%	%	%	%
Decrease moderately or greatly	37.3	33.3	24.8	44.8	33.2	32.5	23.5	17.3
Stay about the same	35.6	34.8	39.3	33.6	37.2	38.4	32.1	41.1
Increase moderately or greatly	21.8	24.9	29.6	16.5	22.8	14.8	36.2	34.1
No preference	5.3	6.9	6.3	5.1	6.8	14.2	8.2	7.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Delaware-Otsego (DELOT), Delaware-Sullivan (DELSUL), Eastern Appalachian Plateau (EAP), Northeast Appalachian Hills (NEAH), Northeast Hudson (NEH), Northwest Hudson (NWH), St. Lawrence Valley (STLV), Adirondack (ADK).

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

	Strata[1]							
	DELOT (n=472)	DELSUL (n=405)	EAP (n=443)	NEAH (n=467)	NEH (n=395)	NWH (n=372)	STLV (n=417)	ADK (n=375)
	%	%	%	%	%	%	%	%
Decrease greatly	8.7	7.9	4.5	12.0	7.8	8.6	5.0	2.4
Decrease moderately	28.6	25.4	20.3	32.8	25.3	23.9	18.5	14.9
Stay about the same	35.6	34.8	39.3	33.6	37.2	38.4	32.1	41.1
Increase moderately	17.6	18.0	23.5	12.8	20.0	11.8	30.5	25.9
Increase greatly	4.2	6.9	6.1	3.6	2.8	3.0	5.8	8.3
No preference	5.3	6.9	6.3	5.1	6.8	14.2	8.2	7.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Delaware-Otsego (DELOT), Delaware-Sullivan (DELSUL), Eastern Appalachian Plateau (EAP), Northeast Appalachian Hills (NEAH), Northeast Hudson (NEH), Northwest Hudson (NWH), St. Lawrence Valley (STLV), Adirondack (ADK).

Table 6. Importance that the deer population in respondents' area change as desired in the next 5 years, by AWMU.

	Strata[1]							
	DELOT (n=472)	DELSUL (n=405)	EAP (n=443)	NEAH (n=467)	NEH (n=395)	NWH (n=372)	STLV (n=417)	ADK (n=375)
	%	%	%	%	%	%	%	%
Not at all important	7.6	9.9	9.5	9.7	11.2	15.1	12.7	11.8
Slightly important	20.4	14.9	20.1	17.2	22.7	24.8	17.7	24.3
Moderately important	38.0	34.0	38.2	37.4	31.9	38.0	35.5	34.5
Very important	24.4	28.8	24.2	26.2	22.7	17.3	26.1	19.5
Extremely important	9.6	12.4	7.9	9.5	11.5	4.9	7.9	9.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Delaware-Otsego (DELOT), Delaware-Sullivan (DELSUL), Eastern Appalachian Plateau (EAP), Northeast Appalachian Hills (NEAH), Northeast Hudson (NEH), Northwest Hudson (NWH), St. Lawrence Valley (STLV), Adirondack (ADK).

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

Preference for future deer population in local area	Level of personal interest in viewing deer[1]			
	Not interested (n=33)	Slightly/ moderately interested (n=142)	Very/ extremely interested (n=196)	Total (n=371)
	%	%	%	%
Decrease mod./greatly	66.7	44.4	18.4	32.6
Stay about the same	9.1	33.1	39.8	34.5
Increase mod./greatly	3.0	11.3	39.8	25.6
No preference	21.2	11.3	2.0	7.3
Total	100.0	100.0	100.0	100.0

[1]Chi square =90.47, df=6, p <0.001

Participation in Deer Hunting

In 6 of 8 AWMUs more than a third of all respondents participated in deer hunting, even though less than 10% of adult New York State residents are estimated to hunt. The percentage of respondents who were deer hunters varied by aggregate: Delaware-Otsego (38%), Delaware-Sullivan (39%), Eastern Appalachian Plateau (44%), Northeast Appalachian Hills (29%), Northeast Hudson (28%), Northwest Hudson (14%), St. Lawrence Valley (46%), Adirondack (39%). 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 Eastern Appalachian Plateau AWMU, 52% of hunters but only 11% of nonhunters preferred an increase in the local deer population; only 12% of hunters but 35% of nonhunters preferred a decrease in the local deer population.

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 (85% vs. 34%).

Nonhunters were much more likely than hunters to believe it is not at all important to consider deer hunting when managing local deer (28% of nonhunters vs. 1% of hunters)

Deer-Related Concerns

Respondents expressed the highest levels of concern about tick-borne diseases and deer-vehicle accidents. The proportion of respondents who described themselves as very or extremely concerned about tick-borne diseases ranged from 66% in the Adirondack to 76% in the Northeast 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 (74% -82%) and deer-vehicle accidents (58%-69%). 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. Deer-related vehicle collisions and condition of deer were the next most frequently selected issues. Smaller proportions of respondents expressed high concern about deer damage to gardens or farmers' crops. 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 12% in the St. Lawrence Valley to 24% in the Northeast Appalachian Hills. In every AWMU 5% or less 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 Northeast Appalachian Hills AWMU.

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

Preference for future deer population in local area	Level of concern about deer damage to gardens[1]			
	Not concerned (n=116)	Slightly/ moderately concerned (n=190)	Very/ extremely concerned (n=133)	Total (n=439)
	%	%	%	%
Decrease mod./greatly	11.2	38.9	82.7	44.9
Stay about the same	42.2	41.6	14.3	33.5
Increase mod./greatly	35.3	14.7	3.0	16.6
No preference	11.2	4.7	0.0	5.0
Total	100.0	100.0	100.0	100.0

[1]Chi square=149.49 , 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 Eastern Appalachian Plateau AWMU.

Preference for future deer population[1]	Personal importance placed on deer management			
	Not (n=24)	Slightly moderately (n=201)	Very extremely (n=190)	Total (n=415)
	%	%	%	%
Decrease moderately/greatly	12.5	25.4	27.4	25.5
Stay about the same	41.7	48.8	27.4	38.6
Increase moderately/greatly	12.5	19.4	43.2	29.9
No preference	33.3	6.5	2.1	6.0
Total	100.0	100.0	100.0	100.0

[1]Chi square=69.14, 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 Northeastern Hudson AWMU.

	Importance that deer pop. change as preferred[1]			
	Not (n=44)	Slightly/ moderately (n=214)	Very/ Extremely (n=134)	Total (n=392)
	%	%	%	%
Decrease moderately/ greatly	4.5	31.8	45.5	33.4
Stay about the same	52.3	40.2	27.6	37.2
Increase moderately/ greatly	2.3	24.8	26.9	23.0
No preference	40.9	3.3	0.0	6.4
Total	100.0	100.0	100.0	100.0

[1]Chi square=126.98, 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 27% 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 Delaware-Otsego (37%), Northeast Appalachian Hills (39%), and Northeast Hudson (36%) AWMUs (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 Delaware-Otsego aggregate about 37% of respondents believed that their local deer population had increased in the previous 5 years, and 38% of respondents in that area preferred that the deer population in their area decrease in the future. In that AWMU, 74% 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 Northeast Hudson 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 St. Lawrence Valley AWMU, 92% of those who thought the benefits of deer outweighed the costs preferred that the local deer population stay the same or increase. Conversely, 82% of those who thought the costs of deer outweighed the benefits preferred a deer population reduction (Table 12).

Table 11. Preference for future deer population by attitude toward local deer, for the Northwest Hudson AWMU.

Preference for future deer population in local area	Attitude toward local deer[1]				
	Enjoy deer, do not worry about problems (n=112)	Enjoy deer, but worry about problems (n=201)	Do not enjoy deer, regard them as a nuisance (n=25)	No particular feelings toward deer (n=30)	Total (n=368)
	%	%	%	%	%
Decrease mod./greatly	6.3	41.8	88.0	20.0	32.3
Stay about the same	42.0	44.3	4.0	20.0	38.9
Increase mod./greatly	36.6	6.5	4.0	0.0	14.9
No preference	15.2	7.5	4.0	60.0	13.9
Total	100.0	100.0	100.0	100.0	100.0

[1]Chi 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 St. Lawrence Valley AWMU.

Preference for future deer population in local area	Cost-benefit perception			
	Benefits of deer outweigh problems (n=139)	Benefits and problems are about an even tradeoff (n=202)	Problems deer cause outweigh benefits of deer (n=65)	Total (n=406)
	%	%	%	%
Decrease moderately/ greatly	4.3	16.8	81.5	22.9
Stay about the same	28.1	42.6	9.2	32.3
Increase moderately/ greatly	64.0	28.2	4.6	36.7
No preference	3.6	12.4	4.6	8.1
Total	100.0	100.0	100.0	100.0

[1]Chi square =, df=6, $p < 0.001$

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 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 higher) (Table 13), so those variables were combined into 1 variable labeled "Browse Concern". 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 2020 regression analyses. We excluded data from respondents who failed to provide valid responses on all predictor variables. That resulted in a loss of 18% to 24% 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).

Preference for a deer population decrease

Depending on the AWMU, the models were able to correctly classify 78% – 86% of cases. Cox & Snell R^2 values and Nagelkerke R^2 values suggest that the models were able to explain somewhere between 24% and 64% 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 7 of 8 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.

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	.414**	—					
Concern: Garden damage	-.240**	-.118**	—				
Concern: Crop damage	-.153**	-.007	.639**	—			
Concern: Forest, native plant damage	-.153**	-.039*	.581**	.662**	—		
Concern: Tick-borne diseases	-.098**	-.039*	.385**	.419**	.400**	—	
Concern: Deer-vehicle collisions	-.192**	-.139**	.454**	.463**	.405**	.561**	—

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

*Correlation is significant at the 0.05 level (2-tailed)

Concern about deer-vehicle collisions was a significant predictor variable in 4 AWMUs and was positively correlated with preference for a deer population decrease. The odds ratio [*Exp(B)*] results indicated that in the Eastern Appalachian Plateau AWMU 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 Northeast 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 5 AWMUs respondents who "drive in areas with lots of deer" were more likely than other respondents to prefer a deer population decrease. Participation in deer hunting was a significant predictor variable in 3 AWMUs. The odds ratio [*Exp(B)*] results indicated that in some AWMUs respondents who hunted deer were three times, six times, or eight times less likely than nonhunters to prefer a deer population decrease.

Preference for a deer population increase

Depending on the AWMU, the models were able to correctly classify 78% – 89% of cases and explain between 25% and 49% of the variance in preference for a deer population increase (Appendix F). In any given AWMU, 2 – 5 variables were significant predictors (Table 15).

Deer-related interests. In all 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 4 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 6 AWMUs. The odds ratio [*Exp(B)*] results indicated that as level of concern about browsing decreased, the odds of preferring a higher deer population increased.

Activity involvement. In 3 AWMUs the odds of preferring a deer population increase were higher for respondents who hunted deer. The odds ratio [*Exp(B)*] results indicated that in some AWMUs respondents who hunted deer were three times, five times, or six times more likely than nonhunters to prefer a deer population increase.

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

	Strata[1]							
	DELOT (n=407) *B*	DELSUL (n=336) *B*	EAP (n=394) *B*	NEAH (n=402) *B*	NEH (n=346) *B*	NWH (n=323) *B*	STLV (n=368) *B*	ADK (n=334) *B*
Interest in deer viewing	-.472***	-.534***	-.792***	-.924***	-.569***	-.509***	-.557***	-.537**
Interest in deer hunting	-.149	.086	-.230	-.222	.101	-.124	.441*	-.269
Concern about browsing damage (to crops, gardens, or forests)	.952***	.861***	.488**	.737***	.885***	.936***	.725***	.980***
Concern: DRVAs	.395**	.564**	.679**	.538**	.315	.131	.444	.078
Gender (male)	.409	.301	-.314	.739*	-.219	.220	.151	.518
Activities: Hunt deer	-.691	-.782	-.313	-1.299*	-1.832**	.332	-2.179***	-.385
Activities: Drive in areas with lots of deer	.673*	.345	1.574***	1.220**	1.113**	.564	1.132**	.171

[1] Delaware-Otsego (DELOT), Delaware-Sullivan (DELSUL), Eastern Appalachian Plateau (EAP), Northeast Appalachian Hills (NEAH), Northeast Hudson (NEH), Northwest Hudson (NWH), St. Lawrence Valley (STLV), Adirondack (ADK).

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

DISCUSSION

We used data from the 2020 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; tick-borne diseases), 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 and 2019 (Siemer et al. 2018; Siemer et al. 2019).

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 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 only a significant predictor in 2 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 in most AWMUs.

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,

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

	Strata[1]							
	DELOT (n=407) *B*	DELSUL (n=336) *B*	EAP (n=394) *B*	NEAH (n=402) *B*	NEH (n=346) *B*	NWH (n=323) *B*	STLV (n=368) *B*	ADK (n=334) *B*
Interest in deer viewing	.456**	.606***	.597***	.627***	.657***	.781***	.396**	.495**
Interest in deer hunting	.491***	.375*	.457**	.130	.202	.352	.067	.500**
Concern about browsing damage (to crops, gardens, or forests)	-.735***	-.637***	-.449*	-.514*	-.097	-.829**	-.628***	-.301
Concern: Tick-borne disease	.250	.302	-.266	-.218	-.324*	.283	.338**	-.037
Concern: DRVAs	-.092	-.271	-.117	-.238	-.340	-.444	-.277*	-.193
Activities: Hunt deer	.797	.141	.576	1.918*	1.298*	1.214	1.660**	.885

[1] Delaware-Otsego (DELOT), Delaware-Sullivan (DELSUL), Eastern Appalachian Plateau (EAP), Northeast Appalachian Hills (NEAH), Northeast Hudson (NEH), Northwest Hudson (NWH), St. Lawrence Valley (STLV), Adirondack (ADK).

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

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 14% to 46% 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 proceeded this survey (Pomeranz et al. 2017) and in the 2018 and 2019 implementations of this study (Siemer et al. 2018, 2019). 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.

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APPENDIX A: EXAMPLE SURVEY INSTRUMENT

Deer in the Adirondacks:
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 Adirondacks, 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 Adirondack 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.

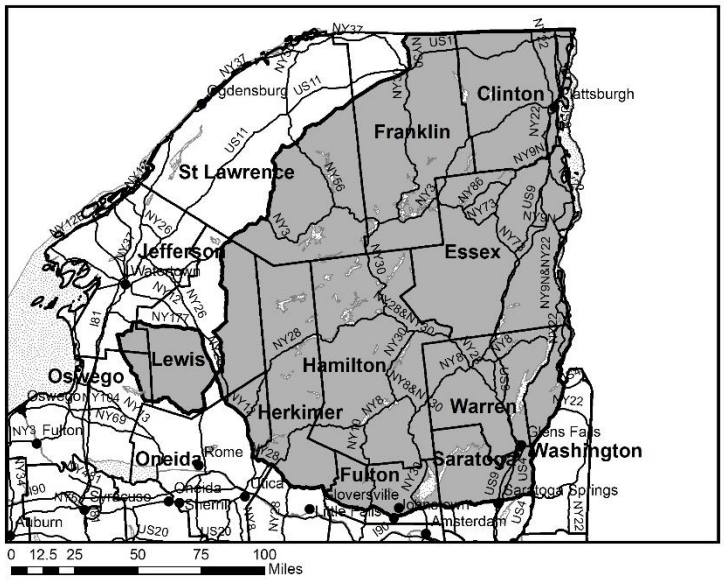
Please complete this questionnaire as soon as you can, seal it with the white re-sealable label provided, and drop it in any mailbox; ***return postage has been pre-paid***. Your identity will be kept confidential and the information you give us will never be associated with your name.

THANK YOU FOR YOUR HELP!

THE ADIRONDACK
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 Adirondack Aggregated Wildlife Management Unit). It encompasses parts of Clinton, Essex, Franklin, Hamilton, St. Lawrence, Saratoga, Warren, Washington, Fulton, Herkimer, Oneida, Lewis, Jefferson, and Oswego counties.



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

YOUR VIEWS ABOUT DEER

1. **Over the last 12 months, how often have you discussed <u>deer</u> 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 <u>deer management</u> 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 <u>you</u> 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 <u>you</u> 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 <u>that DEC considers</u> the following deer-related interests and concerns when managing deer in <u>your area</u>? *(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 <u>two</u> of the following factors should be given the <u>most weight</u> in determining the future deer population level in your area?
*(Circle **<u>TWO</u>** 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 <u>do not worry</u> about problems deer may cause
2 I enjoy deer but I <u>worry</u> about problems deer may cause
3 I do <u>not</u> 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 <u>in your area</u>?
(Circle one number.)

1 The <u>benefits</u> of deer <u>outweigh the problems</u> they cause
2 The <u>problems</u> deer cause <u>outweigh the benefits</u> of deer
3 The benefits of deer and the problems deer cause are about an <u>even trade off</u>

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 <u>all</u> 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, 2020 survey of residents in 8 AWMUs.

Outcome	Aggregated wildlife management units (AWMUs)[1]								Total
	DELOT	DELSUL	EAP	NEAH	NEH	NWH	STLV	ADK	
Completed	25	25	25	25	25	25	25	25	200
Refused	1	1	1	0	4	0	1	1	9
Pending (answer. machine, callback appt., or no answer)	47	65	63	38	55	93	62	36	459
Non-working number	25	55	57	35	35	56	43	30	336
Mail survey returned	1	0	0	1	1	1	1	2	7
Wrong number	1	1	4	0	2	0	2	2	12
Ineligible	0	2	0	1	3	0	1	2	9
Total	100	147	150	100	127	175	135	98	1,032

[1] Delaware-Otsego (DELOT), Delaware-Sullivan (DELSUL), Eastern Appalachian Plateau (EAP), Northeast Appalachian Hills (NEAH), Northeast Hudson (NEH), Northwest Hudson (NWH), St. Lawrence Valley (STLV), Adirondack (ADK).

Table B2. Comparison of respondents to nonrespondents on gender.

	Respondents (n) %	Nonrespondents[a] (n) %
Male	(2,515) 69.7	(93) 46.5
Female	(1,000) 27.7	(106) 53.0
Prefer not to say / self describe	(93) 2.6	(1) 0.5
Total	(3,608) 100.0	(200) 100.0

[a]chi square=59.92, df=2 , p<0.001

Table B3. Comparison of respondents to nonrespondents on participation in hunting.

	Respondents (n) %	Nonrespondents[a] (n) %
Yes (hunter)	(1,271) 34.9	(28) 14.0
No (nonhunter)	(2,368) 65.1	(172) 86.0
Total	(3,639) 100.0	(200) 100.0

[a]chi square=37.09, df=1 , p=0.001

Table B4. Comparison of respondents to nonrespondents on personal of importance deer management as an issue.

	Respondents (n) %	Nonrespondents[a] (n) (%)
Not at all important	(233) 6.8	(33) 16.5
Slightly/moderately important	(1,581) 46.4	(108) 54.0
Very/extremely important	(1,592) 46.7	(59) 29.5
Total	(3,406) 99.9	(200) 100.0

[a]chi square=38.48, df=2 , p<0.001

Table B5. Comparison of respondents to nonrespondents on interest in deer viewing.

	Respondents (n) %	Nonrespondents[a] (n) (%)
Not at all interested	(317) 9.4	(37) 18.5
Slightly/moderately interested	(1,467) 43.4	(110) 55.0
Very/extremely interested	(1,594) 47.2	(53) 26.5
Total	(3,378) 100.0	(200) 100.0

[a]chi square=39.12, df=2 , p<0.001

Table B6. Comparison of respondents to nonrespondents on interest in deer hunting.

	Respondents (n) %	Nonrespondents[a] (n) (%)
Not at all interested	(1,555) 46.4	(126) 63.0
Slightly/moderately interested	(682) 20.4	(37) 18.5
Very/extremely interested	(1,112) 33.2	(37) 18.5
Total	(3,349) 100.0	(200) 100.0

[a]chi square=23.08, df=2 , p<0.001

Table B7. Comparison of respondents to nonrespondents on concern about deer damage to home gardens.

	Respondents (n) %	Nonrespondents[a] (n) (%)
Not at all concerned	(971) 28.6	(81) 40.5
Slightly/moderately concerned	(1,613) 47.6	(87) 43.5
Very/extremely concerned	(807) 23.8	(32) 16.0
Total	(3,659) 100.0	(200) 100.0

[a]chi square=14.65, df=2 , p<0.001

Table B8. Comparison of respondents to nonrespondents on concern about deer damage to forests/native plants.

	Respondents (n) %	Nonrespondents[a] (n) (%)
Not at all concerned	(1,136) 33.7	(98) 50.0
Slightly/moderately concerned	(1,644) 48.8	(84) 42.9
Very/extremely concerned	(589) 17.5	(14) 7.1
Total	(3,369) 100.0	(196) 100.0

[a]chi square=27.24, df=2 , p<0.001

Table B9. Comparison of respondents to nonrespondents on concern about lyme disease or other tick borne illnesses.

	Respondents (n) %	Nonrespondents[a] (n) (%)
Not at all concerned	(113) 3.3	(13) 6.5
Slightly/moderately concerned	(839) 24.7	(57) 28.5
Very/extremely concerned	(2,441) 71.9	(130) 65.0
Total	(3,393) 100.0	(200) 100.0

[a]chi square=7.76, df=2 , p=0.020

Table B10. Comparison of respondents to nonrespondents on concern about deer-vehicle accidents.

	Respondents (n) %	Nonrespondents[a] (n) (%)
Not at all concerned	(146) 4.3	(17) 8.5
Slightly/moderately concerned	(1,112) 32.7	(85) 42.5
Very/extremely concerned	(2,140) 62.0	(98) 49.0
Total	(3,398) 100.0	(200) 100.0

[a]chi square=18.72, df=2 , p<0.001

Table B11. Comparison of respondents to nonrespondents on how much importance DEC should place on deer viewing when managing deer in local area.

	Respondents (n) %	Nonrespondents[a] (n) (%)
Not at all important	(634) 17.8	(63) 31.7
Slightly/moderately important	(1,790) 50.2	(106) 53.2
Very/extremely important	(1,139) 32.0	(30) 15.1
Total	(3,563) 100.0	(199) 100.0

[a]chi square=37.20, df=2 , p<0.001

Table B12. Comparison of respondents to nonrespondents on how much importance DEC should place on deer hunting when managing deer in local area.

	Respondents (n) %	Nonrespondents[a] (n) (%)
Not at all important	(652) 18.4	(45) 22.5
Slightly/moderately important	(1,070) 30.1	(72) 36.0
Very/extremely important	(1,827) 51.5	(83) 41.5
Total	(3549) 100.0	(200) 100.0

[a]chi square=7.56, df=2 , p=0.022

Table B13. Comparison of respondents to nonrespondents on how much importance DEC should place on deer damage to gardens when managing deer in local area.

	Respondents (n) %	Nonrespondents[a] (n) (%)
Not at all important	(709) 19.9	(61) 30.5
Slightly/moderately important	(1,863) 52.3	(98) 49.0
Very/extremely important	(993) 27.9	(41) 20.5
Total	(3,565) 100.0	(200) 100.0

[a]chi square=14.54, df=2 , p<0.001

Table B14. Comparison of respondents to nonrespondents on how much importance DEC should place on deer damage to forests/native plants when managing deer in local area.

	Respondents (n) %	Nonrespondents[a] (n) (%)
Not at all important	(794) 22.4	(71) 35.9
Slightly/moderately important	(1,803) 50.8	(95) 48.0
Very/extremely important	(949) 26.8	(32) 16.2
Total	(3546) 100.0	(198) 100.0

[a]chi square=23.07, df=2 , p<0.001

Table B15. Comparison of respondents to nonrespondents on how much importance DEC should place on tick-borne diseases when managing deer in local area.

	Respondents (n) %	Nonrespondents[a] (n) (%)
Not at all important	(107) 3.0	(8) 4.0
Slightly/moderately important	(687) 19.2	(43) 21.8
Very/extremely important	(2,779) 77.8	(147) 74.2
Total	(3,573) 100.0	(198) 100.0

[a]chi square=1.58, df=2 , p=0.454

Table B16. Comparison of respondents to nonrespondents on how much importance DEC should place on deer vehicle collisions when managing deer in local area.

	Respondents (n) %	Nonrespondents[a] (n) (%)
Not at all important	(161) 4.5	(14) 7.0
Slightly/moderately important	(1,089) 30.4	(76) 38.0
Very/extremely important	(2,334) 65.1	(110) 55.0
Total	(3,584) 100.0	(200) 100.0

[a]chi square=9.14, df=2 , p=0.010

Table B17. Comparison of respondents to nonrespondents on general feelings about deer in their area.

	Respondents (n) %	Nonrespondents[a] (n) (%)
Enjoy deer and do not worry about damage	(1,312) 36.6	(70) 35.0
Enjoy deer but I worry about damage	(1,945) 54.3	(102) 50.5
Don't enjoy deer, regard as nuisance	(160) 4.5	(9) 4.5
No particular feeling about deer	(164) 4.5	(20) 10.0
Total	(3,581) 100.0	(200) 100.0

[a]chi square=11.90, df=3 , p=0.007

Table B18. Comparison of respondents to nonrespondents on perception of costs and benefits related to deer in their local area.

	Respondents (n) %	Nonrespondents[a] (n) (%)
Benefits of deer outweigh problems caused	(1,012) 28.6	(46) 23.5
Problems deer cause outweigh benefits	(826) 23.3	(37) 18.9
Deer benefits/problems are an even trade-off	(1,701) 48.1	(113) 57.7
Total	(3,539) 100.0	(196) 100.0

[a]chi square=6.83, df=2 , p =0.033

Table B19. Comparison of respondents to nonrespondents on local deer population preference.

Desired trend in local deer population in the next five years	Respondents (n) %	Nonrespondents[a] (n) %
Decrease moderately or greatly	(1,045) 31.2	(31) 15.5
Stay about the same	(1,218) 36.4	(65) 32.5
Increase moderately or greatly	(836) 25.0	(63) 31.5
No preference	(247) 7.4	(41) 20.5
Total	(3,346) 100.0	(200) 100.0

[a]chi square=59.33 , df=3, p<0.001

Table B20. Comparison of respondents to nonrespondents on perception of change in local deer population.

Perceived trend in local deer population in last five years	Respondents (n) %	Nonrespondents[a] (n) %
Decreased moderately or greatly	(782) 23.4	(53) 6.5
Stayed about the same	(984) 29.4	(93) 66.7
Increased moderately or greatly	(1,053) 31.5	(16) 8.0
Not sure	(529) 15.8	(37) 18.7
Total	(3,348) 100.0	(199) 100.0

[a]chi square=54.54, df=3, p<0.001

APPENDIX C: 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.

	Strata[1]							
	DELOT (n=472)	DELSUL (n=409)	EAP (n=447)	NEAH (n=479)	NEH (n=407)	NWH (n=377)	STLV (n=430)	ADK (n=389)
	%	%	%	%	%	%	%	%
Never	3.4	3.9	3.6	6.7	2.7	10.3	3.5	5.4
Seldom	8.3	10.0	9.8	11.1	12.8	20.7	10.9	15.2
Occasionally	35.4	32.8	37.1	35.1	38.6	39.0	33.7	35.5
Fairly often	28.6	29.1	27.7	26.5	24.3	19.4	26.5	27.5
Very often	24.4	24.2	21.7	20.7	21.6	10.6	25.3	16.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Delaware-Otsego (DELOT), Delaware-Sullivan (DELSUL), Eastern Appalachian Plateau (EAP), Northeast Appalachian Hills (NEAH), Northeast Hudson (NEH), Northwest Hudson (NWH), St. Lawrence Valley (STLV), Adirondack (ADK).

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

	Strata[1]							
	DELOT (n=472)	DELSUL (n=410)	EAP (n=445)	NEAH (n=480)	NEH (n=406)	NWH (n=377)	STLV (n=429)	ADK (n=387)
	%	%	%	%	%	%	%	%
Not at all important	6.1	7.1	5.4	6.9	8.1	9.3	5.8	6.5
Slightly important	12.1	11.0	13.7	14.0	18.0	23.6	16.8	17.1
Moderately important	30.1	29.0	36.0	31.9	27.8	31.6	27.3	33.1
Very important	33.5	29.8	31.9	32.1	30.0	26.0	33.1	29.7
Extremely important	18.2	23.2	13.0	15.2	16.0	9.5%	17.0	13.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Delaware-Otsego (DELOT), Delaware-Sullivan (DELSUL), Eastern Appalachian Plateau (EAP), Northeast Appalachian Hills (NEAH), Northeast Hudson (NEH), Northwest Hudson (NWH), St. Lawrence Valley (STLV), Adirondack (ADK).

Table C3. Opinion on current size of the deer population in their local area, by AWMU.

	Strata[1]							
	DELOT (n=472)	DELSUL (n=405)	EAP (n=443)	NEAH (n=467)	NEH (n=395)	NWH (n=372)	STLV (n=417)	ADK (n=375)
	%	%	%	%	%	%	%	%
Population is too large	33.5	28.9	22.6	38.5	30.4	25.5	22.0	14.8
Population is about right	43.3	45.2	46.1	42.7	48.5	41.2	47.3	49.5
Population is too small	13.6	14.7	20.6	10.0	11.1	10.6	18.0	19.9
No opinion	9.6	11.2	10.7	8.8	9.9	22.6	12.6	15.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Delaware-Otsego (DELOT), Delaware-Sullivan (DELSUL), Eastern Appalachian Plateau (EAP), Northeast Appalachian Hills (NEAH), Northeast Hudson (NEH), Northwest Hudson (NWH), St. Lawrence Valley (STLV), Adirondack (ADK).

Table C4. How respondents thought the deer population in their local area had changed in the next 5 years, collapsed response categories, by AWMU.

	Strata[1]							
	DELOT (n=470)	DELSUL (n=406)	EAP (n=443)	NEAH (n=465)	NEH (n=396)	NWH (n=373)	STLV (n=418)	ADK (n=377)
	%	%	%	%	%	%	%	%
Decreased moderately or greatly	19.6	22.9	33.0	20.9	16.9	16.9	31.1	24.9
Stayed about the same	29.1	31.5	28.9	26.9	34.1	25.2	25.6	34.5
Increased moderately or greatly	37.0	34.5	22.8	38.5	36.4	30.8	28.9	21.0
Not sure	14.3	11.1	15.3	13.8	12.6	27.1	14.4	19.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Delaware-Otsego (DELOT), Delaware-Sullivan (DELSUL), Eastern Appalachian Plateau (EAP), Northeast Appalachian Hills (NEAH), Northeast Hudson (NEH), Northwest Hudson (NWH), St. Lawrence Valley (STLV), Adirondack (ADK).

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

	Strata[1]							
	DELOT (n=470)	DELSUL (n=406)	EAP (n=443)	NEAH (n=465)	NEH (n=396)	NWH (n=373)	STLV (n=418)	ADK (n=377)
	%	%	%	%	%	%	%	%
Decreased greatly	5.5	8.1	10.6	6.7	5.3	5.9	11.2	8.5
Decreased moderately	14.0	14.8	22.3	14.2	11.6	11.0	19.9	16.4
Stayed about the same	29.1	31.5	28.9	26.9	34.1	25.2	25.6	34.5
Increased moderately	25.1	22.2	18.3	27.1	26.3	20.6	19.9	17.8
Increased greatly	11.9	12.3	4.5	11.4	10.1	10.2	9.1	3.2
Not sure	14.3	11.1	15.3	13.8	12.6	27.1	14.4	19.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Delaware-Otsego (DELOT), Delaware-Sullivan (DELSUL), Eastern Appalachian Plateau (EAP), Northeast Appalachian Hills (NEAH), Northeast Hudson (NEH), Northwest Hudson (NWH), St. Lawrence Valley (STLV), Adirondack (ADK).

Table C6. Interest in deer viewing and deer hunting, by AWMU.

	Strata[1]							
	DELOT	DELSUL	EAP	NEAH	NEH	NWH	STLV	ADK
	%	%	%	%	%	%	%	%
Interest in deer viewing	(n=460)	(n=407)	(n=445)	(n=476)	(n=401)	(n=376)	(n=426)	(n=387)
Not interested	9.6	8.8	6.1	14.1	9.5	14.6	6.3	5.9
Slightly/moderately interested	39.8	39.8	44.5%	48.9	45.6	51.3	37.6	40.1
Very/extremely interested	50.7	51.4	49.4%	37.0	44.9	34.0	56.1	54.0
Interest in deer hunting	(n=468)	(n=397)	(n=439)	(n=470)	(n=400)	(n=366)	(n=424)	(n=385)
Not interested	43.2	41.3	35.5	51.5	51.8	73.0	36.6	42.1
Slightly/moderately interested	23.7	19.1	21.6	18.9	19.5	12.3	22.6	23.9
Very/extremely interested	33.1	39.5	42.8	29.6	28.8	14.8	40.8	34.0

[1] Delaware-Otsego (DELOT), Delaware-Sullivan (DELSUL), Eastern Appalachian Plateau (EAP), Northeast Appalachian Hills (NEAH), Northeast Hudson (NEH), Northwest Hudson (NWH), St. Lawrence Valley (STLV), Adirondack (ADK).

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

Concern about…	Strata[1]							
	DELOT	DELSUL	EAP	NEAH	NEH	NWH	STLV	ADK
	%	%	%	%	%	%	%	%
Garden damage	(n=469)	(n=409)	(n=446)	(n=478)	(n=403)	(n=375)	(n=426)	(n=385)
Not concerned	23.0	24.4	28.3	25.7	22.6	28.5	38.3	39.7
Slightly/moderately concerned	50.5	49.9	49.8	44.4	48.1	47.5	46.5	43.6
Very/extremely concerned	26.4	25.7	22.0	29.9	29.3	24.0	15.3	16.6
Crop damage	(n=470)	(n=403)	(n=443)	(n=477)	(n=401)	(n=372)	(n=425)	(n=383)
Not concerned	18.5	21.3	18.3	16.4	17.0	22.0	26.6	27.4
Slightly/moderately concerned	57.0	48.6	54.4	52.0	53.1	47.3	54.8	53.5
Very/extremely concerned	24.5	30.0	27.3	31.7	29.9	30.6	18.6	19.1
Forest damage	(n=470)	(n=401)	(n=444)	(n=475)	(n=399)	(n=374)	(n=424)	(n=382)
Not concerned	30.4	34.7	31.1	25.7	32.3	28.9	43.9	44.8
Slightly/moderately concerned	54.7	46.4	50.2	50.7	48.9	53.2	44.1	40.8
Very/extremely concerned	14.9	19.0	18.7	23.6	18.8	17.9	12.0	14.4

[1] Delaware-Otsego (DELOT), Delaware-Sullivan (DELSUL), Eastern Appalachian Plateau (EAP), Northeast Appalachian Hills (NEAH), Northeast Hudson (NEH), Northwest Hudson (NWH), St. Lawrence Valley (STLV), Adirondack (ADK).

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

Concern about…	Strata[1]							
	DELOT %	DELSUL %	EAP %	NEAH %	NEH %	NWH %	STLV %	ADK %
Tick-borne diseases	(n=471)	(n=409)	(n=444)	(n=479)	(n=402)	(n=375)	(n=423)	(n=390)
Not concerned	4.2	4.4	2.5	2.5	3.5	1.1	4.7	3.6
Slightly/moderately concerned	23.4	25.2	24.8	22.5	20.4	24.0	28.1	30.0
Very/extremely concerned	72.4	70.4	72.7	74.9	76.1	74.9	67.1	66.4
Deer-related vehicle accidents	(n=473)	(n=409)	(n=445)	(n=478)	(n=403)	(n=375)	(n=427)	(n=388)
Not concerned	4.9	3.9	4.3	2.3	4.0	4.3	6.1	4.9
Slightly/moderately concerned	27.1	28.4	30.8	35.4	32.0	35.5	34.7	39.2
Very/extremely concerned	68.1	67.7	64.9	62.3	64.0	60.3	59.3	55.9

[1] Delaware-Otsego (DELOT), Delaware-Sullivan (DELSUL), Eastern Appalachian Plateau (EAP), Northeast Appalachian Hills (NEAH), Northeast Hudson (NEH), Northwest Hudson (NWH), St. Lawrence Valley (STLV), Adirondack (ADK).

Table C9. Importance of considering deer viewing and deer hunting when making local deer management decisions (response categories collapsed), by AWMU.

Importance of considering…	Strata[1]							
	DELOT	DELSUL	EAP	NEAH	NEH	NWH	STLV	ADK
	%	%	%	%	%	%	%	%
Deer viewing	(n=503)	(n=433)	(n=464)	(n=499)	(n=422)	(n=402)	(n=443)	(n=397)
Not important	18.1	17.3	14.0	25.3	18.5	21.1	12.0	15.4
Slightly/moderately important	50.9	46.7	50.0	51.1	47.9	52.7	53.3	49.1
Very/extremely important	31.0	36.0	36.0	23.6	33.6	26.1	34.8	35.5
Deer hunting	(n=501)	(n=429)	(n=465)	(n=497)	(n=419)	(n=400)	(n=441)	(n=397)
Not important	14.6%	17.2%	13.3%	23.1%	17.9%	30.0%	15.0%	16.9%
Slightly/moderately important	33.7%	25.2%	31.4%	30.4%	29.1%	31.5%	29.3%	30.0%
Very/extremely important	51.7%	57.6%	55.3%	46.5%	53.0%	38.5%	55.8%	53.1%

[1] Delaware-Otsego (DELOT), Delaware-Sullivan (DELSUL), Eastern Appalachian Plateau (EAP), Northeast Appalachian Hills (NEAH), Northeast Hudson (NEH), Northwest Hudson (NWH), St. Lawrence Valley (STLV), Adirondack (ADK).

Table C10. Importance of considering deer damage to gardens, crops, and forests when making local deer management decisions (response categories collapsed), by AWMU.

	Strata[1]							
Importance of considering…	DELOT	DELSUL	EAP	NEAH	NEH	NWH	STLV	ADK
	%	%	%	%	%	%	%	%
Deer damage to gardens	(n=502)	(n=432)	(n=465)	(n=500)	(n=423)	(n=402)	(n=442)	(n=399)
Not important	15.3	18.5	18.3	19.4	18.9	19.2	24.4	26.3
Slightly/moderately important	56.2	50.9	57.4	45.6	47.5	51.5	57.5	51.1
Very/extremely important	28.5	30.6	24.3	35.0	33.6	29.4	18.1	22.6
Deer damage to farmers' crops	(n=503)	(n=427)	(n=465)	(n=502)	(n=421)	(n=401)	(n=440)	(n=396)
Not important	10.7	14.8	12.0	10.2	10.7	13.5	18.6	17.4
Slightly/moderately important	54.1	45.0	52.0	47.6	48.9	44.4	57.3	53.3
Very/extremely important	35.2	40.3	35.9	42.2	40.4	42.1	24.1	29.3
Deer damage to forests	(n=503)	(n=428)	(n=463)	(n=500)	(n=419)	(n=400)	(n=439)	(n=394)
Not important	17.9	22.4	23.3	18.4	22.0	20.5	28.5	27.7
Slightly/moderately important	57.1	47.7	51.2	47.4	47.3	50.5	51.9	53.3
Very/extremely important	25.0	29.9	25.5	34.2	30.8	29.0	19.6	19.0

[1] Delaware-Otsego (DELOT), Delaware-Sullivan (DELSUL), Eastern Appalachian Plateau (EAP), Northeast Appalachian Hills (NEAH), Northeast Hudson (NEH), Northwest Hudson (NWH), St. Lawrence Valley (STLV), Adirondack (ADK).

Table C11. Importance of considering tick-borne diseases and deer-related vehicle accidents when making local deer management decisions (response categories collapsed), by AWMU.

Importance of considering…	Strata[1]							
	DELOT	DELSUL	EAP	NEAH	NEH	NWH	STLV	ADK
	%	%	%	%	%	%	%	%
Tick-borne diseases	(n=503)	(n=434)	(n=468)	(n=501)	(n=423)	(n=404)	(n=439)	(n=401)
Not important	2.8	4.1	3.0	2.6	3.1	2.0	3.4	3.0
Slightly/moderately important	19.3	21.2	19.0	17.0	17.5	16.3	21.2	22.7
Very/extremely important	77.9	74.7	78.0	80.4	79.4	81.7	75.4	74.3
Deer-related vehicle accidents	(n=505)	(n=436)	(n=468)	(n=505)	(n=425)	(n=404)	(n=440)	(n=401)
Not important	4.6	4.8	5.1	3.2	4.0	3.7	5.5	5.2
Slightly/moderately important	26.5	27.3	27.6	32.5	28.7	30.9	33.9	36.7
Very/extremely important	68.9	67.9	67.3	64.4	67.3	65.3	60.7	58.1

[1] Delaware-Otsego (DELOT), Delaware-Sullivan (DELSUL), Eastern Appalachian Plateau (EAP), Northeast Appalachian Hills (NEAH), Northeast Hudson (NEH), Northwest Hudson (NWH), St. Lawrence Valley (STLV), Adirondack (ADK).

Table C12. General feelings toward deer in my area, by AWMU.

	Strata[1]							
	DELOT (n=501)	DELSUL (n=435)	EAP (n=465)	NEAH (n=505)	NEH (n=424)	NWH (n=405)	STLV (n=444)	ADK (n=402)
	%	%	%	%	%	%	%	%
Enjoy deer and don't worry about damage	33.9	36.1	37.0	29.7	32.8	31.4	46.4	47.5
Enjoy deer but I worry about damage	57.3	54.9	56.3	59.2	58.7	54.6	46.6	45.0
Don't enjoy deer, regard them as nuisance	5.2	5.3	3.0	7.3	4.2	6.4	2.0	1.7
No particular feelings about deer	3.6	3.7	3.7	3.8	4.2	7.7	5.0	5.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Delaware-Otsego (DELOT), Delaware-Sullivan (DELSUL), Eastern Appalachian Plateau (EAP), Northeast Appalachian Hills (NEAH), Northeast Hudson (NEH), Northwest Hudson (NWH), St. Lawrence Valley (STLV), Adirondack (ADK).

Table C13. How respondents weight the benefits and costs of having deer in their area, by AWMU.

	Strata[1]							
	DELOT (n=495)	DELSUL (n=423)	EAP (n=463)	NEAH (n=504)	NEH (n=417)	NWH (n=400)	STLV (n=443)	ADK (n=394)
	%	%	%	%	%	%	%	%
Benefits of deer outweigh problems caused	26.7	30.3	29.6	20.6	25.4	24.3	34.3	39.6
Problems deer cause outweigh benefits	24.8	24.3	18.8	36.7	25.9	27.5	15.6	10.4
Deer benefits/problems are an even tradeoff	48.5	45.4	51.6	42.7	48.7	48.3	50.1	50.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Delaware-Otsego (DELOT), Delaware-Sullivan (DELSUL), Eastern Appalachian Plateau (EAP), Northeast Appalachian Hills (NEAH), Northeast Hudson (NEH), Northwest Hudson (NWH), St. Lawrence Valley (STLV), Adirondack (ADK).

Table C14. Methods respondents believe DEC should use to gather public input for decisions about deer management in their local area, by AWMU.

	Strata[1]							
	DELOT (n=472)	DELSUL (n=406)	EAP (n=442)	NEAH (n=469)	NEH (n=398)	NWH (n=375)	STLV (n=417)	ADK (n=376)
	%	%	%	%	%	%	%	%
Public meetings open to all	61.7	66.5	68.3	68.9	61.3	69.6	67.1	68.6
Scientific telephone and mail surveys	52.8	53.0	42.8	53.1	52.8	54.4	48.0	47.1
Unsolicited comments from citizens (e.g., letters, telephone calls)	26.7	25.4	28.3	26.4	33.9	30.9	25.9	23.7
Meetings open to select groups and invited individuals	21.4	19.2	20.1	22.6	21.6	28.3	21.1	25.5
No public input should be used	1.7	2.2	3.6	2.8	4.8	3.5	6.0	2.7

[1] Delaware-Otsego (DELOT), Delaware-Sullivan (DELSUL), Eastern Appalachian Plateau (EAP), Northeast Appalachian Hills (NEAH), Northeast Hudson (NEH), Northwest Hudson (NWH), St. Lawrence Valley (STLV), Adirondack (ADK).

Table C15. Likelihood that respondents would be willing to participate in a DEC survey about deer within the next 3 years, by AWMU.

	Strata[1]							
	DELOT (n=461)	DELSUL (n=394)	EAP (n=434)	NEAH (n=464)	NEH (n=388)	NWH (n=371)	STLV (n=409)	ADK (n=373)
	%	%	%	%	%	%	%	%
Very unlikely	13.4	12.4	14.7	12.1	17.3	16.2	15.6	12.6
Unlikely	12.8	8.1	12.4	10.1	10.1	12.4	11.0	11.8
Likely	34.1	40.4	37.3	35.1	34.5	33.7	33.5	40.5
Very likely	34.1	33.0	30.4	40.1	34.3	31.8	35.0	29.8
Not sure	5.6	6.1	5.1	2.6	3.9	5.9	4.9	5.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Delaware-Otsego (DELOT), Delaware-Sullivan (DELSUL), Eastern Appalachian Plateau (EAP), Northeast Appalachian Hills (NEAH), Northeast Hudson (NEH), Northwest Hudson (NWH), St. Lawrence Valley (STLV), Adirondack (ADK).

Table C16. Likelihood that respondents will attend a public meeting about deer impacts within the next 3 years, by AWMU.

	Strata[1]							
	DELOT (n=459)	DELSUL (n=392)	EAP (n=430)	NEAH (n=463)	NEH (n=385)	NWH (n=367)	STLV (n=407)	ADK (n=369)
	%	%	%	%	%	%	%	%
Very unlikely	32.7	30.9	32.8	29.8	31.7	39.0	36.6	33.1
Unlikely	30.7	29.3	31.6	30.2	27.8	30.8	26.0	28.5
Likely	21.4	22.2	19.5	25.9	26.0	19.3	19.4	21.7
Very likely	10.7	12.2	8.1	10.8	9.9	6.3	12.0	10.8
Not sure	4.6	5.4	7.9	3.2	4.7	4.6	5.9	6.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Delaware-Otsego (DELOT), Delaware-Sullivan (DELSUL), Eastern Appalachian Plateau (EAP), Northeast Appalachian Hills (NEAH), Northeast Hudson (NEH), Northwest Hudson (NWH), St. Lawrence Valley (STLV), Adirondack (ADK).

Table C17. Likelihood that respondents will provide written comments to DEC about a deer management plan or regulation within the next 3 years, by AWMU.

	Strata[1]							
	DELOT (n=459)	DELSUL (n=386)	EAP (n=430)	NEAH (n=460)	NEH (n=381)	NWH (n=370)	STLV (n=407)	ADK (n=370)
	%	%	%	%	%	%	%	%
Very unlikely	40.1	41.5	41.9	39.3	40.9	48.9	39.6	42.4
Unlikely	34.4	26.2	30.5	32.2	27.3	26.2	31.4	30.3
Likely	14.4	18.1	14.7	17.4	16.0	13.5	15.2	15.7
Very likely	6.8	8.3	7.4	8.0	10.2	5.7	8.8	6.2
Not sure	4.4	6.0	5.6	3.0	5.5	5.7	4.9	5.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Delaware-Otsego (DELOT), Delaware-Sullivan (DELSUL), Eastern Appalachian Plateau (EAP), Northeast Appalachian Hills (NEAH), Northeast Hudson (NEH), Northwest Hudson (NWH), St. Lawrence Valley (STLV), Adirondack (ADK).

Table C18. Likelihood that respondents will talk with DEC about deer impacts within the next 3 years, by AWMU.

	Strata[1]							
	DELOT (n=461)	DELSUL (n=390)	EAP (n=432)	NEAH (n=461)	NEH (n=383)	NWH (n=369)	STLV (n=409)	ADK (n=371)
	%	%	%	%	%	%	%	%
Very unlikely	34.3	36.7	37.7	35.4	37.6	45.5	38.6	39.4
Unlikely	33.8	26.4	32.9	32.8	31.9	30.1	34.2	28.0
Likely	17.6	23.6	17.6	19.3	16.2	11.9	12.7	19.1
Very likely	8.5	6.9	5.1	8.0	8.1	5.7	9.0	7.0
Not sure	5.9	6.4	6.7	4.6	6.3	6.8	5.4	6.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Delaware-Otsego (DELOT), Delaware-Sullivan (DELSUL), Eastern Appalachian Plateau (EAP), Northeast Appalachian Hills (NEAH), Northeast Hudson (NEH), Northwest Hudson (NWH), St. Lawrence Valley (STLV), Adirondack (ADK).

Table C19. Description of participants' residences, by AWMU.

	Strata[1]							
	DELOT (n=509)	DELSUL (n=438)	EAP (n=475)	NEAH (n=504)	NEH (n=433)	NWH (n=399)	STLV (n=451)	ADK (n=407)
	%	%	%	%	%	%	%	%
Rural area outside Village/hamlet	66.6	72.4	69.5	53.6	59.4	26.6	65.2	62.4
Village/hamlet (<10,000 people)	23.8	26.3	24.6	31.7	26.6	32.1	26.8	26.5
Small city (10,000-50,000 people)	9.4	0.9	5.9	10.7	12.0	30.1	8.0	10.8
Large city (>50,000 people)	0.2	0.5	0.0	4.0	2.1	11.3	0.0	0.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Delaware-Otsego (DELOT), Delaware-Sullivan (DELSUL), Eastern Appalachian Plateau (EAP), Northeast Appalachian Hills (NEAH), Northeast Hudson (NEH), Northwest Hudson (NWH), St. Lawrence Valley (STLV), Adirondack (ADK).

Table C20. Percentage of respondents who participated in activities where they may be impacted positively or negatively by deer, by AWMU.

	Strata[1]							
	DELOT (n=510)	DELSUL (n=441)	EAP (n=477)	NEAH (n=507)	NEH (n=436)	NWH (n=406)	STLV (n=453)	ADK (n=409)
	%	%	%	%	%	%	%	%
Garden	65.1	66.7	65.4	73.6	70.9	72.4	60.7	66.3
Drive in areas with lots of deer	76.7	72.8	64.8	73.0	70.2	54.9	66.0	63.3
Hike, walk in natural areas	67.6	65.5	63.9	73.0	66.7	67.5	64.7	73.8
Deer hunt	37.5	39.0	44.2	29.0	28.4	14.0	46.1	39.1
Manage woodlots, forested land	22.4	15.9	22.0	17.8	14.7	6.4	28.5	18.3
Farm	19.0	11.8	17.6	11.6	14.9	3.7	15.0	13.7
None of these describe me	4.7	5.0	6.7	4.3	5.0	6.7	8.8	6.1

[1] Delaware-Otsego (DELOT), Delaware-Sullivan (DELSUL), Eastern Appalachian Plateau (EAP), Northeast Appalachian Hills (NEAH), Northeast Hudson (NEH), Northwest Hudson (NWH), St. Lawrence Valley (STLV), Adirondack (ADK).

Table C21. Percentage of male and female respondents, by AWMU.

	Strata[1]							
	DELOT n=472	DELSUL n=405	EAP n=443	NEAH n=467	NEH n=395	NWH n=372	STLV n=417	ADK n=375
	%	%	%	%	%	%	%	%
Female	26.9	27.9	23.1	31.7	26.0	36.9	23.6	26.2
Male	70.1	68.9	74.6	64.7	72.1	61.1	74.0	71.9
Prefer not to say	2.4	3.2	1.9	2.8	1.2	1.5	2.0	2.0
Prefer to self describe	0.6	0.0	0.4	0.8	0.7	0.5	0.4	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Delaware-Otsego (DELOT), Delaware-Sullivan (DELSUL), Eastern Appalachian Plateau (EAP), Northeast Appalachian Hills (NEAH), Northeast Hudson (NEH), Northwest Hudson (NWH), St. Lawrence Valley (STLV), Adirondack (ADK).

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=1,042)	(n=2,222)	2	6.93*
Unlikely	72.5	68.0		
Likely	21.9	25.8		
Not sure	5.7	6.2		
Provide written comments to DEC about deer management plans or proposals	(n=1,037)	(n=2,214)	2	16.22***
Unlikely	76.2	69.6		
Likely	19.1	25.3		
Not sure	4.7	5.1		
Participate in a DEC survey about deer management	(n=1,050)	(n=2,232)	2	81.32***
Unlikely	35.0	20.7		
Likely	59.6	74.6		
Not sure	5.3	4.7		
Attend a public meeting about deer impacts	(n=1,042)	(n=2,218)	2	24.94***
Unlikely	68.4	59.8		
Likely	26.3	34.9		
Not sure	5.3	5.3		

*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=2,810)	(n=454)	2	45.19***
Unlikely	71.4	56.8		
Likely	22.6	37.0		
Not sure	6.0	6.2		
Provide written comments to DEC about deer management plans or proposals	(n=2,802)	(n=449)	2	44.62***
Unlikely	73.7	59.0		
Likely	21.4	35.4		
Not sure	4.9	5.6		
Participate in a DEC survey about deer management	(n=2,826)	(n=456)	2	8.47*
Unlikely	26.1	20.6		
Likely	69.3	72.8		
Not sure	4.6	6.6		
Attend a public meeting about deer impacts	(n=2,811)	(n=449)	2	35.09***
Unlikely	64.5	50.1		
Likely	30.3	43.7		
Not sure	5.1	6.2		

*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=2,657)	(n=607)	2	117.78***
Unlikely	73.0	53.7		
Likely	20.7	41.7		
Not sure	6.4	4.6		
Provide written comments to DEC about deer management plans or proposals	(n=2,649)	(n=602)	2	98.40***
Unlikely	75.2	56.1		
Likely	19.9	38.5		
Not sure	4.9	5.3		
Participate in a DEC survey about deer management	(n=2,667)	(n=615)	2	65.33***
Unlikely	27.9	14.0		
Likely	66.9	82.6		
Not sure	5.2	3.4		
Attend a public meeting about deer impacts	(n=2,657)	(n=603)	2	101.94***
Unlikely	66.4	45.8		
Likely	28.3	49.4		
Not sure	5.4	4.8		

*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=1,022)	(n=2,242)	2	27.40***
Unlikely	74.3	67.2		
Likely	18.8	27.2		
Not sure	6.9	5.6		
Provide written comments to DEC about deer management plans or proposals	(n=1,015)	(n=2,236)	2	33.53***
Unlikely	77.7	68.9		
Likely	16.9	26.2		
Not sure	5.3	4.9		
Participate in a DEC survey about deer management	(n=1,022)	(n=2,260)	2	142.26***
Unlikely	38.4	19.4		
Likely	56.0	76.1		
Not sure	5.7	4.5		
Attend a public meeting about deer impacts	(n=1,018)	(n=2,242)	2	32.12***
Unlikely	68.5	59.9		
Likely	25.3	35.3		
Not sure	6.2	4.9		

*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=1,022)	(n=2,242)	2	37.98***
Unlikely	75.4	66.6		
Likely	17.7	27.7		
Not sure	6.8	5.7		
Provide written comments to DEC about deer management plans or proposals	(n=1,016)	(n=2,235)	2	43.75***
Unlikely	77.8	68.9		
Likely	16.1	26.6		
Not sure	6.1	4.5		
Participate in a DEC survey about deer management	(n=1,026)	(n=2,256)	2	196.34
Unlikely	40.4	18.5		
Likely	53.4	77.3		
Not sure	6.2	4.3		
Attend a public meeting about deer impacts	(n=1,017)	(n=2,243)	2	67.31
Unlikely	71.5	58.5		
Likely	22.2	36.7		
Not sure	6.3	4.8		

*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=2,111)	(n=1,153)	2	213.08***
Unlikely	77.5	54.6		
Likely	16.5	39.3		
Not sure	6.0	6.1		
Provide written comments to DEC about deer management plans or proposals	(n=2,104)	(n=1,147)	2	132.33***
Unlikely	78.3	59.5		
Likely	17.3	34.3		
Not sure	4.4	6.2		
Participate in a DEC survey about deer management	(n=2,120)	(n=1,162)	2	121.24***
Unlikely	31.4	14.2		
Likely	63.6	81.2		
Not sure	5.0	4.6		
Attend a public meeting about deer impacts	(n=2,110)	(n=1,150)	2	225.98***
Unlikely	71.7	45.7		
Likely	23.4	48.3		
Not sure	4.9	5.9		

*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=897)	(n=2,262)	2	24.73***
Unlikely	73.2	67.9		
Likely	19.0	26.7		
Not sure	7.8	5.3		
Provide written comments to DEC about deer management plans or proposals	(n=896)	(n=2,251)	2	19.04***
Unlikely	75.3	70.4		
Likely	18.3	25.1		
Not sure	6.4	4.5		
Participate in a DEC survey about deer management	(n=897)	(n=2,280)	2	7.76*
Unlikely	28.2	23.9		
Likely	66.3	71.4		
Not sure	5.5	4.7		
Attend a public meeting about deer impacts	(n=894)	(n=2,260)	2	25.20***
Unlikely	67.6	60.6		
Likely	25.8	34.7		
Not sure	6.6	4.7		

*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=1,950)	(n=884)	(n=344)	4	18.39**
Unlikely	66.7	71.9	76.7		
Likely	27.1	22.5	19.2		
Not sure	6.3	5.5	4.1		
Provide written comments to DEC about deer management plans or proposals	(n=1,940)	(n=880)	(n=345)	4	7.39^{NS}
Unlikely	70.0	73.2	76.2		
Likely	24.6	22.3	20.0		
Not sure	5.4	4.5	3.8		
Participate in a DEC survey About deer management	(n=1,966)	(n=882)	(n=348)	4	16.80**
Unlikely	23.3	26.8	31.0		
Likely	71.8	69.3	62.1		
Not sure	4.8	4.0	6.9		
Attend a public meeting About deer impacts	(n=1,945)	(n=886)	(n=342)	4	12.84*
Unlikely	60.1	64.9	68.7		
Likely	34.5	30.2	26.6		
Not sure	5.4	4.9	4.7		

*p < 0.05; **p < 0.01; ***p < 0.001; NS = not significant

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					
	Decrease[1]	Stay the same	Increase[2]	No Preference	df	χ^2
	%	%	%	%		
Talk with DEC staff about deer impacts	(n=1,023)	(n=1,187)	(n=812)	(n=237)	6	189.95***
Unlikely	66.3	77.5	54.8	91.6		
Likely	27.3	17.3	38.3	3.8		
Not sure	6.5	5.2	6.9	4.6		
Provide written comments to DEC about deer management plans or proposals	(n=1,021)	(n=1,185)	(n=804)	(n=236)	6	171.56***
Unlikely	68.3	80.2	58.0	91.1		
Likely	26.2	16.3	35.3	4.7		
Not sure	5.5	3.5	6.7	4.2		
Participate in a DEC survey about deer management	(n=1,031)	(n=1,196)	(n=816)	(n=235)	6	235.44***
Unlikely	21.9	27.7	15.9	61.3		
Likely	73.6	67.6	79.7	29.4		
Not sure	4.5	4.7	4.4	9.4		
Attend a public meeting about deer impacts	(n=1,022)	(n=1,186)	(n=809)	(n=238)	6	201.18***
Unlikely	59.7	70.9	46.8	88.7		
Likely	34.3	24.8	47.1	7.1		
Not sure	6.0	4.3	6.1	4.2		

[1]Decrease moderately or decrease greatly
[2]Increase 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 Delaware-Otsego AWMU.

	B	*SE*	Wald	*Exp(B)*
Interest: deer viewing	-.472***	.118	16.039	.624
Interest: deer hunting	-.149	.136	1.209	.861
Concern: deer damage to crops, gardens, or forests (browse concern)	.952***	.151	39.567	2.591
Concern: tick-borne diseases	.009	.148	.003	1.009
Concern: deer-vehicle collisions	.395**	.155	6.551	1.485
Gender: response group 1 (male)	.409	.312	1.725	1.506
Activities: Garden	.289	.278	1.083	1.335
Activities: Farm	-.064	.394	.026	.938
Activities: Manage forest land	.028	.359	.006	1.028
Activities: Hunt deer	-.691	.455	2.308	.501
Activities: Drive in areas with lots of deer	.673*	.341	3.898	1.961
Constant	-3.518	.907	15.047	.030
Model χ^2	164.55	P <0.001		
Cox & Snell R^2	0.333			
Nagelkerke R^2	0.453			
Number of cases (n)	407			
% who preferred deer population decrease	37.6			
% of cases correctly classified by model	77.9			

*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 Delaware-Sullivan AWMU.

	B	*SE*	Wald	*Exp(B)*
Interest: deer viewing	-.534***	.141	14.364	.586
Interest: deer hunting	.086	.173	.249	1.090
Concern: deer damage to crops, gardens, or forests (browse concern)	.861***	.175	24.174	2.365
Concern: tick-borne diseases	-.025	.181	.019	.975
Concern: deer-vehicle collisions	.564**	.195	8.344	1.757
Gender: response group 1 (male)	.301	.362	.693	1.352
Activities: Garden	.100	.340	.087	1.106
Activities: Farm	-.341	.486	.493	.711
Activities: Manage forest land	.057	.438	.017	1.059
Activities: Hunt deer	-.782	.574	1.855	.457
Activities: Drive in areas with lots of deer	.345	.379	.829	1.412
Constant	-4.022	.977	16.933	.018
Model χ^2	127.38	P <0.001		
Cox & Snell R^2	0.316			
Nagelkerke R^2	0.442			
Number of cases (n)	336			
% who preferred deer population decrease	31.8			
% of cases correctly classified by model	79.8			

*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 Eastern Appalachian Plateau AWMU.

	B	*SE*	Wald	*Exp(B)*
Interest: deer viewing	-.792***	.156	25.684	.453
Interest: deer hunting	-.230	.161	2.045	.794
Concern: deer damage to crops, gardens, or forests (browse concern)	.488**	.178	7.488	1.629
Concern: tick-borne diseases	.178	.206	.750	1.195
Concern: deer-vehicle collisions	.679**	.208	10.626	1.972
Gender: response group 1 (male)	-.314	.351	.799	.730
Activities: Garden	-.538	.325	2.744	.584
Activities: Farm	.129	.459	.079	1.137
Activities: Manage forest land	-.305	.482	.400	.737
Activities: Hunt deer	-.313	.521	.361	.731
Activities: Drive in areas with lots of deer	1.574***	.362	18.872	4.826
Constant	-3.289	1.054	9.729	.037
Model χ^2	158.83	P <0.001		
Cox & Snell R^2	0.332			
Nagelkerke R^2	0.488			
Number of cases (n)	394			
% who preferred deer population decrease	25.6			
% of cases correctly classified by model	74.4			

*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 Northeast Appalachian Hills AWMU.

	B	*SE*	Wald	*Exp(B)*
Interest: deer viewing	-.924***	.155	35.539	.397
Interest: deer hunting	-.222	.165	1.801	.801
Concern: deer damage to crops, gardens, or forests (browse concern)	.737***	.174	17.904	2.090
Concern: tick-borne diseases	.307	.206	2.207	1.359
Concern: deer-vehicle collisions	.538**	.188	8.172	1.713
Gender: response group 1 (male)	.739*	.333	4.941	2.095
Activities: Garden	.072	.335	.046	1.075
Activities: Farm	-.034	.502	.005	.966
Activities: Manage forest land	.693	.478	2.102	2.001
Activities: Hunt deer	-1.299*	.572	5.154	.273
Activities: Drive in areas with lots of deer	1.220**	.351	12.076	3.386
Constant	-3.625	.902	16.142	.027
Model χ^2	261.07	P <0.001		
Cox & Snell R^2	0.478			
Nagelkerke R^2	0.638			
Number of cases (n)	402			
% who preferred deer population decrease	45.8			
% of cases correctly classified by model	82.6			

*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 Northeast Hudson AWMU.

	B	*SE*	Wald	*Exp(B)*
Interest: deer viewing	-.569***	.141	16.178	.566
Interest: deer hunting	.101	.161	.396	1.107
Concern: deer damage to crops, gardens, or forests (browse concern)	.885***	.179	24.473	2.424
Concern: tick-borne diseases	.301	.209	2.073	1.352
Concern: deer-vehicle collisions	.315	.193	2.676	1.370
Gender: response group 1 (male)	-.219	.353	.386	.803
Activities: Garden	.575	.360	2.556	1.777
Activities: Farm	.361	.467	.598	1.435
Activities: Manage forest land	-.118	.491	.058	.888
Activities: Hunt deer	-1.832**	.582	9.911	.160
Activities: Drive in areas with lots of deer	1.113**	.375	8.838	3.045
Constant	-4.990	1.074	21.580	.007
Model χ^2	156.89	P <0.001		
Cox & Snell R^2	0.365			
Nagelkerke R^2	0.509			
Number of cases (n)	346			
% who preferred deer population decrease	32.4			
% of cases correctly classified by model	79.8			

*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 Northwest Hudson AWMU.

	B	*SE*	Wald	*Exp(B)*
Interest: deer viewing	-.509***	.131	15.152	.601
Interest: deer hunting	-.124	.186	.446	.883
Concern: deer damage to crops, gardens, or forests (browse concern)	.936***	.183	26.121	2.550
Concern: tick-borne diseases	.440	.235	3.512	1.553
Concern: deer-vehicle collisions	.131	.179	.536	1.140
Gender: response group 1 (male)	.220	.317	.483	1.246
Activities: Garden	-.024	.350	.005	.976
Activities: Farm	.989	.774	1.634	2.688
Activities: Manage forest land	-.032	.624	.003	.968
Activities: Hunt deer	.332	.698	.225	1.393
Activities: Drive in areas with lots of deer	.564	.319	3.118	1.757
Constant	-4.519	1.029	19.291	.011
Model χ^2	125.86	P <0.001		
Cox & Snell R^2	0.323			
Nagelkerke R^2	0.445			
Number of cases (n)	323			
% who preferred deer population decrease	34.7			
% of cases correctly classified by model	80.2			

*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 St. Lawrence Valley AWMU.

	B	*SE*	Wald	*Exp(B)*
Interest: deer viewing	-.557***	.153	13.211	.573
Interest: deer hunting	.441*	.191	5.344	1.555
Concern: deer damage to crops, gardens, or forests (browse concern)	.725***	.172	17.756	2.065
Concern: tick-borne diseases	-.008	.164	.003	.992
Concern: deer-vehicle collisions	.444	.186	5.671	1.558
Gender: response group 1 (male)	.151	.366	.169	1.163
Activities: Garden	.352	.328	1.153	1.422
Activities: Farm	.720	.463	2.415	2.054
Activities: Manage forest land	-.030	.420	.005	.970
Activities: Hunt deer	-2.179***	.615	12.555	.113
Activities: Drive in areas with lots of deer	1.132**	.395	8.199	3.100
Constant	-4.364	1.020	18.314	.013
Model χ^2	120.88	P <0.001		
Cox & Snell R^2	0.280			
Nagelkerke R^2	0.420			
Number of cases (n)	368			
% who preferred deer population decrease	23.9			
% of cases correctly classified by model	84.5			

*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 Adirondack AWMU.

	B	*SE*	Wald	*Exp(B)*
Interest: deer viewing	-.537**	.174	9.473	.585
Interest: deer hunting	-.269	.239	1.275	.764
Concern: deer damage to crops, gardens, or forests (browse concern)	.980***	.201	23.729	2.665
Concern: tick-borne diseases	.442	.230	3.708	1.556
Concern: deer-vehicle collisions	.078	.198	.156	1.081
Gender: response group 1 (male)	.518	.449	1.333	1.679
Activities: Garden	-.744	.420	3.134	.475
Activities: Farm	.881	.580	2.313	2.414
Activities: Manage forest land	.052	.608	.007	1.054
Activities: Hunt deer	-.385	.765	.253	.681
Activities: Drive in areas with lots of deer	.171	.387	.196	1.187
Constant	-3.858	1.161	11.034	.021
Model χ^2	92.436	P <0.001		
Cox & Snell R^2	0.242			
Nagelkerke R^2	0.401			
Number of cases (n)	334			
% who preferred deer population decrease	17.4			
% of cases correctly classified by model	87.4			

*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 Delaware-Otsego AWMU.

	B	*SE*	Wald	*Exp(B)*
Interest: deer viewing	.456**	.147	9.556	1.578
Interest: deer hunting	.491***	.150	10.724	1.634
Concern: deer damage to crops, gardens, or forests (browse concern)	-.735***	.180	16.729	.480
Concern: tick-borne diseases	.250	.151	2.763	1.285
Concern: deer-vehicle collisions	-.092	.150	.377	.912
Gender: response group 1 (male)	.639	.436	2.152	1.895
Activities: Garden	-.039	.308	.016	.961
Activities: Farm	.142	.356	.160	1.153
Activities: Manage forest land	.196	.331	.350	1.217
Activities: Hunt deer	.797	.480	2.763	2.219
Activities: Drive in areas with lots of deer	-.444	.339	1.710	.642
Constant	-4.041	.943	18.355	.018
Model χ^2	143.94	P <0.001		
Cox & Snell R^2	0.298			
Nagelkerke R^2	0.450			
Number of cases (n)	407			
% who preferred deer population decrease	23.3			
% of cases correctly classified by model	82.3			

*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 Delaware-Sullivan AWMU.

	B	*SE*	Wald	*Exp(B)*
Interest: deer viewing	.606***	.164	13.631	1.833
Interest: deer hunting	.375*	.173	4.679	1.454
Concern: deer damage to crops, gardens, or forests (browse concern)	-.637***	.182	12.172	.529
Concern: tick-borne diseases	.302	.156	3.730	1.352
Concern: deer-vehicle collisions	-.271	.158	2.954	.762
Gender: response group 1 (male)	.766	.440	3.037	2.151
Activities: Garden	.062	.329	.035	1.063
Activities: Farm	.429	.427	1.008	1.535
Activities: Manage forest land	.057	.407	.019	1.058
Activities: Hunt deer	.141	.579	.059	1.151
Activities: Drive in areas with lots of deer	-.488	.347	1.969	.614
Constant	-3.611	.985	13.449	.027
Model χ^2	98.713	P <0.001		
Cox & Snell R^2	0.255			
Nagelkerke R^2	0.375			
Number of cases (n)	336			
% who preferred deer population decrease	25.6			
% of cases correctly classified by model	80.4			

*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 Eastern Appalachian Plateau AWMU.

	B	*SE*	Wald	*Exp(B)*
Interest: deer viewing	.597***	.154	14.995	1.817
Interest: deer hunting	.457**	.147	9.673	1.580
Concern: deer damage to crops, gardens, or forests (browse concern)	-.449*	.180	6.247	.638
Concern: tick-borne diseases	-.266	.176	2.271	.767
Concern: deer-vehicle collisions	-.117	.163	.513	.890
Gender: response group 1 (male)	.767	.428	3.217	2.154
Activities: Garden	.064	.312	.042	1.066
Activities: Farm	.384	.368	1.089	1.468
Activities: Manage forest land	-.011	.341	.001	.989
Activities: Hunt deer	.576	.459	1.574	1.778
Activities: Drive in areas with lots of deer	-.472	.304	2.416	.624
Constant	-2.703	.881	9.404	.067
Model χ^2	163.55	P <0.001		
Cox & Snell R^2	0.340			
Nagelkerke R^2	0.479			
Number of cases (n)	394			
% who preferred deer population decrease	30.7			
% of cases correctly classified by model	82.7			

*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 Northeast Appalachian Hills AWMU.

	B	*SE*	Wald	*Exp(B)*
Interest: deer viewing	.627***	.189	11.008	1.871
Interest: deer hunting	.130	.229	.323	1.139
Concern: deer damage to crops, gardens, or forests (browse concern)	-.514*	.228	5.104	.598
Concern: tick-borne diseases	-.218	.184	1.402	.804
Concern: deer-vehicle collisions	-.238	.194	1.505	.788
Gender: response group 1 (male)	-.400	.525	.580	.670
Activities: Garden	-.143	.395	.132	.866
Activities: Farm	.610	.466	1.710	1.840
Activities: Manage forest land	-.346	.420	.679	.707
Activities: Hunt deer	1.918*	.778	6.068	6.804
Activities: Drive in areas with lots of deer	-.271	.388	.490	.762
Constant	-1.728	.977	3.128	.178
Model χ^2	136.43	P <0.001		
Cox & Snell R^2	0.288			
Nagelkerke R^2	0.485			
Number of cases (n)	402			
% who preferred deer population decrease	16.7			
% of cases correctly classified by model	85.3			

*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 Northeast Hudson AWMU.

	B	*SE*	Wald	*Exp(B)*
Interest: deer viewing	.657***	.173	14.349	1.929
Interest: deer hunting	.202	.167	1.461	1.224
Concern: deer damage to crops, gardens, or forests (browse concern)	-.097	.193	.252	.907
Concern: tick-borne diseases	-.324*	.159	4.128	.724
Concern: deer-vehicle collisions	-.340	.180	3.555	.712
Gender: response group 1 (male)	.564	.461	1.498	1.758
Activities: Garden	-.302	.347	.759	.739
Activities: Farm	-.365	.467	.610	.694
Activities: Manage forest land	-.203	.479	.180	.816
Activities: Hunt deer	1.298*	.516	6.326	3.663
Activities: Drive in areas with lots of deer	-.560	.354	2.503	.571
Constant	-1.668	.933	3.196	.189
Model χ^2	123.26	P <0.001		
Cox & Snell R^2	0.300			
Nagelkerke R^2	0.453			
Number of cases (n)	346			
% who preferred deer population decrease	23.1			
% of cases correctly classified by model	84.1			

*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 Northwest Hudson AWMU.

	B	*SE*	Wald	*Exp(B)*
Interest: deer viewing	.781***	.198	15.594	2.185
Interest: deer hunting	.352	.229	2.363	1.421
Concern: deer damage to crops, gardens, or forests (browse concern)	-.829***	.264	9.881	.436
Concern: tick-borne diseases	.283	.242	1.366	1.328
Concern: deer-vehicle collisions	-.444	.239	3.441	.641
Gender: response group 1 (male)	.498	.472	1.114	1.645
Activities: Garden	.704	.508	1.918	2.022
Activities: Farm	1.042	.875	1.415	2.834
Activities: Manage forest land	-1.098	.834	1.734	.333
Activities: Hunt deer	1.214	.771	2.476	3.366
Activities: Drive in areas with lots of deer	.083	.450	.034	1.087
Constant	-4.114	1.186	12.035	.016
Model χ^2	94.584	P <0.001		
Cox & Snell R^2	0.254			
Nagelkerke R^2	0.454			
Number of cases (n)	323			
% who preferred deer population decrease	14.2			
% of cases correctly classified by model	89.2			

*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 St. Lawrence Valley AWMU.

	B	*SE*	Wald	*Exp(B)*
Interest: deer viewing	.396**	.142	7.815	1.486
Interest: deer hunting	.067	.159	.177	1.069
Concern: deer damage to crops, gardens, or forests (browse concern)	-.628***	.170	13.628	.534
Concern: tick-borne diseases	.338**	.127	7.048	1.403
Concern: deer-vehicle collisions	-.277*	.142	3.825	.758
Gender: response group 1 (male)	.238	.370	.413	1.268
Activities: Garden	-.547	.284	3.710	.579
Activities: Farm	-.133	.408	.107	.875
Activities: Manage forest land	.127	.350	.131	1.135
Activities: Hunt deer	1.660**	.505	10.810	5.261
Activities: Drive in areas with lots of deer	-.326	.296	1.215	.722
Constant	-1.807	.823	4.825	.164
Model χ^2	130.11	P <0.001		
Cox & Snell R^2	0.298			
Nagelkerke R^2	0.408			
Number of cases (n)	368			
% who preferred deer population decrease	36.1			
% of cases correctly classified by model	77.7			

*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 Adirondack AWMU.

	B	*SE*	Wald	*Exp(B)*
Interest: deer viewing	.495**	.149	10.944	1.640
Interest: deer hunting	.500**	.168	8.837	1.649
Concern: deer damage to crops, gardens, or forests (browse concern)	-.301	.173	3.044	.740
Concern: tick-borne diseases	-.037	.152	.058	.964
Concern: deer-vehicle collisions	-.193	.144	1.806	.824
Gender: response group 1 (male)	-.139	.377	.135	.871
Activities: Garden	-.114	.336	.115	.892
Activities: Farm	-.339	.446	.577	.712
Activities: Manage forest land	-.171	.408	.175	.843
Activities: Hunt deer	.885	.492	3.238	2.424
Activities: Drive in areas with lots of deer	-.386	.313	1.524	.680
Constant	-2.333	.824	8.008	.097
Model χ^2	130.35	P <0.001		
Cox & Snell R^2	0.323			
Nagelkerke R^2	0.445			
Number of cases (n)	334			
% who preferred deer population decrease	35.0			
% of cases correctly classified by model	78.7			

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