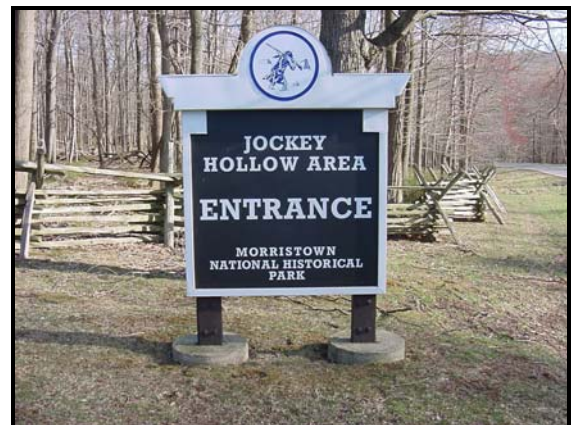

Deer, People, and Parks:

Perspectives of Residents in Communities Near Morristown National Historical Park



December 2007

HDRU Series No. 07-10

Prepared by

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EXECUTIVE SUMMARY

Study Background and Purpose

We established a research project to clarify human dimensions of white-tailed deer (*Odocoileus virginianus*) issues in National Park Service (NPS) units in the northeastern U.S. as part of a cooperative agreement between the NPS Biological Resource Management Division (BRMD) and Cornell University's Human Dimensions Research Unit (HDRU) in the Department of Natural Resources. The project was completed in three phases; this report details findings from research phase IIIB at Morristown National Historic Park (MORR).

Methods

HDRU staff conducted a series of mail surveys specific to each of five NPS parks for the purpose of describing and understanding the views of local residents with respect to deer issues and suggesting how NPS staff might utilize this understanding to enhance management practices, including stakeholder engagement activities.

We developed a 16-page questionnaire with sections focused on perceptions about and use of Morristown National Historic Park (MORR) lands, perceptions of and concerns about deer, opinions about NPS decision making and land management, and information about the backgrounds of respondents. Our sampling universe was divided into two strata. The first stratum consisted of residents, aged 18 and older, of owner-occupied homes living in communities adjacent to MORR. The second stratum consisted of residents of owner-occupied homes who live slightly further away, in surrounding communities within a few miles of MORR. We mailed questionnaires to 1,200 households (600 in each stratum). We mailed all members of the sample a cover letter and questionnaire on April 19, 2007. We contacted nonrespondents up to three additional times, with the last reminder mailing taking place on May 18, 2007.

Key Findings and Study Conclusions

We received 351 completed questionnaires, for an adjusted response rate of 32.6% (response rates in the adjacent and surrounding communities strata were 38% and 26%, respectively). We compared respondents and nonrespondents on 12 variables measured in our telephone follow-up study of nonrespondents. Nonrespondents had visited the park more frequently over the previous 12 months, were less likely to think they could influence decisions within MORR, and were less likely to agree that management at MORR is typically trustworthy. However, respondents did not differ from nonrespondents with regard to gender, age, years living near MORR, frequency of encounters with deer in their community, or attitudes toward deer in their community. Moreover, overall patterns of response were similar for nonrespondents and respondents from the two study strata. Given those similarities, we decided not to weight the data based on nonrespondent information.

The following bullets summarize key findings and study conclusions.

- Local residents appreciate MORR for its amenity values (e.g., as open space, as a leisure resource, as natural habitats). Many visit MORR a few times each year to view the scenery, get exercise, and spend time outside.
- Many local residents, especially those living in adjacent communities, interact with deer regularly. They believe deer use both park lands and local communities as their habitat—they recognize that the park and local communities share a common deer herd.
- A majority of local residents enjoy deer, but worry about deer-related problems. Many residents are very concerned about negative impacts associated with deer-vehicle collisions, disease transmission from deer to humans, and deer browsing damage to landscape and natural plants. They are more concerned about these impacts in their community than in the park. Future discussions of potential deer management activities should address how these concerns relate to park management objectives and the degree to which community concerns about those impacts may be affected, either directly or indirectly.
- About half the respondents believe that deer in the park are having a negative impact on park plants; however, lower proportions regard deer as a serious risk to public health or safety in the park.
- A majority of respondents believe NPS should be managing deer-related impacts on MORR, and they believe NPS actions to manage deer-related impacts would affect local communities. The majority of those who anticipated an effect on communities thought actions by the park would affect them positively. Some expressed uncertainty about how park actions would affect communities, again highlighting the point that any future actions by the park to manage deer-related impacts should be accompanied by communication to clarify how park actions are expected to affect local communities.
- While not reflected in responses from all community residents, a base of general credibility and trust exists for MORR decision makers. However, a substantial proportion of residents in neighboring communities are uncertain about the beliefs of NPS managers regarding deer and deer management in the park.
- About half of respondents had not heard or read news stories about the park in the previous 12 months and few residents of either community type had participated in activities where they provided input to decisions about park management activities.
- The majority of the respondents agreed that public input makes for better management decisions and that multi-stakeholder dialogue provides better opportunities for future relationships. At least a quarter of respondents indicated that they would likely participate if the park offers opportunities to discuss management of deer-related impacts in the park. However, a majority also agree with the statement, “I do not have enough information to provide meaningful input on deer management.”

- A substantial proportion of residents in both community categories expressed uncertainty about the degree to which NPS decision makers listen to community residents or consider their input in decisions.
- Experience with deer and concern about deer-related impacts is stronger in adjacent communities than in surrounding communities, indicating that these two communities represent different publics. Communication intended to reach one or the other community type will have different fundamental objectives.
- This study provides NPS decision makers with information about community interests related to deer impacts and management of NPS lands. Insights from this study can be used to guide ongoing communication about deer management between NPS personnel and residents of neighboring communities. Findings should be especially useful to park managers as they think about tailoring communication toward communities of place and communities of interest.

TABLE OF CONTENTS

	Page
ACKNOWLEDGMENTS	ii
EXECUTIVE SUMMARY	iii
LIST OF TABLES	viii
LIST OF FIGURES	x
INTRODUCTION	1
The Context for Deer Management in Morristown National Historic Park	1
The Morristown National Historic Park Deer Management Study	3
Purpose of this report:	5
METHODS	5
Study area.....	5
Phase IIIB Survey instrument	5
Survey implementation	6
Nonrespondent follow-up survey.....	7
Analysis.....	7
Community importance of MORR:	7
Perceptions of deer behavior:.....	8
Concerns about deer:.....	8
Public image of MORR management:	8
RESULTS	8
Respondent characteristics.....	9
Use of Morristown NHP	9
Deer-related attitudes, perceptions, and concerns.....	10
Perceptions of MORR staff and land management.....	18
Interest in opportunities to provide input to MORR on deer management.....	24
SUMMARY AND CONCLUSIONS	33
LITERATURE CITED	36
APPENDIX A: Survey instrument	40
APPENDIX B: Factor loadings for data reduction scales	55
APPENDIX C: Non-respondent-respondent comparison tables	59

LIST OF TABLES

Table 1. Response rates by stratum, for the 2007 Morristown National Historical Park (NHP) Deer, People and Parks survey.	9
Table 2. Rates of participation in outdoor activities reported by respondents to the 2007 Morristown NHP Deer, People and Parks survey.	10
Table 3. Reasons for visiting Morristown NHP (MORR) lands offered by the 86% of residents who visited MORR for a purpose other than passing through on the way to another destination. Numbers represent percent of respondents who indicated each reason.	11
Table 4. Attitudes toward deer in Morristown NHP (MORR) and surrounding communities expressed by respondents to the 2007 MORR Deer, People and Parks survey, by stratum.	12
Table 5. Perceptions of deer in Morristown NHP (MORR) expressed by respondents to the 2007 MORR Deer, People and Parks survey, by stratum.	13
Table 6. Perceptions of deer in communities near Morristown NHP (MORR), expressed by respondents to the 2007 MORR Deer, People and Parks survey, by stratum.	14
Table 7. A comparison of mean scores on factors within a perception of deer scale (in the park and in communities) obtained by community stratum, for respondents to the 2007 Morristown NHP Deer, People and Parks survey.	15
Table 8. Concerns about deer-related impacts in Morristown NHP (MORR) expressed by respondents to the 2007 MORR Deer, People and Parks survey, by stratum.	16
Table 9. Concerns about deer-related impacts “in your community, outside the park,” expressed by respondents to the 2007 MORR Deer, People and Parks survey, by stratum.	17
Table 10. A comparison of mean scores on factors within a deer-related impacts scale obtained by community stratum, for respondents to the 2007 Morristown NHP Deer, People and Parks survey.	18
Table 11. Attitudes about benefits that Morristown NHP (MORR) provides to people living near the park (“adjacent communities”) and in surrounding communities, reported in the 2007 MORR Deer, People and parks survey.	19
Table 12. A comparison of mean scores on factors within a Morristown NHP (MORR) community importance scale, expressed by respondents to the 2007 MORR Deer, People and Parks survey in two community strata.	21

LIST OF TABLES (continued)

Table 13. Beliefs about deer-related impacts and impacts management in Morristown NHP (MORR) expressed by respondents to the 2007 MORR Deer, People and Parks survey in two community strata.	22
Table 14. Beliefs about Morristown NHP (MORR) staff perceptions of deer-related impacts and impacts and impacts management in MORR expressed by respondents to the 2007 MORR Deer, People and Parks survey in two community strata.	25
Table 15. Perceptions of Morristown NHP (MORR) as a land manager and community partner, expressed by respondents to the 2007 MORR Deer, People and parks survey in two community strata.	27
Table 16. Perceptions of Morristown NHP (MORR) management public image, expressed by respondents to the 2007 MORR Deer, People and Parks survey in three community strata.	28
Table 17. A comparison of mean scores on factors within a Morristown NHP (MORR) public image scale, expressed by respondents to the 2007 MORR Deer, People and Parks survey in two community strata.	29
Table 18. Perceptions about Morristown NHP (MORR) use of public input for land management decisions, expressed by respondents to the 2007 MORR Deer, People and parks survey in two community strata.	30
Table 19. Actions taken in the previous 12 months to obtain information about Morristown NHP (MORR), reported by respondents to the 2007 MORR Deer, People and parks survey in two community strata.	31
Table 20. Likelihood of participating in involvement opportunities if those opportunities were provided my Morristown NHP (MORR), reported by respondents to the 2007 MORR Deer, People and parks survey in two community strata.	32
Table 21. Level of influence respondents perceive they have to influence management of Morristown NHP (MORR) or communities surrounding the park, expressed by respondents to the 2007 MORR Deer, People and parks survey in two community strata.	33

LIST OF FIGURES

Figure 1. Geographic location of Morristown National Historic Park (MORR).....	2
Figure 2. Geographic boundaries used to assign households to a community.	6

INTRODUCTION

White-tailed deer have been a major concern in park units of the northeastern U.S. for over two decades, and biological studies have been undertaken at a number of parks to determine deer population density, movement, and impact on park resources (for example: Frost et al. 1997, Lovallo and Tzilkowski 2003, Porter and Underwood 1999, Shafer-Nolan 1997, Underwood 2005, Underwood and Porter 1991, Warren 1991). To reduce adverse impacts of deer to park resources, the NPS may propose actions that are consistent with NPS policy and the park's enabling legislation. Deer can have profound impacts not only on a park's natural and cultural resources, but also on the residents of adjacent communities. In addition, any management actions considered by a park also may impact stakeholders (i.e., may cause collateral impacts, Decker et al. 2006), either tangibly or intangibly. Likewise, actions taken by park neighbors can exacerbate or diminish impacts experienced in the park that are associated with deer.

While park management decisions ultimately are made by NPS, such decisions are guided by the fundamental purpose of the NPS, which includes "...providing for the enjoyment of park resources and values by the people of the United States," with types of activities and use level that avoid impairment of the resource condition or value (National Park Service 2006:10). In addition, the NPS has adopted a civic engagement philosophy "... that will help ensure the relevance of NPS resources and programs to people, as well as ensure NPS responsiveness to diverse public viewpoints, values, and concerns" (National Park Service 2007:2). NPS policies also recognize that "...parks are integral parts of larger regional environments, the service will work cooperatively with others to anticipate, avoid and resolve potential conflicts...and address mutual interests in the quality of life of community residents" (National Park Service 2006:13). Local stakeholders often are crucial to the initial identification and articulation of wildlife issues at parks, such as those related to deer, although park management objectives and policy influence the degree to which NPS becomes involved in management of those issues (Leong and Decker 2005). After the NPS formally identifies, defines, publicizes and is in the process of planning actions, regional or national stakeholder groups may become involved in management planning. In addition, NPS policies place emphasis on public participation in wildlife management planning, especially local stakeholders (National Park Service 2006, 2007). Federal agencies also are required to engage stakeholders whenever any action is considered that may significantly impact the environment (National Environmental Policy Act 1969). In addition to these policy directives, a growing body of literature recognizes the role of deliberative stakeholder engagement in resolving conflicts, improving the quality of decisions, and building relationships (for example, Beierle and Cayford 2002, Halvorsen 2003, Wondolleck and Yaffee 2000). Yet few studies have addressed the ways in which human values and attitudes affect wildlife management planning in national parks and land units managed by NPS. The research we report here addressed those information needs in one NPS park.

The Context for Deer Management in Morristown National Historic Park

Located in north central New Jersey approximately 30 miles west of New York City (Figure 1), Morristown National Historical Park (hereafter referred to as MORR) is comprised of 1,698 acres and contains four separate units. Established on March 2, 1933, it is the first national

historical park in the national park system and preserves the lands and features associated with the grim winter encampments of the Continental Army during the War for Independence. The NPS maintains the woodlands of MORR as a culturally significant natural resource reminiscent of the 18th century hardwood forest as it appeared to the Continental Army during the winter encampment of 1779-80. The park's forests are part of a relatively large area of woodland and open land mosaic situated in a heavily populated suburban setting.

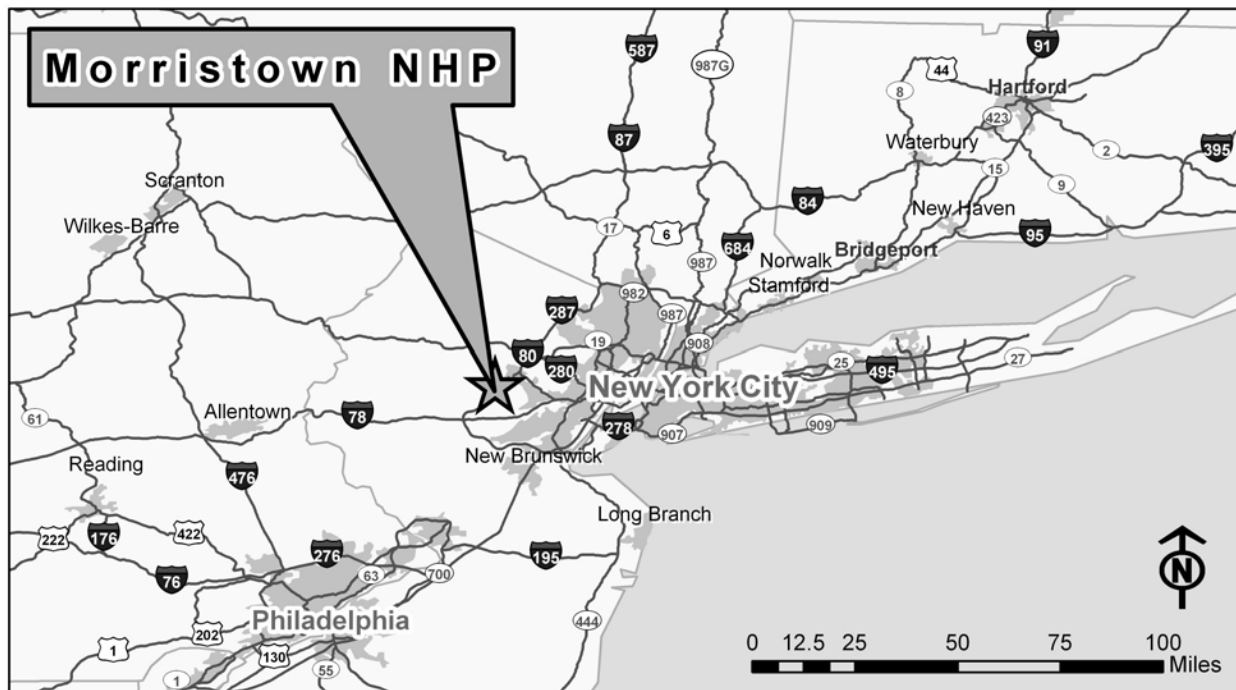


Figure 1. Geographic location of Morristown National Historic Park (MORR).

It appears that the population of deer in the park increased dramatically during the 1980's. No estimate of deer density is available for the mid-1970's, however, a study conducted in 1977 observed healthy deer, lack of browse line, and abundant understory shrub and tree reproduction, concluding that the deer population in the park was in balance with the available resources (Ehrenfeld 1977). In the mid-1980's, a study of the park's largest unit, Jockey Hollow, estimated deer densities at 65 deer per km² (Christie and Sayre 1989). Vegetation composition, structure, and species richness appeared to indicate overbrowsing, and this study concluded that the deer population exceeded the carrying capacity of the park forest land. They also noted that the park and surrounding open areas acted as a sanctuary for the deer amidst developing residential and commercial areas. In addition, deer survival was closely linked with acorn production and the amount of open land for grazing. Negative impacts to the park's forests due to deer browsing also were noted in additional studies conducted in the 1990's (Russell 1995; Ehrenfeld 1999).

MORR was utilized as a site to examine aspects of deer biology and site-specific factors which impact the feasibility of fertility control programs (Underwood 2007). As part of the study, deer density estimates were recorded. In 1996, an adjacent county park initiated a deer control program. Deer density estimates by park staff and researchers indicated an approximate 40-50% lowering in the number of deer in the Jockey Hollow Unit since the initiation of the county park hunt.

The preferred management alternative outlined in MORR's 2004 General Management Plan stated that lands beyond established interpretive areas would have the following desired resource condition: mixed hardwood forest is sustained, naturally regenerating, reflecting historic character, biodiversity and natural processes, woodlands, buffer zones, fields, interpretive exhibits, trails and scientific devices (Boston Support Office, National Park Service 2004).

A technical report prepared for MORR (Shaw and Patterson 2006) describes the current forest condition and develops management strategies and specific quantifiable objectives to describe the desired future condition. The strategies all involve reduction of deer browse and control of invasive plant species. A 10-acre exclosure was recently constructed in the park to implement and refine some of the management strategies without the effect of deer browse. Results from experimental treatments within the exclosure will provide management with information to develop resource management strategies to achieve desired future conditions for the park's forests.

Because deer move through political jurisdictions and across property boundaries, local community members experience a range of impacts from deer they associate with MORR, just as MORR experiences impacts from deer that use local communities. Impacts have been generically defined as socially-determined important effects (e.g., ecological, economic, psychological, health, and safety, etc.) of events or interactions involving (a) wildlife and other natural resources, (b) humans and wildlife, and (c) wildlife management interventions (Riley et al. 2002).

The degree to which impacts from deer warrant management action depends on a park's mission and management policies. Recent NPS Management Policies (2006) recognize that natural resources in parks are inherently important, regardless of park designation. Recent research has improved understanding of effects deer may have on achievement of desired resource conditions within MORR. Human dimensions research is needed to better understand how residents of communities neighboring MORR perceive deer are affecting them and the well-being of their communities.

The Morristown National Historic Park Deer Management Study

While biological studies can help assess physical impacts to the environment, sociological studies are necessary to determine impacts to stakeholders. We established a research project to clarify human dimensions of white-tailed deer issues in NPS units in the northeastern U.S. as part of a cooperative agreement between the NPS Biological Resource Management Division (BRMD) and Cornell University's Human Dimensions Research Unit (HDRU) in the Department of Natural Resources. Information from the overall research project

is intended to help NPS decision makers better understand community interests related to deer impacts and management of NPS lands. Findings from each research area provide insights to guide ongoing communication between NPS personnel and residents of communities near parks. The data reported herein will be especially useful to park managers as they think about tailoring communication toward communities of place and communities of interest. This study also will help park managers better understand factors associated with intention to participate in deer management planning opportunities.

The project was completed in three phases.

In phase I of our research project, Leong and Decker (2005) used a web-based survey and semi-structured in-depth discussions with NPS natural resource managers and staff describe the deer situation in northeastern parks and develop an approach for inquiry to aid in management practice and policy interpretation, resulting in a study plan. Managers described a multi-tiered complex of influences shaping a park's management environment and identified five key elements for the foundation of successful management plans: understanding the park's unique management environment, internal NPS coordination, coordination with external stakeholders, effective planning processes, and adequate resources. For each of these elements, local communities were seen as significantly affecting management activity and so became the focal point for additional inquiry.

In research phase II, Leong (2007) conducted in-depth semi-structured interviews with 20 public participation practitioners to determine how public participation and civic engagement methods fit within NPS wildlife management, including (but not limited to) NPS policies that fulfill the purposes of the National Environmental Policy Act (1969). Interviewees included: natural resource managers, superintendents, rangers, and scientists with the NPS, USDA Forest Service, U.S. Fish and Wildlife Service, Bureau of Land Management, and US Geological Survey, and; specialists in community planning, dispute resolution, and public participation who regularly provide their services to federal land management agencies. Practitioners identified participatory strategies that integrate the substance of negotiations, relationships between stakeholders, and process design.

In research phase IIIA, HDRU staff conducted qualitative interviews with a total of 267 local community residents living near three suburban NPS units (i.e., Fire Island National Seashore [Leong and Decker 2007a], Valley Forge National Historical Park [Leong and Decker 2007b], and Prince William Forest Park [Leong and Decker 2007c]). Interviews with residents of communities near parks were used as an orientation to community members' understanding of park wildlife management, expectations for public input in management planning, and experiences with the park related to wildlife management. Capacity needs were identified to improve future public participation efforts in wildlife management planning. Insights from study phase IIIA informed development of a mail-back survey to NPS managers and residents of communities near five parks (phase IIIB).

Purpose of this report:

This report focuses on results of the final phase of research (phase IIIB), conducted in MORR. The goal of phase IIIB research was to gain an in-depth understanding of a variety of stakeholder beliefs and attitudes related to deer and deer-related impacts. This phase of research focused on comparisons of residents living in communities adjacent to a park with residents living in surrounding communities near parks (i.e. the study compared communities with a different potential to experience direct impacts from deer or deer management at parks, due to their relative distance from a park). The sociological research conducted during this phase of the project uncovers a range of local community members' opinions and experiences related to: deer issues and deer management at MORR, the role of MORR in deer and other wildlife management, and the influence of public input in wildlife management at MORR.

METHODS

Study area

Potential study sites were identified based on discussions with BRMD staff, Regional Chief Scientists from the Northeast and National Capital Regions of NPS, and Natural Resource Managers at NPS units throughout the northeast. Seven NPS units volunteered to participate in the project; three sites were ultimately chosen to represent various stages of maturity of their deer issues and amount of outreach effort related to these issues. MORR, in central New Jersey, represents a park with a long history of deer issues and limited public outreach activities about deer. Fire Island National Seashore, on Long Island, New York, represents a park with a long history of deer issues and experience with outreach activities with communities and visitors about deer. Prince William Forest Park, in Virginia, represents a park where deer issues are emerging only recently and relatively few outreach activities have occurred related to deer. No parks were identified that were experiencing recently emerging deer issues yet had engaged in many outreach activities about deer.

Phase IIIB Survey instrument

As described above, the phase IIIB survey instrument is the product of a multi-step process, including our previous research experience on community-based deer management and insights gained through study phases I and II. Many of the items used in our survey instrument were pilot tested in a community-based deer management survey instrument used in central New York in 2006 (Siemer et al. 2007).

The data collection instrument for study phase IIIB was a 16-page questionnaire with sections focused on perceptions about and use of NPS lands, perceptions of and concerns about deer, opinions about NPS decision making and land management, and information about the backgrounds of respondents (Appendix A). We designed the instrument to assess key beliefs held by residents of local communities with respect to issues related to deer and deer management. In addition, we designed the survey instrument to help determine whether the perspectives of interviewees in phase IIIA are representative of a random sample of local residents and whether responses differ for parks with longer histories of deer impacts.

Survey implementation

Our sampling universe was divided into two strata. The first stratum consisted of residents, aged 18 or older, of owner-occupied homes living in communities adjacent to MORR. The second stratum consisted of residents of owner-occupied homes who live slightly farther away, in surrounding communities within a few miles of MORR (Figure 2).

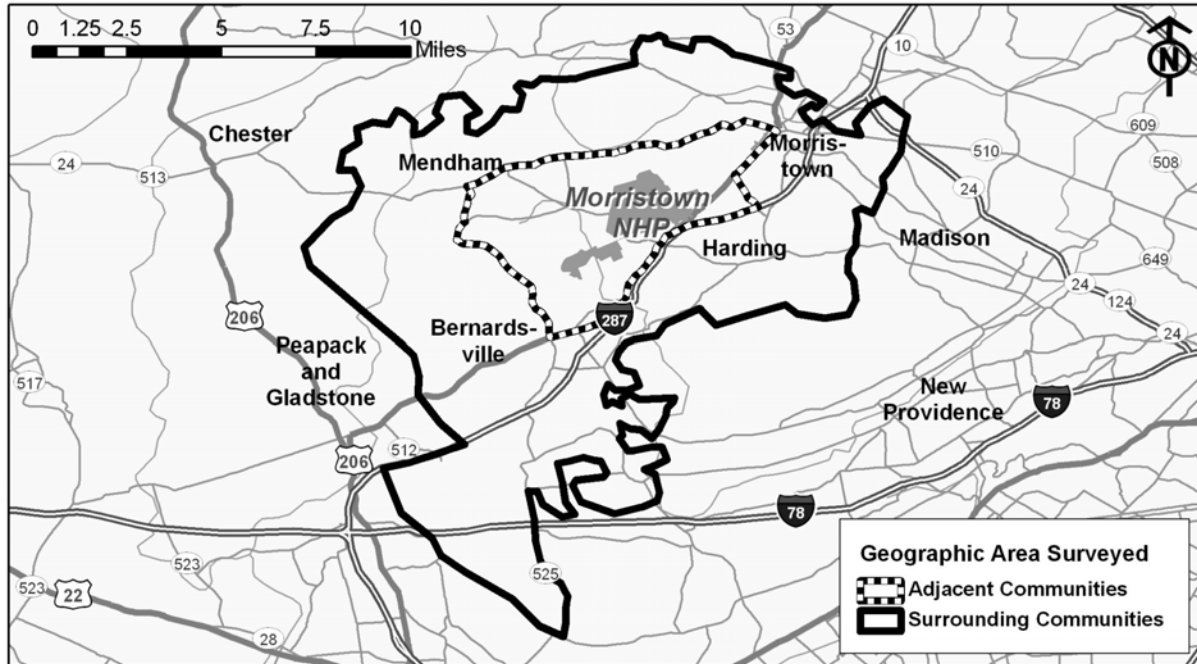


Figure 2. Geographic boundaries used to assign households to a community.

Adjacent communities were defined as the residential neighborhoods that share a boundary with the park, bounded by major geographic features (rivers, highways, other major roads). Boundaries include Mendham Road on the north; Mt. Kemble Avenue, Harter Road, and I-287 on the southeast; and CR-525 on the west.

Surrounding communities were defined as the townships and boroughs that border the park (excluding adjacent communities): Morristown Town, Morris Township, Mendham Borough, Mendham Township, Harding Township, Bernards Township, and Bernardsville Borough.

We mailed questionnaires to 1,200 households (600 in each stratum). We used a four-wave mailing approach, similar to the total design approach advocated by Dillman (2000). We mailed all members of the sample a cover letter and questionnaire on April 19, 2007. We contacted nonrespondents up to three additional times, with the last reminder mailing taking place on May 18, 2007.

Nonrespondent follow-up survey

To assess potential for nonresponse bias in the data, we conducted a follow-up study with nonrespondents. The purpose of the follow-up study was to determine if non-respondents differed significantly from respondents on key questions. We developed a 12-item telephone interview instrument and contracted with Cornell University's Survey Research Institute (SRI) to use the instrument in a telephone survey with a random sample of nonrespondents. SRI staff set a target of completing 50 interviews in each stratum. They initiated data collection on June 18, 2007 and completed interviewing on July 8, 2007 (Box 1).

Box 1. Outcome of follow-up telephone interviews after 2007 VFNHP Deer, Parks, and People mail survey.	Adjacent communities	Surrounding communities (n)	Overall
Completed telephone interview	50	50	100
Bad phone number	12	19	31
Too Ill; Deceased; Incapable of responding	0	0	0
Language problem	0	0	0
Did not call	108	122	230
Refused	1	4	5
Pending (number called; person not reached)	172	196	368
Total	343	391	734

Analysis

In this report we provide descriptive study highlights using a set of tables with frequencies of response from residents in two geographic strata: (1) adjacent communities and (2) surrounding communities. We used chi-square tests to identify statistically different results between the strata and between respondents and non-respondents. Differences are reported at the $p < 0.05$ level of significance.

We used factor analysis as a technique to reduce data from individual items into scales. We were able to develop multi-item scales for: (1) community importance of MORR; (2) perceptions of deer behavior; (3) concerns about deer; and (4) public image of MORR management. All data analysis was conducted using SPSS version 15.0.0 (SPSS Inc., Chicago IL).

Community importance of MORR:

We developed 12 items to assess community residents' held values for MORR as a community asset. We used those 12 items to create a multi-item index of community importance placed on MORR. Dropping three items yielded a 9-item scale with high reliability ($\alpha = 0.789$). Principal axis factoring identified three factors with an eigen value above 1. These factors accounted for 67% of the variance between items. Factor loadings ranged from 0.474 to

0.911. We labeled the factors “amenity values,” “ecological values,” and “economic values” (Appendix B, Table B1).

Perceptions of deer behavior:

We developed 12 items to assess community residents’ perceptions of deer within MORR and in local communities. Dropping three items yielded a 9-item scale with high reliability ($\alpha = 0.832$ for perceptions of deer within MORR; $\alpha = 0.818$ for perceptions of deer in local communities). Principal axis factoring identified two factors with an eigen value above 1. That factor accounted for 57% of the variance between items in the park scale (55% of variance on the community scale). Factor loadings ranged from 0.488 to 0.844 in the park scale and from 0.581 to 0.822 in the community scale. We labeled the factors “harmless” and “natural” behavior (Appendix B, Table B2).

Concerns about deer:

We developed 12 items to assess community residents’ concerns about deer within MORR and in neighboring communities. Dropping two items yielded a 10-item scale with high reliability ($\alpha = 0.854$ for concerns in the park scale; $\alpha = 0.837$ for concerns in local communities scale). Principal axis factoring identified three factors with an eigen value above 1. The factors accounted for 64% of the variance between items in the park scale and 61% of variance in the community scale). Factor loadings ranged from 0.530 to 0.876 in the park scale and 0.594 to 0.886 in the community scale. We labeled the factors “damage concerns,” “other concerns,” and “concerns about deer” (Appendix B, Table B3).

Public image of MORR management:

We developed 8 items to assess community residents’ image of MORR management. Dropping two items yielded a 6-item scale with high reliability ($\alpha = 0.849$). Principal axis factoring identified two factors with an eigen value above 1. Those factors accounted for 79% of the variance between items. Factor loadings ranged from 0.648 to 0.894. We labeled the factors “professionalism” and “community affiliation” (Appendix B, Table B4).

RESULTS

We received 351 completed questionnaires, for an adjusted response rate of 32.6% (Table 1). Response rate was higher for the adjacent communities stratum (38.8% responded in the adjacent community stratum; 26.0% responded in the surrounding communities stratum). We compared respondents and nonrespondents on 12 variables measured in our telephone follow-up study of nonrespondents (Appendix C). Nonrespondents had visited the park more frequently over the previous 12 months, were less likely to think they could influence decisions within MORR, and were less likely to agree that management at MORR is typically trustworthy. However, respondents did not differ from nonrespondents with regard to gender, age, years living near MORR, frequency of encounters with deer in their community, or attitudes toward deer in their community. Moreover, overall patterns of response were similar for nonrespondents and respondents from the two study strata. Given those similarities, we decided not to weight the data based on nonrespondent information.

Table 1. Response rates by stratum, for the 2007 Morristown National Historical Park (NHP) Deer, People and Parks survey.

Community	Sample	Returns	Not deliverable	Not usable	Adjusted response rate (%)
Adjacent communities	600	214	48	0	38.77
Surrounding community	600	137	74	4	26.05
Total	1,200	351	122	4	29.25

The following sections summarize study results within all the major categories of questions in the mail survey instrument. We note differences between strata that have practical implications for gathering input from or communicating with residents of communities near MORR.

Respondent characteristics

Respondents included a nearly even split of men and women (47% of respondents male in adjacent communities; 51% of respondents male in surrounding communities). Mean age was 57 years old. On average, respondents had lived near MORR 24 years. The majority of respondents in adjacent and surrounding communities participated in walking/hiking and viewing wildlife. Participation in traditional wildlife-related and outdoor activities (i.e., fishing, hunting, camping) was relatively low in both types of communities. There were no significant differences between strata with respect to outdoor activity involvement (Table 2).

Use of Morristown NHP

Most local residents (over 90% of respondents and nonrespondents) had visited MORR at some time. About 14% of respondents reported only passing through the park on their way to another destination over the previous 12 months. Of those who visited MORR as their primary destination, most (93% of adjacent community residents and 83% of surrounding community residents) stayed less than 4 hours per visit. Respondents from adjacent communities were more likely than respondents from surrounding communities to have visited the park 10 or more times in the preceding 12 months (22% vs. 10%; $\chi^2 = 12.263$; $df = 5$; $p = 0.031$). Most respondents (67% in adjacent communities; 81% in surrounding communities) had visited the park 0 - 4 times in the previous 12 months. Nonrespondents in both strata were more likely than respondents to have visited the park 5 or more times during that time (Table C2).

Table 2. Rates of participation in outdoor activities reported by respondents to the 2007 Morristown NHP Deer, People and Parks survey.

Activity	Adjacent communities (n=210)	Surrounding communities (n=133)	Chi-square	P-value
Hiked/walked	93.3	88.7	2.23	NS ¹
Viewing wildlife	59.0	57.9	0.04	NS
Picnicking	38.1	43.6	1.03	NS
Biking	35.7	44.4	2.55	NS
Photo/sketch	23.8	18.8	1.19	NS
Boating	20.0	17.3	0.38	NS
Fishing	16.7	11.3	1.89	NS
Camping	12.9	16.5	0.90	NS
Horse riding	8.1	14.3	3.32	NS
Hunting	1.4	1.5	<0.01	NS

¹Not significant

The most common reasons for visiting MORR were to spend time outdoors, view the scenery, get exercise, enjoy nature, and spend time with family or friends. Many also visited the park to learn about history. Although residents of adjacent communities visited the park more frequently, there were no differences between adjacent and surrounding community residents with regard to reasons for visiting the park (Table 3).

Deer-related attitudes, perceptions, and concerns

Over a quarter of visitors to MORR saw deer on half or more of their visits to the park. Adjacent community residents were more likely than surrounding community residents to see deer on nearly every visit ($\chi^2 = 10.673$; $df = 3$; $p = 0.014$). Most respondents encountered deer regularly in their communities (i.e., majorities of respondents from both community types reported seeing deer daily or a few times a week) (Appendix C, Table C3). Adjacent community residents were more likely than surrounding community residents to report that they see “almost daily” in their community ($\chi^2 = 20.587$; $df = 4$; $p < 0.001$).

Table 3. Reasons for visiting Morristown NHP (MORR) lands offered by the 86% of residents who visited MORR for a purpose other than passing through on the way to another destination. Numbers represent percent of respondents who indicated each reason.

Reason for visiting MORR	Adjacent communities (n=172)	Surrounding communities (n=101)	Chi-square	P-value
Be outside	77.3	72.3	0.87	NS ¹
View the scenery	76.2	79.2	0.33	NS
Exercise	64.5	54.5	2.71	NS
Enjoy the sounds and smells of nature	55.2	59.4	0.45	NS
Spend time with family or friends	51.7	52.5	0.01	NS
Learn about history	49.4	60.4	3.08	NS
Get away from demands	37.2	34.7	0.18	NS
View wildlife	35.5	43.6	1.76	NS
Volunteer in park	1.7	3.0	0.44	NS
Other	11.0	10.9	<0.01	NS

¹Not significant

The majority of respondents in both strata reportedly enjoy deer, but worry about deer-related problems in MORR (Table 4). Attitudes toward deer in neighboring communities were less positive, with a third of respondents in both community types reporting that they do not enjoy deer in their community (Table 4). Attitudes toward deer were similar in both community types (Table 4).

Table 4. Attitudes toward deer in Morristown NHP (MORR) and surrounding communities expressed by respondents to the 2007 MORR Deer, People and Parks survey, by stratum.

	n	No particular feelings	Enjoy and do not worry	Enjoy BUT worry	Do not enjoy	Chi- square	P-value
Attitude toward Deer in MNHP							
Community strata:							
Adjacent	192	15.6	15.6	60.9	7.8	6.525	NS ¹
Surrounding	123	26.8	15.4	52.8	4.9		
Attitude toward Deer in your community							
Community strata:							
Adjacent	199	1.5	11.1	54.8	32.7	1.865	NS
Surrounding	129	3.9	10.9	52.7	32.6		

¹Not significant

Residents of the two local community types held similar perceptions of deer behavior in the park and in local communities (Table 5-6). Most respondents in both strata viewed deer behavior in the park and in their communities as almost always peaceful, normal, natural, and rarely aggressive, threatening, or strange (Table 5-6). These perceptions are echoed in the high and uniform mean scores both strata received on the “harmless” and “natural” factors reported in Table 7.

We assessed resident’s concerns about a range of deer-related impacts. We found that substantial proportions of residents were very concerned about deer-car collisions, diseases and/or parasites carried by deer, and deer browsing on landscape plants, vegetable gardens, and naturally growing flowers, trees, and shrubs (Table 8-9). More respondents were very concerned about all three categories of browsing damage in their community than were concerned about browsing damage in MORR (Table 8-9). Concern about deer damage to levels of concern were not different across strata. The finding that residents of both community types placed highest importance on concerns about deer-vehicle collisions, disease transmission, and browsing damage is expressed in aggregate by the high mean for the factor “damage concerns” in Table 10.

Table 5. Perceptions of deer in Morristown NHP (MORR) expressed by respondents to the 2007 MORR Deer, People and Parks survey, by stratum.

In Morristown NHP deer, in general are...	Strata	n	(Percent)			Chi- square	P- value
			Rarely	Some times	Almost Always		
wild	Adjacent	156	33.3	23.1	43.6	0.241	NS ¹
	Surrounding	88	35.2	20.5	44.3		
peaceful	Adjacent	166	2.4	14.5	83.1	3.848	NS
	Surrounding	93	1.1	23.7	75.3		
behaving strangely	Adjacent	163	85.3	11.7	3.1	1.983	NS
	Surrounding	92	82.6	16.3	1.1		
dangerous	Adjacent	164	65.2	26.8	7.9	0.719	NS
	Surrounding	90	63.3	25.6	11.1		
tame	Adjacent	162	26.5	34.6	38.9	2.721	NS
	Surrounding	93	33.3	37.6	29.0		
behaving normally	Adjacent	163	3.7	17.2	79.1	2.382	NS
	Surrounding	94	1.1	22.3	76.6		
aggressive	Adjacent	165	85.5	13.9	0.6	2.665	NS
	Surrounding	93	78.5	19.4	2.2		
timid	Adjacent	165	15.8	34.5	49.7	0.720	NS
	Surrounding	93	14.0	39.8	46.2		
acting naturally	Adjacent	165	3.0	14.5	82.4	1.269	NS
	Surrounding	92	1.1	17.4	81.5		
harmless	Adjacent	160	15.6	27.5	56.9	2.032	NS
	Surrounding	92	17.4	34.8	47.8		
threatening	Adjacent	162	77.2	16.7	6.2	0.224	NS
	Surrounding	90	78.9	14.4	6.7		
acting unnaturally	Adjacent	161	80.1	16.8	3.1	0.281	NS
	Surrounding	91	79.1	16.5	4.4		

¹Not significant

Table 6. Perceptions of deer in communities near Morristown NHP (MORR), expressed by respondents to the 2007 MORR Deer, People and Parks survey, by stratum.

In communities near Morristown NHP deer, in general are...	Strata	n	(Percent)			Chi-square	P-value
			Rarely	Some times	Almost Always		
wild	Adjacent	185	34.6	22.7	42.7	2.539	NS ¹
	Surrounding	116	38.8	27.6	33.6		
peaceful	Adjacent	191	2.6	14.7	82.7	3.371	NS
	Surrounding	120	3.3	22.5	74.2		
behaving strangely	Adjacent	187	82.9	13.9	3.2	1.290	NS
	Surrounding	121	81.0	17.4	1.7		
dangerous	Adjacent	191	57.1	30.9	12.0	1.685	NS
	Surrounding	121	51.2	38.0	10.7		
tame	Adjacent	188	22.9	41.0	36.2	3.428	NS
	Surrounding	124	32.3	37.1	30.6		
behaving normally	Adjacent	189	3.7	21.2	75.1	0.980	NS
	Surrounding	119	2.5	17.6	79.8		
aggressive	Adjacent	191	82.2	15.2	2.6	0.713	NS
	Surrounding	120	78.3	18.3	3.3		
timid	Adjacent	192	18.2	32.8	49.0	1.442	NS
	Surrounding	122	15.6	39.3	45.1		
acting naturally	Adjacent	191	3.7	19.9	76.4	0.944	NS
	Surrounding	122	4.1	15.6	80.3		
harmless	Adjacent	187	22.5	28.9	48.7	2.086	NS
	Surrounding	121	16.5	34.7	48.8		
threatening	Adjacent	189	70.4	21.7	7.9	0.334	NS
	Surrounding	120	73.3	19.2	7.5		
acting unnaturally	Adjacent	190	76.8	18.9	4.2	0.397	NS
	Surrounding	122	76.2	18.0	5.7		

¹Not significant

Table 7. A comparison of mean scores on factors within a perception of deer scale (in the park and in communities) obtained by community stratum, for respondents to the 2007 Morristown NHP Deer, People and Parks survey.

Factor Label	Community Strata	“In Morristown NHP”				“In your community”			
		n	Mean ¹	t	P-value	n	mean	t	P-value
Harmless	Adjacent	167	2.68	1.183	NS	193	2.59	0.503	NS ²
	Surrounding	94	2.61			124	2.56		
Natural	Adjacent	166	2.79	0.272	NS	192	2.74	-0.134	NS
	Surrounding	94	2.77			125	2.75		

¹1=rarely, 2=sometimes, 3=almost always

²Not significant

Table 8. Concerns about deer-related impacts in Morristown NHP (MORR) expressed by respondents to the 2007 MORR Deer, People and Parks survey, by stratum.

Concern	Strata	n	Level of concern (%)			Chi-square	P-value
			Not at all	Some what	Very		
Car accidents involving deer	Adjacent	166	8.4	18.7	72.9	1.63	NS ¹
	Surrounding	89	13.5	16.9	69.7		
Diseases/parasites carried by deer	Adjacent	166	5.4	22.9	71.7	5.13	NS
	Surrounding	88	13.6	21.6	64.8		
Deer browsing on landscaped flowers/trees/shrubs	Adjacent	164	15.2	26.2	58.5	2.48	NS
	Surrounding	91	19.8	31.9	48.4		
Deer browsing on vegetable gardens	Adjacent	162	21.6	26.5	51.9	1.72	NS
	Surrounding	88	25.0	31.8	43.2		
Deer browsing on naturally growing plants	Adjacent	167	28.1	28.1	43.7	4.63	NS
	Surrounding	90	34.4	35.6	30.0		
Deer accessing unsecured trash	Adjacent	162	45.7	24.7	29.6	0.80	NS
	Surrounding	88	39.8	27.3	33.0		
Presence of deer feces	Adjacent	168	43.5	28.0	28.6	5.40	NS
	Surrounding	90	42.2	40.0	17.8		
Deer interacting with pets	Adjacent	160	48.8	27.5	23.8	<0.01	NS
	Surrounding	88	48.9	27.3	23.9		
Having seen unhealthy deer	Adjacent	157	41.4	34.4	24.2	2.32	NS
	Surrounding	88	45.5	38.6	15.9		
People's behavior around Deer	Adjacent	163	44.8	36.8	18.4	0.23	NS
	Surrounding	88	42.0	37.5	20.5		
Fawns that are born too late to survive winter	Adjacent	155	51.0	31.0	18.1	0.25	NS
	Surrounding	90	52.2	32.2	15.6		
Deer behavior Around people	Adjacent	164	55.5	31.7	12.8	0.44	NS
	Surrounding	88	51.1	35.2	13.6		
Other	Adjacent	16	0.0	12.5	87.5	1.27	NS
	Surrounding	6	0.0	33.3	66.7		

¹Not significant

Table 9. Concerns about deer-related impacts “in your community, outside the park,” expressed by respondents to the 2007 MORR Deer, People and Parks survey, by stratum.

Concern	Strata	n	Level of concern (%)			Chi-square	P-value
			Not at all	Some what	Very		
Car accidents involving deer	Adjacent	194	0.5	14.4	85.1	4.48	NS ¹
	Surrounding	126	3.2	10.3	86.5		
Diseases/parasites carried by deer	Adjacent	192	4.7	17.7	77.6	0.11	NS
	Surrounding	125	4.8	19.2	76.0		
Deer browsing on landscaped flowers/trees/shrubs	Adjacent	194	5.2	18.6	76.3	0.32	NS
	Surrounding	126	6.3	19.8	73.8		
Deer browsing on vegetable gardens	Adjacent	193	9.8	19.2	71.0	1.28	NS
	Surrounding	126	11.1	23.8	65.1		
Deer browsing on naturally growing plants	Adjacent	195	21.5	20.5	57.9	0.37	NS
	Surrounding	124	21.0	23.4	55.6		
Presence of deer feces	Adjacent	191	26.2	31.9	41.9	1.51	NS
	Surrounding	122	32.0	32.0	36.1		
Deer accessing unsecured trash	Adjacent	189	43.4	21.7	34.9	2.77	NS
	Surrounding	118	33.9	26.3	39.8		
Deer interacting with pets	Adjacent	189	45.0	28.0	27.0	0.46	NS
	Surrounding	122	41.8	27.9	30.3		
Having seen unhealthy deer	Adjacent	181	39.2	32.0	28.7	3.38	NS
	Surrounding	119	37.8	41.2	21.0		
People’s behavior around deer	Adjacent	190	41.6	38.9	19.5	1.05	NS
	Surrounding	122	41.8	34.4	23.8		
Fawns that are born too late to survive winter	Adjacent	179	48.6	31.3	20.1	0.24	NS
	Surrounding	122	50.0	28.7	21.3		
Deer behavior around people	Adjacent	190	49.5	34.7	15.8	0.52	NS
	Surrounding	122	46.7	34.4	18.9		
Other	Adjacent	21	0.0	9.5	90.5	<0.01	NS
	Surrounding	11	0.0	9.1	90.9		

¹Not significant

Table 10. A comparison of mean scores on factors within a deer-related impacts scale obtained by community stratum, for respondents to the 2007 Morristown NHP Deer, People and Parks survey.

Factor Label	Community Strata	“In Morristown NHP”				“In your community”			
		n	Mean ¹	t	P-value	n	Mean	t	P-value
Damage concerns	Adjacent	169	2.33	1.541	NS ¹	195	2.57	0.547	NS ²
	Surrounding	93	2.21			128	2.53		
Other concerns	Adjacent	165	1.73	-0.444	NS	192	1.80	-1.171	NS
	Surrounding	89	1.77			123	1.88		
Concerns about deer	Adjacent	160	1.75	0.804	NS	185	1.80	0.271	NS
	Surrounding	91	1.68			123	1.78		

¹1=not at all concerned, 2=somewhat concerned, 3=very concerned

²Not significant

Perceptions of MORR staff and land management

Most local residents valued MORR as a community asset. Nearly all respondents agreed that MORR preserves natural resources, provides open space and wildlife habitat, and makes their community a special place to live (Table 11). Respondents from the adjacent communities stratum were more likely to agree that the park is an important place for recreation, protects the landscape from development, and is a good neighbor than respondents of the surrounding communities stratum. The finding that adjacent community residents were more likely to perceive amenity values from MORR is expressed in aggregate by the difference in mean score for the factor “amenity values” in Table 12. Table 12 also demonstrates that residents were more likely to agree that the park provided amenity values than they were to agree it provided positive ecological or economic impact to their communities.

The majority of residents recognized that deer and deer-related impacts cross jurisdictional boundaries. Although more than 80% in both strata believe the habitat inside the park is better than outside, the same proportion of residents also believe that local deer use habitat inside and outside the park (Table 13). Substantial proportions of respondents in both strata believed that deer in the park are having a negative impact on park plants. However, only minorities of respondents believed deer present a serious health or safety threat to park users (Table 13).

Table 11. Attitudes about benefits that Morristown NHP (MORR) provides to people living near the park (“adjacent communities”) and in surrounding communities, reported in the 2007 MORR Deer, People and parks survey.

Morristown NHP...	Strata	n	(Percent)				Chi-square	P-value
			Disagree, Strongly Disagree	Neutral	Agree, Strongly Agree	Not Sure		
provides open space for my community.	Adjacent	204	2.0	1.0	97.1	0.0	3.704	NS ¹
	Surrounding	133	3.0	1.5	94.0	1.5		
provides habitat for plants and animals.	Adjacent	205	2.4	2.0	95.6	0.0	5.004	NS
	Surrounding	135	2.2	3.0	92.6	2.2		
makes my community a special place to live.	Adjacent	205	2.0	2.0	95.1	1.0	3.948	NS
	Surrounding	133	4.5	3.8	89.5	2.3		
preserves natural resources.	Adjacent	205	1.0	2.9	94.6	1.5	6.977	NS
	Surrounding	135	3.7	6.7	86.7	3.0		
is a place where people in my community spend leisure time.	Adjacent	203	1.5	6.9	86.2	5.4	5.837	NS
	Surrounding	135	3.7	11.9	76.3	8.1		
plays a significant role in my community.	Adjacent	204	3.9	17.2	77.5	1.5	5.851	NS
	Surrounding	135	5.2	21.5	68.1	5.2		
attracts tourism dollars to my community.	Adjacent	204	11.8	24.0	44.1	20.1	2.665	NS
	Surrounding	135	10.4	28.9	46.7	14.1		
increases the job opportunities in my community.	Adjacent	205	15.1	36.6	21.5	26.8	5.533	NS
	Surrounding	134	12.7	44.8	25.4	17.2		

¹Not significant

Table 11. continued.

Morristown NHP...	Strata	n	(Percent)				Chi-square	P-value
			Disagree, Strongly Disagree	Neutral	Agree, Strongly Agree	Not Sure		
does not protect the landscape from development.	Adjacent	204	80.9	0.5	17.2	1.5	13.001	0.005
	Surrounding	133	67.7	3.8	22.6	6.0		
is not an important place for recreation for my community.	Adjacent	204	79.9	5.9	13.7	0.5	20.131	<0.001
	Surrounding	134	61.9	17.2	16.4	4.5		
does not help the local economy.	Adjacent	202	52.0	22.8	8.9	16.3	1.890	NS ¹
	Surrounding	134	50.7	23.9	12.7	12.7		
is not a good neighbor.	Adjacent	202	89.6	4.0	5.4	1.0	9.145	0.027
	Surrounding	135	80.0	9.6	5.9	4.4		

¹Not significant

Table 12. A comparison of mean scores on factors within a Morristown NHP (MORR) community importance scale, expressed by respondents to the 2007 MORR Deer, People and Parks survey in two community strata.

Factor label	Community Strata	n	Mean¹	t	P-value
Amenity values	Adjacent	205	4.37	3.220	0.001
	Surrounding	134	4.15		
Ecological values	Adjacent	205	4.58	1.377	NS ²
	Surrounding	133	4.49		
Economic values	Adjacent	172	3.37	0.045	NS
	Surrounding	122	3.36		

¹1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree

²Not significant

Table 13. Beliefs about deer-related impacts and impacts management in Morristown NHP (MORR) expressed by respondents to the 2007 MORR Deer, People and Parks survey in two community strata.

		(Percent)					Chi-square	P-value
	Strata	n	Disagree, Strongly Disagree	Neutral	Agree, Strongly Agree	Not Sure		
The local deer herd uses habitat both in the park and in communities outside	Adjacent	207	1.4	1.4	93.7	3.4	11.017	0.012
	Surrounding	130	4.6	4.6	82.3	8.5		
It is reasonable to have deer in the park	Adjacent	211	2.8	10.0	85.8	1.4	2.472	NS ¹
	Surrounding	130	1.5	6.2	90.0	2.3		
The habitat for deer is better in the park than in communities outside the park	Adjacent	208	5.8	6.7	83.7	3.8	2.042	NS
	Surrounding	132	3.0	9.1	84.8	3.0		
Deer seriously damage plants and other resources in the park	Adjacent	210	12.4	20.5	52.4	14.8	3.793	NS
	Surrounding	131	9.9	26.7	44.3	19.1		
Deer create a serious health risk in the park	Adjacent	208	39.9	24.5	26.0	9.6	1.027	NS
	Surrounding	131	39.7	23.7	23.7	13.0		
Deer present a serious safety risk in the park	Adjacent	209	52.6	22.0	13.9	11.5	0.154	NS
	Surrounding	131	51.9	23.7	13.0	11.5		
Deer create a serious nuisance for people visiting the park	Adjacent	210	58.6	19.0	12.9	9.5	3.363	NS
	Surrounding	131	55.0	18.3	10.7	16.0		

¹Not significant

Table 13. continued.

(Percent)								
	Strata	n	Disagree, Strongly Disagree	Neutral	Agree, Strongly Agree	Not Sure	Chi- square	P-value
The park is part of the local community	Adjacent	209	2.9	2.4	93.8	1.0	3.364	NS ¹
	Surrounding	132	2.3	4.5	90.2	3.0		
It is important to understand other people's views about deer-related impacts	Adjacent	206	7.3	16.0	71.8	4.9	3.071	NS
	Surrounding	130	6.2	14.6	77.7	1.5		
Addressing deer-related impacts in the park would affect communities outside	Adjacent	208	4.8	6.7	73.1	15.4	6.205	NS
	Surrounding	130	6.2	14.6	66.2	13.1		
The park should start now to address deer-related impacts in the park	Adjacent	210	10.0	19.0	61.9	9.0	2.426	NS
	Surrounding	131	13.0	14.5	60.3	12.2		
Addressing deer-related impacts in the park would affect me positively	Adjacent	210	13.8	19.5	43.8	22.9	4.739	NS
	Surrounding	130	16.2	28.5	36.2	19.2		
Addressing deer-related impacts in the park would affect me negatively	Adjacent	210	49.0	20.5	9.0	21.4	1.280	NS
	Surrounding	129	45.7	25.6	9.3	19.4		

¹Not significant

About 60% of respondents agreed with the statement, “The park should start now to address deer-related impacts”. Few respondents anticipated that they might be affected negatively if MORR staff took action to manage deer-related impacts. However, fewer than half believed they would be affected positively by such action (Table 13).

We repeated the questions asked in Table 13 and asked residents how they thought MORR staff would respond. Depending on the item and stratum, 32-57% of residents responded “not sure” (Table 14). In aggregate, this pattern suggests unfamiliarity with park staff and their views on deer and deer management.

Findings suggest that MORR and park staff have a positive public image in local communities. A majority of residents believed NPS employees were dedicated to preserving and protecting the park and the majority reported having trust in MORR staff to make good decisions about natural resource management (Table 15). However, many were also unsure whether park staff listen to public opinion or work with local communities for shared purposes (Table 15). Substantial numbers also expressed uncertainty about whether management decisions at MORR are typically trustworthy, fair unbiased, or considerate of community interests (Table 16-17).

Interest in opportunities to provide input to MORR on deer management

The majority of residents agreed that public input usually leads to better management decisions (Table 18). Only one in ten respondents agreed with the statement “I usually have enough opportunities to provide input on park management decisions” (Table 18). Over half believed they did not have enough information to provide meaningful input on deer management in the park.

Only about half of respondents had read or listened to news about the park in the previous 12 months. Few residents of either community type had taken personal actions to learn about park activities (Table 19). We found no differences between communities on past information-seeking actions.

Most respondents indicated that, provided the opportunity, they would read or listen to news concerning park efforts to address deer impacts (Table 20). Adjacent community residents were more likely than surrounding community residents to express and interest in park-related news (Table 20).

About a quarter to one-third of local residents expressed an interest in providing input if NPS addresses deer-related impacts in the future. Adjacent community residents were more likely than surrounding community residents to express interest in providing written input related to management of deer impacts (Table 20). A majority of respondents in both community types believed they could have some influence on management decisions in the park and in their communities (Table 17). Adjacent community residents were more likely to believe they could have some influence in making communities surrounding the park a better place to live (Table 21).

Table 14. Beliefs about Morristown NHP (MORR) staff perceptions of deer-related impacts and impacts and impacts management in MORR expressed by respondents to the 2007 MORR Deer, People and Parks survey in two community strata.

“NPS managers think...”	Strata	n	(Percent)				Chi-square	P-value
			Disagree, Strongly Disagree	Neutral	Agree, Strongly Agree	Not Sure		
the local deer herd uses habitat both in the park and in communities outside the park	Adjacent	200	1.5	3.0	58.0	37.5	6.653	NS ¹
	Surrounding	127	2.4	9.4	54.3	33.9		
it is reasonable to have deer in the park	Adjacent	203	0.5	6.9	56.7	36.0	0.564	NS
	Surrounding	130	0.8	8.5	57.7	33.1		
the habitat for deer is better in the park than in communities outside the park	Adjacent	200	2.5	8.0	48.5	41.0	1.642	NS
	Surrounding	128	2.3	10.2	53.1	34.4		
deer seriously damage plants and other resources in the park	Adjacent	201	7.5	8.0	35.3	49.3	12.077	0.007
	Surrounding	128	5.5	21.1	32.0	41.4		
deer create a serious health risk in the park	Adjacent	201	21.9	13.9	18.4	45.8	0.870	NS
	Surrounding	127	26.0	13.4	18.9	41.7		
deer present a serious safety risk in the park	Adjacent	201	31.8	13.9	9.5	44.8	2.912	NS
	Surrounding	127	28.3	20.5	11.0	40.2		
deer create a serious nuisance for people visiting the park	Adjacent	202	34.2	10.9	9.9	45.0	6.555	NS
	Surrounding	127	33.1	20.5	6.3	40.2		

¹Not significant

Table 14. continued.

(Percent)								
“NPS managers think...”	Strata	n	Disagree, Strongly Disagree	Neutral	Agree, Strongly Agree	Not Sure	Chi- square	P-value
the park is part of the local community	Adjacent	200	1.5	3.5	56.0	39.0	8.011	0.046
	Surrounding	126	3.2	10.3	54.8	31.7		
it is important to understand other people’s views about deer impacts	Adjacent	199	1.5	6.5	46.2	45.7	9.335	0.025
	Surrounding	127	5.5	11.8	48.8	33.9		
addressing deer impacts in the park would affect communities outside the park	Adjacent	201	3.0	4.5	46.8	45.8	7.389	NS ¹
	Surrounding	127	2.4	12.6	41.7	43.3		
the park should start now to address deer impacts in the park	Adjacent	201	4.0	10.4	37.8	47.8	4.342	NS
	Surrounding	127	6.3	16.5	37.8	39.4		
addressing deer impacts in the park would affect me positively	Adjacent	199	4.5	11.6	27.6	56.3	3.736	NS
	Surrounding	126	4.8	19.0	27.0	49.2		
addressing deer impacts in the park would affect me negatively	Adjacent	198	27.8	10.6	5.1	56.6	6.462	NS
	Surrounding	127	25.2	20.5	3.1	51.2		

¹Not significant

Table 15. Perceptions of Morristown NHP (MORR) as a land manager and community partner, expressed by respondents to the 2007 MORR Deer, People and parks survey in two community strata.

	Strata	n	(Percent)				Chi-square	P-value
			Disagree, Strongly Disagree	Neutral	Agree, Strongly Agree	Not sure		
MNHP is an educational resource for my community.	Adjacent	187	1.1	10.2	87.2	1.6	3.553	NS
	Surrounding	118	1.7	5.1	89.8	3.4		
NPS employees are dedicated to preserving, protecting park.	Adjacent	187	1.1	16.6	72.7	9.6	2.791	NS
	Surrounding	118	1.7	10.2	76.3	11.9		
I usually trust management at MNHP to make good decisions about resource management.	Adjacent	185	3.2	17.3	64.3	15.1	0.980	NS
	Surrounding	118	2.5	13.6	66.9	16.9		
MNHP works with local communities for shared purposes.	Adjacent	186	4.8	18.3	34.9	41.9	6.084	NS
	Surrounding	118	.8	26.3	30.5	42.4		
Managers at MNHP listen to opinions from people like me.	Adjacent	184	2.7	29.3	16.3	51.6	5.305	NS
	Surrounding	118	5.9	22.9	23.7	47.5		
My community typically does not help care for MNHP.	Adjacent	187	31.0	16.0	13.9	39.0	0.149	NS
	Surrounding	118	32.2	15.3	12.7	39.8		
The rules and regulations at MNHP do not help preserve and protect it for the future.	Adjacent	186	50.0	11.8	7.0	31.2	2.964	NS
	Surrounding	118	54.2	11.9	2.5	31.4		
I usually do not support the resource management decisions made at MNHP.	Adjacent	184	36.4	32.6	3.8	27.2	1.248	NS
	Surrounding	118	31.4	32.2	5.1	31.4		
I do not feel welcome at MNHP.	Adjacent	186	93.0	3.2	2.7	1.1	6.263	NS
	Surrounding	117	88.9	3.4	1.7	6.0		

Table 16. Perceptions of Morristown NHP (MORR) management public image, expressed by respondents to the 2007 MORR Deer, People and Parks survey in three community strata.

Management at Morristown NHP typically is...	Strata	n	(Percent)				Chi-square	P-value
			Disagree, Strongly Disagree	Neutral	Agree, Strongly Agree	Not Sure		
trustworthy	Adjacent	186	0.5	12.9	56.5	30.1	0.929	NS ¹
	Surrounding	117	0.0	13.7	59.0	27.4		
not knowledgeable	Adjacent	185	59.5	10.3	2.7	27.6	1.535	NS
	Surrounding	116	61.2	12.1	0.9	25.9		
not fair	Adjacent	184	53.3	15.8	1.1	29.9	1.665	NS
	Surrounding	116	51.7	14.7	0.0	33.6		
telling the whole story	Adjacent	185	13.5	24.3	21.1	41.1	2.146	NS
	Surrounding	116	12.1	21.6	28.4	37.9		
unbiased	Adjacent	184	10.3	21.7	20.1	47.8	3.484	NS
	Surrounding	115	7.8	22.6	28.7	40.9		
concerned about my community's well-being	Adjacent	185	3.8	15.1	45.4	35.7	1.647	NS
	Surrounding	116	3.4	19.0	48.3	29.3		
unconcerned about the public interest	Adjacent	186	55.9	10.2	4.8	29.0	0.571	NS
	Surrounding	116	55.2	12.9	4.3	27.6		
watching out for my community's interests	Adjacent	186	7.5	18.8	38.2	35.5	0.696	NS
	Surrounding	115	6.1	18.3	42.6	33.0		

¹Not significant

Table 17. A comparison of mean scores on factors within a Morristown NHP (MORR) public image scale, expressed by respondents to the 2007 MORR Deer, People and Parks survey in two community strata.

Factor label	Community Strata	n	Mean¹	t	P-value
Professionalism	Adjacent	142	3.9437	-0.126	NS ²
	Surrounding	90	3.9537		
Community Affiliation	Adjacent	136	3.7451	-0.064	NS
	Surrounding	85	3.7510		

¹1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree.

²Not significant

Table 18. Perceptions about Morristown NHP (MORR) use of public input for land management decisions, expressed by respondents to the 2007 MORR Deer, People and parks survey in two community strata.

Morristown NHP...	Strata	n	(Percent)				Chi-square	P-value
			Disagree, Strongly Disagree	Neutral	Agree, Strongly Agree	Not sure		
For the most part, interactions between myself, park managers, and people with different ideas helps build future relationships.	Adjacent	198	3.0	20.2	62.6	14.1	0.958	NS
	Surrounding	126	4.8	18.3	61.1	15.9		
Public input usually leads to better management decisions.	Adjacent	201	4.5	18.9	59.7	16.9	3.457	NS
	Surrounding	127	7.1	14.2	66.1	12.6		
I do not have enough information to provide meaningful input on deer management.	Adjacent	201	21.4	11.4	56.2	10.9	1.451	NS
	Surrounding	126	18.3	15.1	54.0	12.7		
I do not believe my input typically (or would be) taken seriously by park management.	Adjacent	200	22.5	24.0	26.5	27.0	2.835	NS
	Surrounding	126	22.2	31.0	19.8	27.0		
The different ways the park asks for my opinion encourages me to provide input.	Adjacent	199	22.1	35.2	19.1	23.6	6.178	NS
	Surrounding	126	15.1	30.2	29.4	25.4		
I am not comfortable voicing my opinion about park mgt. decisions.	Adjacent	200	49.5	22.5	18.5	9.5	1.979	NS
	Surrounding	127	43.3	27.6	21.3	7.9		
I usually have enough opportunities to provide input on park management decisions.	Adjacent	199	30.7	36.2	9.0	24.1	1.186	NS
	Surrounding	126	26.2	37.3	11.9	24.6		

Table 19. Actions taken in the previous 12 months to obtain information about Morristown NHP (MORR), reported by respondents to the 2007 MORR Deer, People and parks survey in two community strata.

Actions in past 12 months	Strata	n	(Percent)			Chi-square	P- value
			No	Yes	Not sure		
Read or listened to news about park.	Adjacent	202	39.6	54.0	6.4	4.959	NS ¹
	Surrounding	130	45.4	43.1	11.5		
Talked with local park staff.	Adjacent	205	83.9	15.6	0.5	2.564	NS
	Surrounding	130	80.0	17.7	2.3		
Talked with other public officials about the park.	Adjacent	203	95.6	4.4	0.0	3.154	NS
	Surrounding	130	93.8	4.6	1.5		
Participated in a community group or activity related to a park issue.	Adjacent	203	96.6	3.4	0.0	1.608	NS
	Surrounding	130	95.4	3.8	0.8		
Provided written comments to a park plan, impact statement, survey.	Adjacent	203	98.5	1.5	0.0	1.569	NS
	Surrounding	130	97.7	1.5	0.8		
Attended a public meeting about the park.	Adjacent	203	99.5	0.5	0.0	2.550	NS
	Surrounding	130	97.7	1.5	0.8		
Written a letter to a newspaper about the park.	Adjacent	203	99.0	0.5	0.5	0.204	NS
	Surrounding	130	98.5	0.8	0.8		

¹Not significant

Table 20. Likelihood of participating in involvement opportunities if those opportunities were provided my Morristown NHP (MORR), reported by respondents to the 2007 MORR Deer, People and parks survey in two community strata.

Actions	Strata	n	(Percent)			Chi-square	P-value
			Very unlikely, Unlikely	Very likely, Likely	Not Sure		
Read or listen to news about park actions to address deer impacts.	Adjacent	203	7.9	91.1	1.0	9.583	0.008
	Surrounding	129	10.1	82.9	7.0		
Attend a public meeting about deer impacts.	Adjacent	202	51.0	39.6	9.4	2.981	NS ¹
	Surrounding	129	55.8	31.0	13.2		
Provide written comments to a park plan, impact statement, survey related to deer impacts.	Adjacent	203	55.7	39.9	4.4	6.253	0.044
	Surrounding	129	63.6	27.9	8.5		
Talk with other public officials about deer-related impacts.	Adjacent	202	60.4	32.7	6.9	3.920	NS
	Surrounding	127	61.4	26.0	12.6		
Talk with local park staff about deer-related impacts	Adjacent	203	62.6	28.1	9.4	1.760	NS
	Surrounding	128	63.3	23.4	13.3		
Participate in a community group or activity related to deer impacts.	Adjacent	202	58.9	25.7	15.3	1.057	NS
	Surrounding	129	64.3	23.3	12.4		
Write a letter to a newspaper about deer impacts.	Adjacent	202	78.2	13.9	7.9	0.495	NS
	Surrounding	129	81.4	11.6	7.0		

¹Not significant

Table 21. Level of influence respondents perceive they have to influence management of Morristown NHP (MORR) or communities surrounding the park, expressed by respondents to the 2007 MORR Deer, People and parks survey in two community strata.

How much influence do you think people like yourself can have ...	n	a lot	Some	Very little	None at all	Chi-square	P-value
<hr/>							
on the management of Morristown NHP?							
Adjacent	204	6.9	59.8	29.9	3.4	0.533	NS ¹
Surrounding	129	7.0	56.6	31.8	4.7		
in making communities surrounding the park a better place to live?							
Adjacent	205	27.3	61.0	10.7	1.0	15.354	0.002
Surrounding	129	13.2	62.8	20.2	3.9		

¹Not significant

SUMMARY AND CONCLUSIONS

This study examined local community members' perceptions about and use of NPS lands, perceptions of and concerns about deer, and opinions about NPS decision making and land management. Local residents appreciate Morristown National Historic Park for its amenity values (e.g., as open space, as a leisure resource, as natural habitats) and many visit MORR a few times a year frequently to get outdoors, view the scenery, enjoy nature, or spend time with family or friends. Although many visit MORR to learn about history, uses of MORR by local residents suggest that they value MORR for a range of quality-of-life factors, not just the historical and cultural aspects that led to the park's creation. This is a phenomenon typical in many gateway communities (Howe et al. 1997).

Many local residents (especially those living in adjacent communities) interact with deer regularly. They believe deer use both park lands and communities as their habitat (i.e., they recognize that the park and communities share a common deer herd). A majority of local residents enjoy deer, but also worry about deer-related problems. Many are very concerned about three categories of negative impacts associated with the presence of deer on park lands and in their communities: impacts associated with deer-vehicle collisions, disease transmission from deer to humans, and deer browsing damage to landscape and natural plants. They are more concerned about these impacts in their community than in the park. Future discussions of potential deer management activities should address how these concerns relate to park management objectives and the degree to which community concerns about those impacts may be affected, either directly or indirectly.

The majority of local residents did not think of deer as a serious risk to public health or safety in the park. However, about half of respondents believe that deer in the park are having a negative impact on park plants and a majority of respondents believe NPS should be managing deer-related impacts on MORR. A majority of those who thought NPS should take action to manage deer-related impacts thought those actions would affect local communities, and would have a positive affect on them personally. Some expressed uncertainty about how park actions would affect communities, again highlighting the point that any future actions by the park to manage deer-related impacts should be accompanied by communication to clarify how park actions are expected to affect local communities.

We did not ask respondents how they believed action by NPS would benefit their community. However, we recommend that future communication with communities address expectations for subsequent effects of deer management on local communities near MORR. A previous phase of this research project revealed that different problem frames exist for deer issues in NPS units. That is, the topics that individuals perceive as salient affect the way they think about the dimensions of the problem and the appropriate means, time frame and geographic scope of potential solutions (Leong and Decker 2007b). Without specific communication from NPS that explicitly states expectations for management of specific deer-related impacts, community members may assume different metrics of success for deer management interventions than those chosen by NPS managers. Future communication with local residents also could include discussion of complementary actions which local communities could take to manage deer-related impacts that transcend park boundaries and may be outside the scope of work addressed within MORR.

While not reflected in responses from all community residents, a base of general credibility and trust exists for MORR decision makers. However, a substantial proportion of residents in local communities are uncertain about the beliefs of NPS managers regarding deer and deer management in the park. About half of respondents had not heard or read news stories about the park in the previous 12 months and few residents of either community type had participated in activities where they provided input to decisions about park management activities. The majority of the respondents agreed that public input makes for better management decisions and that multi-stakeholder dialogue provides better opportunities for future relationships. At least a quarter of respondents indicated that they would likely participate if the park offers opportunities to discuss management of deer-related impacts in the park. However, a majority also agree with the statement, “I do not have enough information to provide meaningful input on deer management”.

A substantial proportion of residents in both community types expressed uncertainty about the degree to which NPS decision makers listen to community residents or consider their input in decisions. These results indicate the need for public issues education; that is, an effort to build the capacity of the public to provide informed input on decisions (Dale and Hahn 1994, Leong et al. 2006). Community members also may be offered training in community-based planning, as outlined in the Department of the Interior Environmental Statement Memorandum that discusses public participation and community-based training (Department of the Interior 2003).

Because of their proximity to MORR, adjacent communities have greater potential to experience direct impacts from deer associated with the park or deer management initiated by MORR than do surrounding communities. As expected, experience with deer and concern about deer damage to vegetation is stronger in adjacent communities than surrounding communities, suggesting that actions to address deer-related impacts in MORR would be more salient in adjacent communities. Although adjacent community respondents did not indicate higher interest in providing input to MORR, experience with deer and concern about deer-related impacts is stronger in adjacent communities than in surrounding communities, and adjacent community members indicated a stronger inclination to seek out news reports about deer issues at MORR. These findings are consistent with the assumption that adjacent and surrounding communities represent different publics. Communication intended to reach one or the other community type will have different fundamental objectives. For example, adjacent communities may be more prepared to discuss the problem as perceived by MORR, while communication targeting surrounding communities would need more emphasis on problem definition and supporting logic.

These results also corroborate the situational theory of publics (Grunig 1977), which posits that individuals are more likely to actively seek information or take action if they believe a situation involves them. This theory also suggests that to encourage involvement from a public, the type of information to be provided should focus on: understanding the problem itself (to encourage the public to think about the problem and possibly to become involved), the solutions to the problem (to provide referent criteria for the specific problem), and information to eliminate constraints to action (in this case, increased awareness of opportunities to provide input). These suggestions assume that the park (as communicator) has adequately framed the problem and potential solutions. More recent communications research emphasizes the importance of two-way communication that incorporates dialogue with the public to improve mutual learning about the variety of ways the problem and potential solutions are understood (Pearce and Littlejohn 1997). This dialogic approach will be most important for topics where MORR and public perspectives diverge.

Over the past century, the types of units administered by the NPS have broadened from parks created to preserve America's scenic treasures to include parks that are embedded in human-dominated landscapes (Runte 1997), such as MORR. NPS public participation policies likewise have evolved to acknowledge communities of place (related to the physical context of resource management issues) in addition to communities of interest; e.g., regional or national publics with different sets of concerns (Patterson, et al., 2003). NPS Director's Order #75A: Civic Engagement and Public Involvement (National Park Service 2007) views civic engagement as "...a continuous, dynamic conversation with the public..." (p. 2). This perspective better reflects the process for engaging communities of place (e.g., adjacent community residents). Recent NPS policies recognize the importance of this type of dialogue and encourage ongoing two-way communication with communities of place as a way of doing business.

Overall, this study provides NPS decision makers with information about community interests related to deer impacts and management of NPS lands. Insights from this study can be used to guide ongoing communication about deer management between NPS personnel and

residents of neighboring communities. Findings should be especially useful to park managers as they think about tailoring communication toward communities of place and communities of interest.

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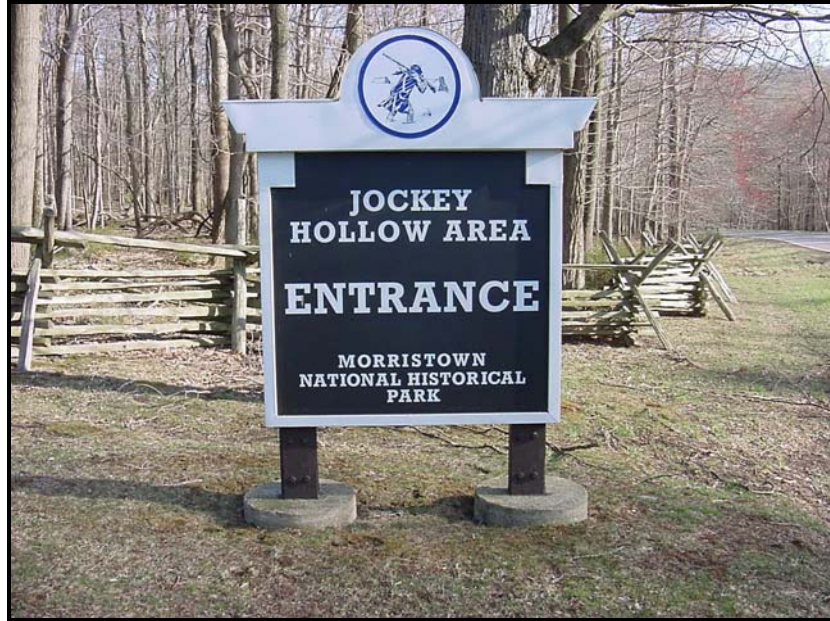
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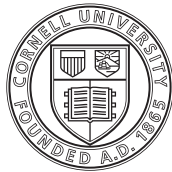
APPENDIX A: Survey instrument

Deer, People and Parks

*A Survey of Residents Living Near
Morristown National Historical Park*



Research conducted by



Cornell University
Department of Natural Resources
Human Dimensions Research Unit



National Park Service
Biological Resource Management Division

About this Questionnaire

The National Park Service seeks your help to improve public involvement in management decisions. The purpose of this survey is to learn about your experiences, opinions and suggestions related to natural resource management in Morristown National Historical Park, particularly with respect to deer and related issues in the park and surrounding community. This survey is part of a large study about deer and the National Park System and does not imply that Morristown National Historical Park is currently planning to manage deer.

Even if you have not visited Morristown National Historical Park, your feedback will assist the National Park Service when considering community involvement there and at other parks in the future.

Please complete this questionnaire at your earliest convenience, seal it, and drop it in any mailbox (no envelope is needed); return postage has been provided. The questionnaire has an identification number so you can be removed from our mailing list when you return it; your name and address will not be saved with your responses. We appreciate your prompt response.

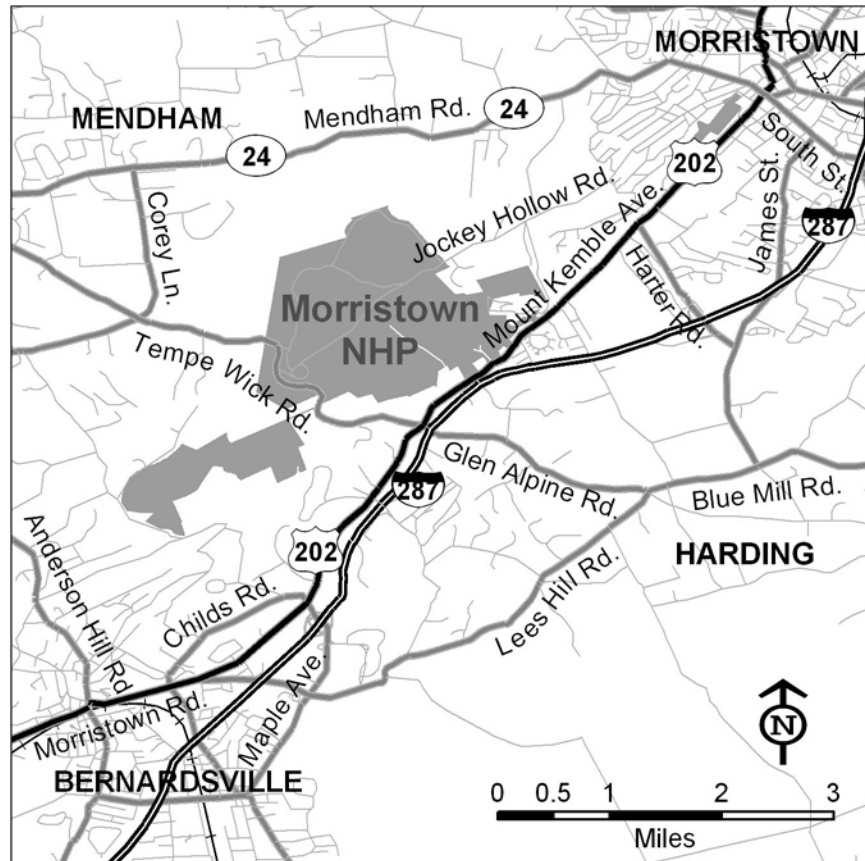
Thank you for your help with this important study!



Printed on recycled paper

Throughout this survey, we may refer to the National Park Service as “NPS” and Morristown National Historical Park as “Morristown NHP,” or “the Park.”

When responding to answers about the park, please refer to your experiences in or near the Jockey Hollow Encampment (JHE) and New Jersey Brigade Encampment (NJBE) areas (see shaded areas on map).



YOUR EXPERIENCES WITH MORRISTOWN NATIONAL HISTORICAL PARK, DEER, AND YOUR COMMUNITY

1. Have you ever visited Morristown National Historical Park?

- ☐ Yes
☐ No *(If no, please skip to Question 6)*

2. When you visit Morristown National Historical Park, how much time do you usually spend there? Please check one.

- ☐ Passing through on my way to somewhere else
☐ Less than 4 hours
☐ Four hours or more, but less than one day
☐ One day or more

3. Why do you visit Morristown National Historical Park?

Please check all that apply.

- ☐ To view the scenery
☐ To enjoy the smells and sounds of nature
☐ To view wildlife
☐ To learn about history
☐ To spend time with family and friends
☐ To exercise
☐ To be outside
☐ To get away from the usual demands of life
☐ To volunteer in park activities
☐ Other, please specify: _____

4. How many visits have you made to Morristown National Historical Park in the past 12 months?

- ☐ None *(If none, please skip to Question 6)*
☐ 1
☐ 2-4
☐ 5-10
☐ More than 10
☐ Don't know/Can't remember

5. In the past 12 months, how often have you seen deer in Morristown National Historical Park? Please check one.

<input type="checkbox"/> Every visit	<input type="checkbox"/> Half or more but not all visits	<input type="checkbox"/> Less than half of visits	<input type="checkbox"/> Never
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6. In the past 12 months, how often have you seen deer in your community near Morristown National Historical Park? *Please check one.*

<input type="checkbox"/> Daily	<input type="checkbox"/> A few times a week	<input type="checkbox"/> Weekly	<input type="checkbox"/> Less often than once a week	<input type="checkbox"/> Never
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7. Please indicate to what extent you agree or disagree with the following statements about Morristown National Historical Park and your community.

Morristown National Historical Park ...

Please circle one number for each item.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Not Sure
makes my community a special place to live	1	2	3	4	5	9
is not an important place for recreation for my community	1	2	3	4	5	9
provides habitat for plants and animals	1	2	3	4	5	9
does not help the local economy	1	2	3	4	5	9
does not protect the landscape from development	1	2	3	4	5	9
provides open space for my community	1	2	3	4	5	9
plays a significant role in my community	1	2	3	4	5	9
attracts tourism dollars to my community	1	2	3	4	5	9
is not a good neighbor	1	2	3	4	5	9
increases the job opportunities in my community	1	2	3	4	5	9
preserves natural resources	1	2	3	4	5	9
is a place where people in my community spend leisure time	1	2	3	4	5	9

YOUR OPINIONS ABOUT DEER IN THE PARK & COMMUNITY

8. In Morristown National Historical Park or in your community (outside the park), to what extent do you think that deer, in general, are:

Please circle one number for each item.

	IN MORRIS-TOWN NHP			IN YOUR COMMUNITY (OUTSIDE THE PARK)		
	Rarely	Sometimes	Almost always	Rarely	Sometimes	Almost always
wild	1	2	3	1	2	3
peaceful	1	2	3	1	2	3
behaving strangely	1	2	3	1	2	3
dangerous	1	2	3	1	2	3
tame	1	2	3	1	2	3
behaving normally	1	2	3	1	2	3
aggressive	1	2	3	1	2	3
timid	1	2	3	1	2	3
acting naturally	1	2	3	1	2	3
harmless	1	2	3	1	2	3
threatening	1	2	3	1	2	3
acting unnaturally	1	2	3	1	2	3

9. Generally, how do you feel about deer IN MORRISTOWN NATIONAL HISTORICAL PARK?

Please check one.

- ☐ I have no particular feelings about deer in Morristown NHP
☐ I enjoy deer AND I do not worry about deer-related impacts
☐ I enjoy deer BUT I worry about deer-related impacts
☐ I do not enjoy deer in Morristown National Historical Park

10. Generally, how do you feel about deer IN YOUR COMMUNITY (outside Morristown National Historical Park)? *Please check one.*

- ☐ I have no particular feelings about deer in my community
☐ I enjoy deer AND I do not worry about deer-related impacts
☐ I enjoy deer BUT I worry about deer-related impacts
☐ I do not enjoy deer in my community

11. Please indicate whether you are concerned about any of these deer-related impacts, either within Morristown National Historical Park or in your community (outside the park):

Please circle one number for each item.

	IN MORRIS-TOWN NHP			IN YOUR COMMUNITY (OUTSIDE THE PARK)		
	Not at all concerned	Somewhat concerned	Very concerned	Not at all concerned	Somewhat concerned	Very concerned
Having seen unhealthy deer	1	2	3	1	2	3
Fawns that are born too late to survive winter	1	2	3	1	2	3
Presence of deer feces	1	2	3	1	2	3
Deer browsing on naturally growing flowers, trees and shrubs	1	2	3	1	2	3
Deer browsing on landscaped flowers, trees and shrubs	1	2	3	1	2	3
Deer browsing on vegetable gardens	1	2	3	1	2	3
Deer accessing unsecured trash	1	2	3	1	2	3
Deer interacting with pets	1	2	3	1	2	3
Deer behavior around people	1	2	3	1	2	3
People's behavior around deer	1	2	3	1	2	3
Diseases and/or parasites carried by deer	1	2	3	1	2	3
Car accidents involving deer	1	2	3	1	2	3
Other (Please specify): _____	1	2	3	1	2	3

12. Please indicate to what extent you agree or disagree with the following statements.

Please circle one number for each item.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Not Sure
It is reasonable to have deer in the park	1	2	3	4	5	9
The habitat for deer is better in the park than in communities outside the park	1	2	3	4	5	9
The local deer herd uses habitat both in the park and in communities outside the park	1	2	3	4	5	9
Deer seriously damage plants and other resources in the park	1	2	3	4	5	9
Deer create a serious nuisance for people visiting the park	1	2	3	4	5	9
Deer present a serious health risk in the park	1	2	3	4	5	9
Deer present a serious safety risk in the park	1	2	3	4	5	9
The park should start now to address deer-related impacts in the park	1	2	3	4	5	9
Addressing deer-related impacts in the park would affect communities outside the park	1	2	3	4	5	9
Addressing deer-related impacts in the park would affect me positively	1	2	3	4	5	9
Addressing deer-related impacts in the park would affect me negatively	1	2	3	4	5	9
It is important to understand other people's views about deer-related impacts	1	2	3	4	5	9
The park is part of the local community	1	2	3	4	5	9

13. Please indicate to what extent you agree or disagree with the following statements about NPS managers in general.

Please circle one number for each item.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Not Sure
NPS managers think it is reasonable to have deer in the park	1	2	3	4	5	9
NPS managers think the habitat for deer is better in the park than in communities outside the park	1	2	3	4	5	9
NPS managers think the local deer herd uses habitat both in the park and in communities outside the park	1	2	3	4	5	9
NPS managers think deer seriously damage plants and other resources in the park	1	2	3	4	5	9
NPS managers think deer create a serious nuisance for people visiting the park	1	2	3	4	5	9
NPS managers think deer present a serious health risk in the park	1	2	3	4	5	9
NPS managers think deer present a serious safety risk in the park	1	2	3	4	5	9
NPS managers think they should start now to address deer-related impacts in the park	1	2	3	4	5	9
NPS managers think that addressing deer-related impacts in the park would affect communities outside the park	1	2	3	4	5	9
NPS managers think that addressing deer-related impacts in the park would affect me positively	1	2	3	4	5	9
NPS managers think that addressing deer-related impacts in the park would affect me negatively	1	2	3	4	5	9
NPS managers think it is important to understand other people's views about deer-related impacts	1	2	3	4	5	9
NPS managers think the park is part of the local community	1	2	3	4	5	9

YOUR EXPERIENCES WITH PARK MANAGEMENT

14. Have you done any of the following IN THE PAST 12 MONTHS?

Please circle one category for each item.

Read or listened to news about the park	Yes	No	Not Sure
Talked with local park staff	Yes	No	Not Sure
Talked with other public officials about the park	Yes	No	Not Sure
Provided written comments to a park management plan, impact statement, or survey (excluding this survey)	Yes	No	Not Sure
Written a letter to a newspaper about the park	Yes	No	Not Sure
Attended a public meeting about the park	Yes	No	Not Sure
Participated in a community group or community activity related to a park issue	Yes	No	Not Sure

15. If the park were to consider addressing deer-related impacts in the future, how likely is it that you would do any of the following ?

Please circle one number for each item.

	Very Unlikely	Unlikely	Likely	Very Likely	Not Sure
Read or listen to news about park actions to address deer-related impacts	1	2	3	4	9
Talk with local park staff about deer impacts	1	2	3	4	9
Talk with other public officials about deer impacts	1	2	3	4	9
Provide written comments to a park management plan, impact statement, or survey related to deer impacts (in addition to this survey)	1	2	3	4	9
Write a letter to a newspaper about deer impacts	1	2	3	4	9
Attend a public meeting about deer impacts	1	2	3	4	9
Participate in a community group or community activity related to deer impacts	1	2	3	4	9

16. Please indicate to what extent you agree or disagree with the following statements about management and planning at Morristown National Historical Park.

Please circle one number for each item.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Not Sure
I usually have enough opportunities to provide input on park management decisions	1	2	3	4	5	9
I do not believe my input typically is (or would be) taken seriously by park management	1	2	3	4	5	9
I do not have enough information to give meaningful input on deer management	1	2	3	4	5	9
The different ways the park asks for my opinion (e.g., via written comments, conversations with park staff, public meetings, etc.) encourage me to provide input	1	2	3	4	5	9
I am not comfortable voicing my opinion about park management decisions	1	2	3	4	5	9
Public input usually leads to better management decisions	1	2	3	4	5	9
For the most part, interactions between myself, park managers, experts, and people with ideas different from my own help build future relationships	1	2	3	4	5	9

17. How much influence do you think people like yourself can have on the management of Morristown National Historical Park? *Please check one.*

☐ A lot ☐ Some ☐ Very little ☐ None at all

18. How much influence do you think people like yourself can have in making the communities surrounding Morristown National Historical Park a better place to live? *Please check one.*

☐ A lot ☐ Some ☐ Very little ☐ None at all

19. Please indicate to what extent you agree or disagree with the following statements about management at Morristown National Historical Park.

Please circle one number for each item.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Not Sure
On the whole, National Park Service employees are dedicated to preserving and protecting Morristown National Historical Park	1	2	3	4	5	9
Morristown National Historical Park is an educational resource for my community	1	2	3	4	5	9
I do not feel welcome at Morristown National Historical Park	1	2	3	4	5	9
Morristown National Historical Park typically works with local communities for shared purposes	1	2	3	4	5	9
On the whole, the rules and regulations at Morristown National Historical Park do not help preserve and protect it for the future.	1	2	3	4	5	9
My community typically does not help care for Morristown National Historical Park	1	2	3	4	5	9
Managers at Morristown National Historical Park typically listen to opinions from people like me	1	2	3	4	5	9
I usually do not support the resource management decisions made at Morristown National Historical Park	1	2	3	4	5	9
I usually trust management at Morristown National Historical Park to make good decisions about resource management	1	2	3	4	5	9

20. Please indicate to what extent you agree or disagree that management at Morristown National Historical Park typically is...

Please circle one number for each item.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Not Sure
trustworthy	1	2	3	4	5	9
not knowledgeable	1	2	3	4	5	9
not fair	1	2	3	4	5	9
telling the whole story	1	2	3	4	5	9
unbiased	1	2	3	4	5	9
concerned about my community's well-being	1	2	3	4	5	9
unconcerned about the public interest	1	2	3	4	5	9
watching out for my community's interests	1	2	3	4	5	9

BACKGROUND INFORMATION

All information you provide is never associated with your name.

21. In what year were you born? 19_____

22. Are you male or female? ☐ Male ☐ Female

23. How long have you lived in a community near Morristown NHP?
_____ years

24. Please tell us which activities you have participated in, at any location (not just in the park or your community), in the last 12 months: *Please check all that apply.*

- ☐ Hiking/Walking outdoors
- ☐ Biking
- ☐ Picnicking
- ☐ Camping
- ☐ Boating/Canoeing/Kayaking
- ☐ Wildlife viewing
- ☐ Nature photography/Painting/Sketching
- ☐ Horseback riding
- ☐ Hunting
- ☐ Fishing

25. What is the highest level of formal education you have completed? *Please check one.*

- ☐ Some high school
- ☐ High school diploma/G.E.D.
- ☐ Some college or technical school
- ☐ Associate's Degree (e.g., A.A.)
- ☐ College undergraduate degree (e.g., B.A., B.S.)
- ☐ Graduate degree (e.g., M.S., Ph.D., M.D.)

26. Please use the space below for any additional comments:

THANK YOU FOR YOUR PARTICIPATION!

**To return this questionnaire, simply seal it and drop it into the nearest mailbox.
Postage has already been provided.**

For more information about this project, please visit:
<http://www.dnr.cornell.edu/deerpeopleparks>
or call: 607-255-4136.

To learn more about the National Park System, please visit:
<http://www.nps.gov>

To learn more about Morristown National Historical Park, please visit:
<http://www.nps.gov/morr/>

APPENDIX B: Factor loadings for data reduction scales

Table B1. Factor loadings for 9-item values of Morristown NHP to communities scale.

“Morristown NHP...”	Factor 1 (Amenity values)	Factor 2 (Ecological values)	Factor 3 (Economic values)
makes my community a special place to live	0.828	0.209	-0.001
plays a significant role in my community	0.777	0.121	0.319
provides open space for my community	0.720	0.252	0.052
is an important place for recreation for my community	0.570	0.046	0.113
is a place where people in my community spend leisure time	0.474	0.445	0.393
preserves natural resources	0.176	0.847	0.049
provides habitat for plants and animals	0.149	0.822	0.039
increases the job opportunities in my community	-0.026	0.085	0.911
attracts tourism dollars to my community	0.408	0.011	0.781
% variance explained by factor	40.46	14.81	11.55
factor alpha	0.727	0.578	0.701

Table B2. Factor loadings for 9-item scale on perceptions of deer in Morristown NHP.

“...deer in general are...”	Park scale		Community scale	
	Factor 1 (Harmless)	Factor 2 (Natural)	Factor 1 (Harmless)	Factor 2 (Natural)
not dangerous	0.758	0.191	0.733	0.188
not threatening	0.735	0.207	0.751	0.198
not aggressive	0.706	0.209	0.680	0.235
harmless	0.676	0.337	0.676	0.301
peaceful	0.628	0.031	0.581	0.060
not behaving strangely	0.442	0.488	0.275	0.654
behaving normally	0.356	0.733	0.328	0.755
not acting unnaturally	0.110	0.770	0.195	0.681
acting naturally	0.107	0.844	0.039	0.822
% variance explained	43.63	13.32	41.67	13.22
factor alpha	0.782	0.758	0.772	0.757

Table B3. Factor loadings for 10-item scale on concerns about deer in Morristown NHP.

Potential concerns:	Park scale			Community scale		
	Factor 1 (Damage Concerns)	Factor 2 (Other Concerns)	Factor 3 (Concerns about deer)	Factor 1 (Damage Concerns)	Factor 2 (Other Concerns)	Factor 3 (Concerns about deer)
Deer browsing on landscaped flowers, trees and shrubs	0.876	0.046	0.071	0.856	0.032	0.042
Deer browsing on vegetable gardens	0.834	0.180	0.112	0.757	0.221	0.077
Deer browsing on naturally growing flowers, trees and shrubs	0.750	0.041	-0.115	0.728	0.101	-0.164
Car accidents involving deer	0.706	0.233	0.096	0.620	0.117	0.206
Diseases and/or parasites carried by deer	0.626	0.292	0.274	0.658	0.262	0.204
Presence of deer feces	0.530	0.234	0.337	0.594	0.273	0.114
Deer behavior around people	0.221	0.810	0.102	0.264	0.769	0.146
Deer interacting with pets	0.135	0.794	0.263	0.221	0.790	0.171
Deer accessing unsecured trash	0.174	0.735	0.223	0.255	0.714	0.161
People's behavior around deer	0.098	0.695	0.032	0.017	0.679	0.076
Fawns born too late to survive winter	0.013	0.135	0.869	0.018	0.135	0.886
Having seen unhealthy deer	0.189	0.245	0.796	0.191	0.277	0.786
% variance explained by factor	39.38	15.58	9.17	37.95	14.39	8.86
factor alpha	0.850	0.793	0.693	0.817	0.775	0.718

Table B4. Factor loadings for 7-item scale on image of Morristown NHP management.

“Management at Morristown NHP typically is...”	Factor 1 (Professionalism)	Factor 2 (Community affiliation)
Knowledgeable	0.877	0.173
Trustworthy	0.828	0.232
Fair	0.807	0.427
Concerned about the public interest	0.467	0.648
Concerned about my community’s well being	0.272	0.894
Watching out for my community’s interests	0.169	0.897
% variance explained by factor	62.45	16.20
factor alpha	0.831	0.851

APPENDIX C: Non-respondent-respondent comparison tables

Table C1. Percent of respondents and non-respondents who have visited Morristown NHP (MORR) by stratum.

Ever visited PRWI?	Respondent classification	Adjacent Communities		Surrounding Communities	
		n	(%)	n	(%)
No	Respondents	7	3.4	19	14.1
	Non-respondents	3	6.0	4	8.0
Yes	Respondents	200	96.6	116	85.9
	Non-respondents	47	94.0	46	92.0
Total	Respondents	207	100.0	135	100.0
	Non-respondents	50	100.0	50	100.0

Table C2. Percent of respondents and non-respondents who visited Morristown NHP, by stratum and number of visits in past 12 months.

Visits in past 12 months	Respondent classification	Adjacent Communities		Surrounding Communities	
		n	(%)	n	(%)
0, 1, don't know	Respondents	67	33.8	55	47.4
	Non-respondents	8	16.0	12	24.0
2-4 times	Respondents	66	33.3	40	34.5
	Non-respondents	7	14.0	7	14.0
5 or more visits	Respondents	65	32.8	21	18.1
	Non-respondents	35	70.0	31	62.0
Total	Respondents	198	100.0	116	100.0
	Non-respondents	50	100.0	50	100.0
Chi-square			22.949		31.415
P-value			<0.001		<0.001

Table C3. Percent of Morristown NHP respondents and non-respondents by stratum and by frequency with which they see deer in their community.

See deer in Community	Respondent classification	Adjacent Communities		Surrounding Communities	
		n	(%)	n	(%)
Daily, or a few times a week	Respondents	168	82.4	94	70.1
	Non-respondents	42	84.0	39	78.0
Weekly, Less than once once a week, or never	Respondents	36	17.6	40	29.9
	Non-respondents	8	16.0	11	22.0
Total	Respondents	204	100.0	134	100.0
	Non-respondents	50	100.0	50	100.0
Chi-square			0.076		1.120
P-value			NS ¹		NS

¹Not significant

Table C4. Percent of respondents and non-respondents with particular attitudes toward deer in Morristown NHP, by stratum.

Collapsed Response Categories	Respondent classification	Adjacent Communities		Surrounding Communities	
		n	(%)	n	(%)
No particular feelings/ Enjoy deer without Worry	Respondents	60	31.3	52	42.3
	Non-respondents	8	16.7	18	36.0
Enjoy deer but worry/ Do not enjoy deer	Respondents	132	68.8	71	57.7
	Non-respondents	40	83.3	32	64.0
Total	Respondents	192	100.0	123	100.0
	Non-respondents	48	100.0	50	100.0
Chi-square			4.022		0.581
P-value			0.045		NS ¹

¹Not significant

Table C5. Percent of Morristown NHP respondents and non-respondents with particular attitudes toward deer in their community, by stratum.

Collapsed Response Categories	Respondent classification	Adjacent Communities		Surrounding Communities	
		n	(%)	n	(%)
No particular feelings/ Enjoy deer without Worry	Respondents	25	12.6	19	14.7
	Non-respondents	5	10.2	11	22.0
Enjoy deer but worry/ Do not enjoy deer	Respondents	174	87.4	110	85.3
	Non-respondents	44	89.8	39	78.0
Total	Respondents	199	100.0	129	100.0
	Non-respondents	49	100.0	50	100.0
Chi-square			0.206		1.366
P-value			NS ¹		NS

¹Not significant

Table C6. Percent of Morristown NHP respondents and non-respondents by stratum and beliefs about level of influence they can have on management of the park.

Level of influence you expect to have on park decisions	Respondent classification	Adjacent Communities		Surrounding Communities	
		n	(%)	n	(%)
A lot, or Some	Respondents	136	66.7	82	63.6
	Non-respondents	18	40.9	15	31.3
Very little, or None at all	Respondents	68	33.3	47	36.4
	Non-respondents	26	59.1	33	68.8
Total	Respondents	204	100.0	129	100.0
	Non-respondents	44	100.0	48	100.0
Chi-square			10.202		14.749
P-value			0.001		<0.001

Table C7. Percent of Morristown NHP respondents and non-respondents by stratum and response to trustworthiness of MNHP staff.

Management at MORR is typically trustworthy	Respondent classification	Adjacent Communities		Surrounding Communities	
		n	(%)	n	(%)
Strongly disagree, Disagree, or Neutral	Respondents	25	13.4	16	13.7
	Non-respondents	21	42.0	16	32.0
Strongly agree, Agree	Respondents	105	56.5	69	62.5
	Non-respondents	16	32.0	19	38.0
Not sure	Respondents	56	30.1	32	23.5
	Non-respondents	13	26.0	15	30.0
Total	Respondents	186	100.0	117	100.0
	Non-respondents	50	100.0	50	100.0
Chi-square			21.312		9.151
P-value			<0.001		0.010

Table C8. Percent of Morristown NHP respondents and non-respondents by stratum and response to concern about local communities among MNHP staff.

Management at MORR is concerned about my community	Respondent classification	Adjacent Communities		Surrounding Communities	
		n	(%)	n	(%)
Strongly disagree, disagree	Respondents	7	3.8	4	3.4
	Non-respondents	8	16.0	10	20.4
Neutral	Respondents	28	15.1	22	19.0
	Non-respondents	9	18.0	9	18.4
Strongly agree, agree	Respondents	84	45.4	56	48.3
	Non-respondents	20	40.0	14	28.6
Not sure	Respondents	66	35.7	34	29.3
	Non-respondents	13	26.0	16	32.7
Total	Respondents	185	100.0	116	100.0
	Non-respondents	50	100.0	49	100.0
Chi-square			10.764		14.964
P-value			0.013		0.002

Table C9. Percent of Morristown NHP respondents and non-respondents by stratum and likelihood of talking to park staff about deer impacts if park offers such opportunities.

Likelihood of talking with park staff about deer impacts	Respondent classification	Adjacent Communities		Surrounding Communities	
		n	(%)	n	(%)
Very unlikely, unlikely	Respondents	127	62.6	81	63.3
	Non-respondents	31	62.0	25	52.1
Very likely, likely	Respondents	57	28.1	30	23.4
	Non-respondents	19	38.0	23	47.9
Not sure	Respondents	19	9.4	17	13.3
	Non-respondents	0	0.0	0	0.0
Total	Respondents	203	100.0	128	100.0
	Non-respondents	50	100.0	48	100.0
Chi-square		5.996		14.048	
P-value		0.050		0.001	

Table C10. Percent of Morristown NHP respondents and non-respondents by stratum and likelihood of writing comments regarding an issue with deer in the park.

Likelihood of providing some form of written comments (to a park plan, impact statement, survey) related to deer impacts	Respondent classification	Adjacent Communities		Surrounding Communities	
		n	(%)	n	(%)
Very unlikely, unlikely	Respondents	113	55.7	82	63.6
	Non-respondents	28	56.0	23	46.0
Very likely, likely	Respondents	81	39.9	36	27.9
	Non-respondents	21	42.0	27	54.0
Not sure	Respondents	9	4.4	11	8.5
	Non-respondents	1	2.0	0	0.0
Total	Respondents	281	100.0	129	100.0
	Non-respondents	50	100.0	50	100.0
Chi-square		0.646		13.130	
P-value		NS ¹		0.001	

¹Not significant

Table C11. Percent of Morristown NHP respondents and non-respondents by stratum and likelihood of attending a public meeting on the topic of deer-related impacts in the park.

Likelihood of attending a public meeting related to deer impacts	Respondent classification	Adjacent Communities		Surrounding Communities	
		n	(%)	n	(%)
Very unlikely, unlikely	Respondents	103	30.5	72	55.8
	Non-respondents	29	58.0	31	62.0
Very likely, likely	Respondents	80	64.9	40	31.0
	Non-respondents	20	40.0	19	38.0
Not sure	Respondents	19	9.4	17	13.2
	Non-respondents	1	2.0	0	0.0
Total	Respondents	202	100.0	129	100.0
	Non-respondents	50	100.0	50	100.0
Chi-square			3.147		7.363
P-value			NS ¹		0.025

¹Not significant

Table C12. Gender of Morristown NHP respondents and non-respondents by stratum.

Gender	Respondent classification	Adjacent Communities		Surrounding Communities	
		n	(%)	n	(%)
Male	Respondents	100	47.4	67	51.1
	Non-respondents	19	38.0	20	40.0
Female	Respondents	111	52.6	64	48.9
	Non-respondents	31	62.0	30	60.0
Total	Respondents	211	100.0	131	100.0
	Non-respondents	50	100.0	50	100.0
Chi-square			1.438		1.801
P-value			NS ¹		NS

¹Not significant

Table C13. Year born and years lived in a community near Morristown NHP (MORR) for MORR survey respondents and nonrespondents.

		<u>n</u>	<u>Mean</u>	<u>Median</u>
Year born	Respondents	338	1950	1952
	Nonrespondents	95	1950	1952
Years lived in community near park	Respondents	343	23.98	20
	Nonrespondents	100	23.93	20