Miscellaneous Reports   Maine Agricultural and Forest Experiment Station

10-1-2007

MR443: Maine Coastal Islands Visitor Survey 2006--Deer Isle/Stonington Region

Andres J. Ednie

John J. Daigle

Recommended Citation

Ednie, A., and J.J. Daigle. 2007. Maine coastal islands visitor survey 2006--Deer Isle/Stonington region. Maine Agricultural and Forest Experiment Station Miscellaneous Report 443.

Maine Coastal Islands Visitor Survey 2006— Deer Isle/Stonington Region

Andrea J. Ednie

John J. Daigle

Maine Coastal Islands Visitor Survey 2006—Deer Isle/Stonington Region

Andrea J. Ednie
Assistant Professor
Department of Recreation and Tourism Management
Kimball Hall
University of Maine at Machias

John J. Daigle
Associate Professor
Parks, Recreation and Tourism
School of Forest Resources
Nutting Hall
University of Maine

ACKNOWLEDGMENTS

Photo credit: More than 90% of the respondents rated the scenic quality, nature appreciation, the distinctive coastline, and exploration as important of very important reasons for visiting the Stonington region. This photo was taken by Andrea Ednie at Steves Island near Stonington, Maine.

Contents

Figures

Tables

EXECUTIVE SUMMARY

In 2003, the Maine Island Trail Association and the Maine Department of Conservation involved hundreds of stakeholders in the development of the *Recreation Plan for the Public Islands on the Maine Island Trail, 2004–2014,* to address visitor use of 45 islands dispersed along more than 325 miles of coast and near to hundreds of coastal communities. Based on the management plan, an island-monitoring task force was created to develop a long-term monitoring plan to track environmental and social changes using established indicators and standards. The task force focused for three years on developing environmental-monitoring methods, and this report presents results from the second phase of the island-monitoring program headed by the Maine Island Trail Association, which was to inventory social conditions on a subset of public islands on the Maine Island Trail. During the summer season of 2006, we recorded observations on the use of 23 islands in the Stonington region of Maine and asked visitors to those islands to participate in a survey. The survey was designed to elicit information from participants on a variety of issues to determine characteristics of the visit including their travel patterns and travel decisions, background information, experiences, Leave No Trace knowledge and behavior, and preferences for and satisfaction with the condition of the resource. Information was collected from island visitors using two survey instruments: a short on-site survey card and a more extensive mail-back questionnaire. We mailed a total of 435 questionnaires to island visitors, and visitors returned 361 usable questionnaires, for an 85% response rate.

Island Use Observations

- The most popular islands for day use were Green Island (26%), followed by Wreck Island (12%), Hell's Half Acre Island (11%), and Russ Island (11%). The greatest percentage of overnight use was recorded on Hell's Half Acre Island (22%), followed by Steves Island (19%), Harbor Island (11%), and Buckle Island (9%).

- Our observations of island visitors found that group size ranged from one to 40 individuals. The mean day-use group size was 7.28; however, the most common day group size was two. The most common overnight group size was also two, while the mean overnight group size was 4.54.

- We observed a total of 193 groups of day users and 194 groups of overnight users. We found the greatest percentage of day users was on Wednesdays (19%) and Sundays (18%), and the greatest percentage of overnight users was on Saturdays (18%), Mondays (17%), and Fridays (16%).

- According to our observations, 272 groups of visitors traveled by hand power (kayak, canoe), and they were most frequently observed on Mondays (23%), Wednesdays (20%), and Saturdays (20%). We observed 39 groups of sailors (while physically on-island), and 94 groups in motorized boats.

Visitor-Use Characteristics

- Visitor group sizes ranged from one to 50; however, most groups consisted of two people, representing 32% of all survey participants. Only seven participants reported traveling alone. Twenty-seven percent of groups included at least one child under the age of 16. Fifty percent of all visitor groups were made up of family or family plus friends.

- Forty-eight percent of groups camped overnight, with an average of three nights. Respondents camped most frequently on Hell's Half Acre Island, Steves Island, Harbor Island, and Wheat Island, which were mentioned 25, 24, 21, and 16 times, respectively. Steves Island and Hell's Half Acre Island were the islands most commonly visited for day use, mentioned 14 and 10 times, respectively.

- The majority of groups traveled on the water by kayak (78%), followed by motor boat (17%), and sailboat (16%); only 2% traveled by canoe. Thirteen percent of respondents used more than one mode of travel.

- The most frequently reported access point to the water was Old Quarry Campground (58%); 16% of the study participants reported launching at the Stonington boat ramp. Another 13% of the participants were traveling through from another region.

- Seeking specific islands (38%), having been there before (36%), and visiting a new area (32%) were the most commonly reported reasons for choosing water routes. Sixty-three percent of the respondents decided to visit the Stonington region islands because someone recommended the area, and 27% did their own research.

- Having been there before (51%), NOAA charts (42%), word of mouth (34%), and the Internet/Web sites (30%) were the most popularly reported sources of information used to learn about the Stonington area.

Background Information

- Study participants ranged in age from 24 to 91 years, with most being between the ages of 46 and 55. Participants were balanced in gender, with 51% male and 49% female. Eighty-four percent held either a bachelor or graduate degree.

- Visitors to the Stonington region came from 35 states, Canada, and the United Kingdom. Most participants were from Maine (28%), followed by Massachusetts (17%), and New York (9%).

- Most participants in this study were visitors to the Stonington region (87%), and most did not hold employment that is dependent on the resource (94%). Thirty-three percent of respondents were members of the Maine Island Trail Association, and an additional 6% had been members in the past.

Visitor Experiences

- More than 90% of the respondents rated the scenic quality, nature/wildlife appreciation, the distinctive coastline, and exploration as important or very important reasons for visiting the Stonington region. Adventure/excitement and being with family and/or friends were also rated within the top three reasons for visiting by more than one-quarter of the respondents.

- Forty-eight percent of the groups camped overnight on the islands. Sixty-four percent of the camping groups reported that on the average night, no other groups were camped nearby (within clear sight or sound), and 30% reported one other group nearby. On the busiest night, 80% of the study participants reported one other group, and 18% reported two other groups within sight or sound.

- Sixty percent of the groups who camped with other groups nearby reported the other groups did not interfere with their experiences. Twenty-eight percent reported other groups interfered somewhat, 7% reported that other groups interfered, and 4% felt other groups interfered significantly with their camping experiences on the islands.

- Seventy-three percent of overnight users took their intended campsites during their visit to the islands. Of the 27% who did not take their intended site, 64% did not take the first available site for only one night of their trip. The most common reason for not taking the intended site was because they chose to scout around first to see what other options existed. Thirteen individuals did not stay at their intended site because the site was already occupied, and only two individuals mentioned campsite size or access to the campsite as reasons for not choosing the intended site.

- Sixty-one percent of participants had previously visited the Stonington region for recreation, 73% had previous recreation experience at other coastal locations, and 84% had either previous experience in Stonington or at other coastal areas.

Leave No Trace Knowledge and Behavior

- The vast majority of visitors (92%) were aware of Leave No Trace techniques, and 99% felt the recommendations were either very important or important. An analysis of participants who were not familiar with Leave No Trace techniques revealed 85% were day users (did not camp) and 60% traveled by motorboat or sailboat.

- Eighty-five percent of participants always or often removed litter/trash when they notice it. Eighty percent of the respondents carried out human waste, and 89% carried out leftover food.

- Not including participants who used neither a wood fire nor a camp stove, 14% of the respondents built a wood fire, 67% used a camp stove, and 19% used both. Day users were more likely to build wood fires (17% of the day users vs 4% of overnight users). Eighty-five percent of the sailors were day users, and 41% of the sailors built wood fires.

- Forty-nine percent of the participants signed the island logbooks, 39% did not sign the logbooks, and 12% did not see, or visited islands that did not have, logbooks. Sixty-seven percent of MITA members and 40% of the non-MITA members signed logbooks.

Visitor Preferences for and Satisfaction with Resource Conditions

- The amount of litter/trash around a campsite and the amount of litter/trash along a shoreline most greatly influenced the quality of visitor experiences. More than 90% of respondents rated them very much or extremely influential. The least important conditions were the availability of choice between several different places to pitch a tent and the availability of small campsites with only one or two places to pitch a tent. These conditions were rated not at all to moderately influential by at least 70% of the respondents.

- Most visitors (80%) strongly supported maintaining existing trails on the islands. Three other management actions received some degree of support from three out of four participants: posting signs outlining Leave No Trace recommendations; restricting use to manage impact and protect the islands; and providing the presence of a roving steward for the Stonington area.

- Ninety-seven percent of the participants rated experiences like the Maine coast islands as extremely valuable or very valuable. Ninety percent of the participants rated their trip A, very good, and 9% rated it B, good.

Conclusions

This research was designed to help the Maine Island Trail Association and others interested in the management of the Maine's coastal islands. It can be used for studying current visitation to the Maine islands, for planning educational programs, for selecting indicators for limits of acceptable change applications, and for establishing management objectives. Understanding the different aspects of the visitor experience and recognizing which of these are important to visitors is a crucial component in protecting the coastal recreation experiences of the Maine islands. Our research demonstrates that visitors to the Stonington region islands come with diverse interests and abilities. The many islands along the Maine coast make it a place that is capable of satisfying a broad array of needs, and the management and research implications in this report focus on helping managers to select the most effective approach for ensuring continual access while protecting the natural character of Maine's beautiful islands.

INTRODUCTION

The Maine islands, once a chain of mountains located miles inland, became islands approximately 11,000 years ago when glaciers receded and the sea level rose. Today, there are more than 4,600 islands off the Maine coast and thousands of intertidal ledges. Roughly one-quarter of the islands have some vegetation, and because of their aesthetic beauty combined with their geographical proximity to one another, many of them are popular destinations for recreational boaters. In the 1980s, the Maine Bureau of Parks and Lands and the Island Institute became interested in developing a water trail to protect 45 public islands that were identified as appropriate for public use. Maine's island trail became the largest and oldest water trail in North America, and the Maine Island Trail Association (MITA) was created to protect the integrity of the islands while keeping them accessible to the public. Since then, the Maine Island Trail has been expanded from the 45 public islands to include more than 150 public, private, and non-profit-organization-owned islands and mainland sites available for day visits or camping. The mission of MITA is to "establish a model of thoughtful use and volunteer stewardship for the Maine islands that will assure their conservation in a natural state while providing an exceptional recreational asset that is maintained and cared for by the people who use it"(MITA 2006).

In 2003, MITA, the Maine Department of Conservation, and the Bureau of Parks and Lands (BPL) involved hundreds of stakeholders in the development of a management plan for 45 of the state's public islands. *The Recreation Plan for the Public Islands on the Maine Island Trail, 2004–2014* addresses use of 45 islands dispersed along more than 325 miles of coast and near to hundreds of coastal communities. The plan focuses on recreation, rather than on integrated resource allocation, because the islands were selected specifically for public use in the 1980s. The management plan addresses both trail-wide issues and island-specific concerns (Department of Conservation 2003) and is a timely document given that island use is on the rise (MITA estimates that between 1997 and 2002, the use of the public islands on trail increased by 50%).

A central stipulation in the management plan is that the islands be managed to preserve the natural and cultural resources; to protect the relatively wild character of the islands and favor natural processes; to provide a setting for a high-quality coastal recreation experience; and to ensure equitable access to various users. The plan also states that "monitoring island conditions and social impacts is necessary to provide relevant information for ongoing recreational use management decisions" (Department of Conservation 2003: 35). One of the major recommendations of the management plan was to develop a monitoring task force to develop a long-term monitoring plan that would track environmental and social changes using established indicators and standards. In January of 2004, the Island Monitoring Task Force officially formed and developed their goal, which was "to develop recreational use management information and techniques that island owners and managers can use to achieve their resource and recreation management objectives" (Springuel 2007). The task force developed three main monitoring objectives: to conduct inventory of present natural resource and social conditions on a representative subset of islands; to identify natural resource and social indicators of the impact of recreation and define their associated standards; and to develop monitoring protocols that identify and monitor change caused by recreational use, for comparison to established standards. The task force decided to focus their first three years on developing environmental-monitoring methods. They used field mapping and GIS, a survey checklist, campsite monitoring, trails monitoring, shoreline monitoring, intertidal monitoring, and the photo-transect method to develop detailed baseline inventories for seven representative islands along the Maine coast.

The goal of this report is to present results from the second phase of the island-monitoring program, which was to inventory social conditions on a subset of the public islands on the Maine Island Trail. Specifically, the goal of this research was to obtain a better understanding of the visitors who use the Maine Island Trail. This research was designed to build on the ecological inventory developed by the task force and to help MITA and other groups to manage the islands by

1. determining characteristics of the Maine island visit, including activities, use patterns, method of travel, length of stay;

2. determining characteristics of the visitors, including types of groups, previous experience, place of residence, socio-demographic descriptions, visitor satisfaction and preferences;

3. determining visitor attitudes toward management actions; and

4. analyzing relationships between items listed.

This research will help natural resource managers to protect the island values that visitors and locals cherish: ecological integrity, a feeling of remoteness, and access. Quality in outdoor recreation can be defined as the degree to which recreation opportunities provide the experience for which they

are designed and managed. Key to protecting the experiences of the Maine Island Trail visitors is an understanding of the different aspects of the visitor experience and recognizing which of these are important to visitors. These indicators are measurable variables that help to define the quality of the recreation experience and standards that define the minimum acceptable conditions (Daigle 2005; Daigle et al. 2003). Good indicators are practical to measure quantitatively, sensitive to the type and amount of use, and potentially responsive to management control (Lucas and Stankey 1985; Manning 1999). They are used in managerial planning cycles such as limits of acceptable change (Stankey et al. 1985) along with standards to guide the implementation of management strategies and monitoring efforts.

Several studies examining indicators of quality have revealed some variables to be more important than others (Manning 1999). For example, visitors perceived litter and other signs of visitor use to have more of an impact on their experience than management-related issues, such as signs and presence of staff. Visitors often consider social indicators of quality, especially those dealing with behaviors or types of other user groups at remote campsite locations, to be more important than ecological indicators. Visitors to remote islands may be more sensitive to a variety of potential indicators of quality than visitors to highly used and developed islands or sites. On the Maine Island Trail, users have access to numerous public launch sites and diverse methods of travel to reach islands, such as by motor, sail, and kayak. Considering the recent increase in island visitation, this situation suggests the need to understand the diverse recreation experiences and indicators of quality.

Survey Site

The Stonington region island archipelago was chosen to host the first Maine Island Visitor Survey. This region was selected because of its geographical layout, its popularity as a recreation destination, its nature as a working waterfront, and its geography. The Stonington region archipelago is a cluster of approximately 80 islands located near the southern tip of Deer Isle, Maine. Deer Isle is approximately 55 miles South of Bangor or 155 miles East of Portland and is connected to the mainland by a causeway and a bridge at its north end over the Eggemoggin Reach. Although to a lesser extent than other coastal Maine communities, the community of Stonington has experienced a significant amount of change over the past two decades due to an increase in summer and other part-time residents. Also, Isle au Haut, home

to an island community of just under 100 people and also home to a segment of Acadia National Park, is located just on the southern border of the Stonington region islands.

The Stonington archipelago represents a range of recreation use history (e.g., heavily used locations vs remote) and user characteristics (e.g., local, outfitter, long-distance travelers). The most common visitors to this area include private and commercial groups of sea kayakers, recreational sailors, recreational motor-boaters, recreational yachters, and commercial schooners. The commercial lobster fishery represents the core of the Stonington community, and the Stonington fleet includes approximately 288 commercial moorings, nearly all of which are for lobster boats. The extent of recreational use in the area has not been fully recorded to date. MITA has placed log books on public islands to track use and has asked monitor skippers to count visitors on their approximately weekly monitoring rounds.

Islands in the Stonington region archipelago are owned and managed by a range of groups, including MITA, the Department of Conservation, the Maine Coast Heritage Trust, the Island Heritage Trust, and a variety of private owners. The main focus of this study was on the seven public islands in the region managed by the MITA under the 2003 management plan. This visitor survey also included contacts and estimates on the use of six private islands managed by MITA, three islands owned by the Island Heritage Trust and managed by the MITA, and seven islands owned and managed by the Maine Coast Heritage Trust. These islands are intermixed geographically with many private islands that are not accessible to the public.

The 23 islands sampled in this study differ in terms of permitted use and recommendations for use behavior. Seven of the islands monitored had campsites open for public use, and six had campsites for use by members of MITA. Of those islands with permitted camping, recommended group sizes ranged from four to 18, based on natural character and the number of campsites per island. Nine of the monitored islands permit day use only. All of the campsites in the region are free of development, with the exception of one campsite that contains two tent platforms on Hell's Half Acre Island. Each of the public camping islands has a sign at each campsite outlining use recommendations including a two-night maximum stay, party size, and "Leave No Trace" practices (Appendix A). Table 1 summarizes the islands monitored in terms of ownership, permitted use, and recommended group sizes for the public islands. Island landings range from long, gradual

Table 1.   Islands where use estimates and survey contacts were collected.

Island	Ownership	Use	Number of Campsites	Recommended Capacity (max)
Little Sheep	Public	Camping	1	4
Hell's Half Acre	Public	Camping	2	14
Steves	Public	Camping	4	10
Harbor	Public	Camping	3	18
Wheat	Public	Camping	2	10
Doliver	Public	Camping	1	4
Weir	Public	Camping	1	5
Russ	Non-profit	Camping	2	N/A
Saddleback	Non-profit	Camping	1	N/A
The Fort	Non-profit	Day use	0	N/A
Wreck	Non-profit	Day use	0	N/A
Round	Non-profit	Day use	0	N/A
Green	Non-profit	Day use	0	N/A
Nathan	Non-profit	Day use	0	N/A
Bills	Non-profit	Day use	0	N/A
Millet	Non-profit	Day use	0	N/A
Sand	Non-profit	Day use	0	N/A
Fog	Private (non-profit easement)	Day use	0	N/A
Buckle	Private	Camping	1	N/A
Sheep	Private	Camping	2	N/A
Rock	Private	Camping	1	N/A
Burnt	Private	Camping	1	N/A
Kimball	Private	Camping	1	N/A

sandy beaches to steep bolder-filled shorelines. There are three public access locations directly within the study region as well as several others nearby. Two of the public access points are within the town of Deer Isle; one is a concrete/stone boat ramp owned by the towns of Stonington and Isle au Haut, and the other is a floating dock, which is public; however, visitors are encouraged to avoid the float due to past issues with congestion. The third access point is a privately owned campground located along nearby Oceanville Road, where the owner provides public access for a small fee. The islands range from half a mile to six miles away from the closest points along the Stonington shore. Tidal variation in the Stonington region on average is approximately 10 feet.

SURVEY METHODS

The Stonington region visitor survey, 2006, included information collected from visitors using two instruments: a brief on-site visitor interview and a more extensive mail-back questionnaire. The researcher, a University of Maine Ph.D. student who

was doubling as a Maine Island Trail Association island steward, greeted all study participants in person, briefly describing the purpose of the study and asking the visitors to participate. Contacts were made on most of the 23 islands described in Table 1 between June 18 and September 3, 2006. Contacts were also made at Old Quarry Ocean Adventures, a popular access point to the Stonington region island landscape.

Sources of Samples

Although sampling consistency is desirable, we had to adjust the sampling strategy during the course of the data collection process. The original sampling scheme followed a random stratified sampling method and extended the study region up into the Eggemoggin Reach. Within the first few weeks, however, we decided to reduce the study region and to convert from the random stratified scheme to a more purposive maximum yield approach because of concerns over the ability of one person to make enough contacts over such a large region, as well

as concerns about the accuracy of use estimates the researcher was also collecting for the Maine Island Trail Association.

The new sampling scheme involved a rigorous schedule of monitoring islands for as many hours as possible during a day. Weather permitting, each island was visited at least once during the day and also once in the evening or early morning to intercept campers. Although the researcher made all participant contacts for the visitor survey, the Maine Coast Heritage Trust (MCHT) regional steward was also estimating use of the islands.

On-site Interview

After they agreed to participate (only two individuals declined over the entire survey period), the researcher conducted a short interview lasting two to four minutes, requesting information about access point, length of visit, type of group, size of group, mode of travel, and their addresses. The intent was to keep on-site visitor burden to a minimum while collecting sufficient information to draw conclusions about users and to compare response and non-response groups on the mail-back questionnaire.

Study participants were assured that participation was completely voluntary and that all responses would be confidential. The following statement was printed on the back of the on-site interview card for participants to read if they were interested:

> This study is being conducted by the University of Maine in partnership with the Department of Conservation, the Maine Island Trail Association, and the Maine Coast Heritage Trust. Your participation in this interview is voluntary, and you may skip any questions you do not wish to answer. Since each interviewed person will represent many others who will not be surveyed, your cooperation is extremely important. The answers you provide will be confidential. An identification label used on mail-out questionnaires is for mailing purposes only. Our results will be summarized so that the answers you provide cannot be associated with you or anyone in your group or household. Your name and address will not be given to any other group or be used by us beyond the purposes of this study.

We reviewed the on-site interview data for completeness, accuracy, and consistency, entered the information into a Microsoft Excel spreadsheet, and assigned a tracking number to each study participant. This number provided a unique identifier to link responses to the on-site interview with responses to the returned mail-back questionnaire.

Mail Questionnaire Procedures

The mail-back questionnaire was administered by the University of Maine. Administration of the questionnaire followed strategies developed by Salant and Dillman (1994) and Dillman (2000). In recreation visitor studies, this method has produced response rates as high as 90%. Using the Dillman (2000) total design method, survey participants received up to three surveys mailings over a seven-week period, each timed carefully following the initial visitor contact. The completed questionnaires returned to the University of Maine were processed regularly, to reduce the occurrence of respondents receiving follow-up mailings. Components of the mail survey included (1) the questionnaires; (2) cover letters; (3) envelopes for sending the mail survey; (4) stamped envelopes for returning the questionnaires; (5) postcard thank you/reminders; and (6) administration of the mail survey. We made extra effort to personalize this mail survey to emphasize the difference between it and other mail surveys more common to American households.

The Questionnaire

We designed the questionnaire to obtain visitor characteristics and perceptions of a variety of variables including information on socio-demographics, travel, attitudes towards management actions, perceptions of the importance of certain island conditions, reasons for visiting, Leave No Trace knowledge and behavior, and sense of connection to the landscape (Appendix B). Staff at the Maine Island Trail Association, the Department of Conservation, the Maine Coast Heritage Trust, Acadia National Park, among other organizations, assisted in the development of questions, the sequencing of questions, and the wording of the final questionnaire. A pre-test, completed in May 2006 with 16 volunteers, produced helpful feedback in terms of question development and survey length. The survey included a cover page with the title of the survey, an image of the landscape, and the names of collaborating organizations followed by 10 pages of questions including a final page containing an open-ended section for comments.

Cover Letters, Envelopes, and Reminders

We included a cover letter explaining the purpose of the survey and encouraging a high response rate, with the questionnaires. Printed on Parks, Recreation, and Tourism, University of Maine letterhead and addressed to each participant, the letter included (1) identification that this study was being conducted by the University of Maine; (2)

an explanation of the purpose of the study; (3) the importance of completing the questionnaire; and (4) an assurance that information provided would be held in the strictest of confidence. We created three slightly different versions of the cover letter, for use in each of the three possible rounds of survey mailing and hand-signed each cover letter.

To personalize the envelope, we hand wrote each name and address on the official department envelopes and also used regular postage stamps as opposed to mechanical stamping to mail the surveys. Each survey packet also contained a business reply envelope for returning the completed questionnaire. An account (business reply postage) was established so that postage was charged only if respondents used the envelope for returning questionnaires.

Additionally, we sent postcard reminders one week after the first questionnaire. The postcards encouraged participants to complete the questionnaire and thanked those individuals who had already done so. Again, we hand wrote the names and addresses on all postcards, which read

> Last week we mailed you a questionnaire asking about your perceptions of the conditions of the Maine Islands during your recent trip. If you have already completed and returned the questionnaire to the University of Maine, please accept our thanks. If you have not yet completed it, please do so today. The questionnaire was sent to a small but representative sample of different Maine Island visitor types. It is extremely important that your responses be included in the study for the results to be of assistance in future management. If, for some reason, you did not receive the questionnaire, or if it has been misplaced, please call me at (207) 581-2850 and we will mail a replacement questionnaire to you today. Thank you for your assistance.

Survey Administration

To monitor returned questionnaires and to facilitate additional mailings, we created a system with a master data table that contained (1) respondent identification number; (2) name and address; (3) mailing number (1, 2, or 3); and (4) notes on nondeliverable questionnaires. The identification number (corresponding with on-site interview numbers) was written on the last page of the questionnaire and used to monitor returns. We cross-referenced the names and addresses of each respondent with the identification number and recorded the date and applicable mailing (1, 2, or 3) when the completed questionnaires were received. We also recorded notes on the data sheets describing outcomes such as nondeliverables of the initial mailings.

We sent the first follow-up mailing three weeks after the first mailing, and the second replacement questionnaire six weeks after the first mailing. Each mailing contained a new copy of the questionnaire, a business reply envelope, and slightly different cover letter. Using a data table, we calculated response rates throughout phases of the mail survey process. We also produced codebooks for both the on-site interview and the mail-back questionnaire, which defined variables in terms of type, location, and description. The data were keyed into an Excel spreadsheet, which was inspected to ensure high accuracy of data entry. The Excel file was converted to a database suitable for analysis, and the data were analyzed using the Statistical Package for the Social Sciences (SPSS 2001).

Recruitment and Participation

Approximately 435 participants were contacted and asked to participate in the study. We decided to interview multiple individuals per group if they felt they could provide unique perspective. We also decided to present all data in this report on the basis of all participants sampled, with the exception of the visit characteristics section, where data are presented by visitor group. With only two exceptions, all who were asked to participate agreed. Table 2 shows visitor contacts by location over the three-month on-site survey period. Eighty percent of the participant on-site interviews were conducted on the Maine islands. Twenty percent were completed at nearby Old Quarry Campground, which is a popular public access point for visitors.

Eight of the 435 mailed surveys were returned because they were undeliverable; therefore, 427 respondents received the mail survey. A total of 361 completed questionnaires were returned, providing an overall response rate of 85%. Table 3 shows the number of on-site cards completed and the number who returned mail surveys and the percentage response rate by residence. Figure 1 shows the percentage of visitors by time of year who agreed to participate in the study and returned their questionnaires.

We compared the participants who returned the questionnaires with those who did not on several of the on-site interview questions to check for non-response bias. Respondents did not differ from non-respondents on whether they were day users or overnight campers ($\chi^2 = 0.013$, 1df, P = 0.909), first time or return visitors ($\chi^2 = 0.028$, 1df, P = 0.866), or visitors or individuals with other connections to the area ($\chi^2 = 0.326$, 1df, P = 0.568). There were also no significant differences between respondents

Table 2.   Visitors who completed on-site interviews by sample location.

Sample Location	Completed on-site survey cards	Distribution (%)
Old Quarry Campground	87	20
Green Island	62	14
Hell's Half Acre Island	60	14
Harbor Island	35	8
Steves Island	32	7
Russ Island	29	7
Wheat Island	26	6
Sheep Island	23	5
Wreck Island	18	4
Rock Island	16	4
Buckle Island	12	3
Saddleback Island	11	3
On the water	7	1
Little Sheep Island	7	1
Other islands	10	3
Total	435	100

Table 3.   Proportion of visitors who completed on-site cards and returned mail surveys by residence.

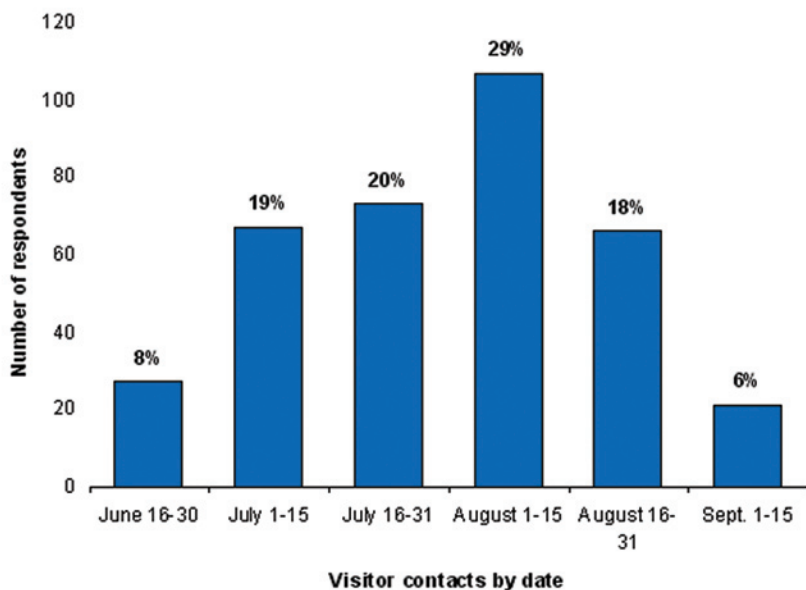| Residence	Number of completed on-site surveys	Number of returned mail surveys	% of on-site cards returned
Maine	130	102	78
Massachusetts	74	62	84
New York	47	35	74
New Hampshire	22	17	77
Connecticut	21	19	90
Pennsylvania	17	17	100
Vermont	15	13	87
New Jersey	14	13	93
Virginia	11	11	100
Canada	8	8	100
Ohio	8	8	100
Florida	7	7	100
Texas	5	4	80
Georgia	5	4	80
California	5	4	80
North Carolina	5	4	80
Maryland	5	2	40
Other	36	33	92
Total	435	363	

Figure 1. Proportion of visitors who agreed to participate and returned their mail-back questionnaires, by date.
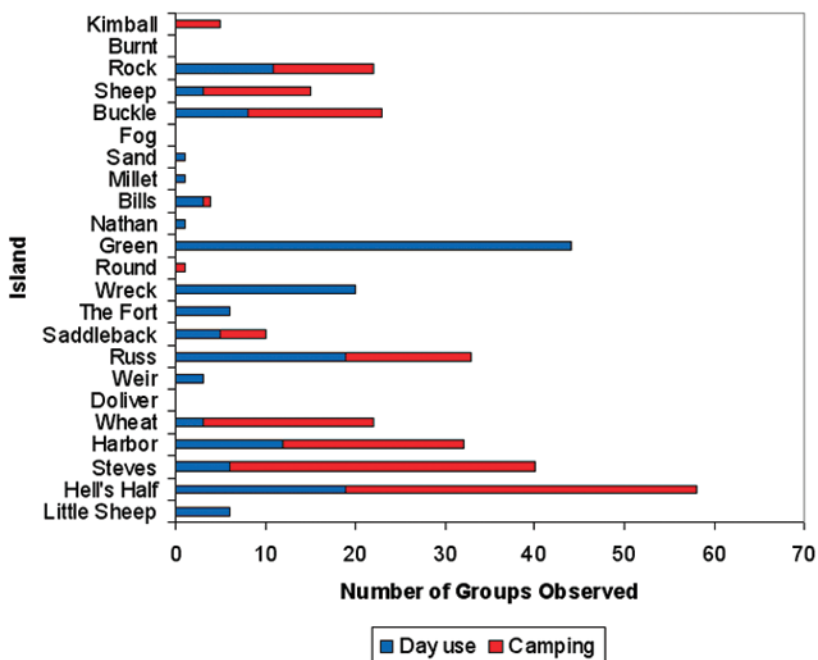

Figure 2. Number of visitor groups observed on each island, N = 387.

OBSERVATIONS OF ISLAND USE

We observed island use on-site from June 18 through September 3, 2006, and based observations on routine visits to the islands included in the survey (see Table 1), recording both visitor use and non-use (islands with no visitors). The MCHT regional steward supplemented the survey researcher's estimates by monitoring islands in different areas at the same time, by recording use during the researcher's days off-island, and by traveling with the survey researcher to increase efficiency on the water. We recorded only observed visitors on islands, not water traffic unless visitors were clearly going to land on an island or were just leaving an island.

We also noted visitation on islands that were not included in the survey, but we only recorded non-use, however, for those islands included in the survey (Table 1). Figure 2 shows that the most popular island for day use was Green Island, which has a freshwater quarry that is a popular swimming location for commercial outfitters and people from the area. Twenty-six percent of all recorded day-use groups were on Green Island, followed by 12% on Wreck Island, and 11% on both Russ Island and Hell's Half Acre Island. The greatest percentage of recorded overnight groups was on Hell's Half Acre Island, which had 22% of all observed camping groups. Steves Island received 19% of all recorded camping groups, and Harbor Island and Buckle Island were host to 11% and 9% of all camping groups, respectively. We observed little use on several of the monitored islands, including Sand, Millet, Bills, Nathan, Round, and Weir islands and no visitors on Burnt, Fog, and Doliver islands.

Figure 3 shows the number of islands monitored (for use and non-use) by weekday, and the number

and non-respondents with respect to type of group ($\chi2 = 9.553$, 6df, P = 0.145). A significant difference was found in party size ($\chi^2 = 9.738$, 3df, P = 0.021); however, the difference can be attributed to groups of two to five respondents (representing 47% of non-responders), where it is likely that several of the small parties that were asked to complete two mail-back surveys decided to return only one.
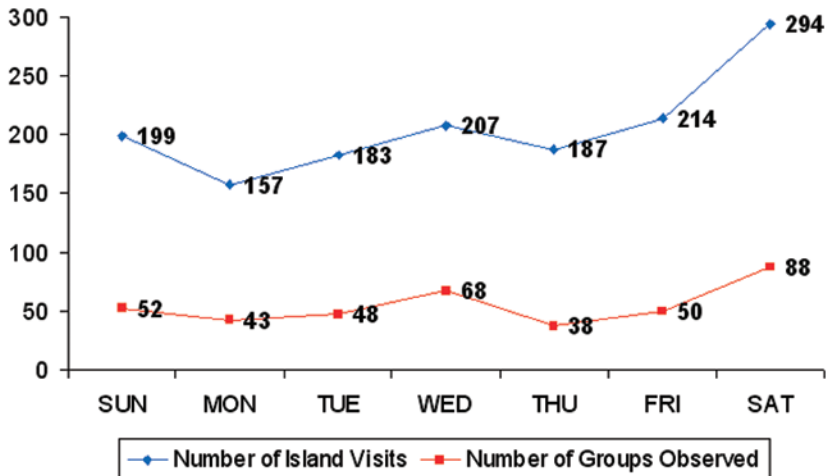
Figure 3. Number of islands visited and groups observed by day of the week, N=1441.

of times visitors were recorded for each day of the week. We made more observations on Saturdays compared with the other days of the week. There was also variation in the number of island visits we made throughout the rest of the weekdays, visiting islands less frequently on Mondays compared to the other days. For this reason, all further observations reported by weekday are presented based on the proportion of island visits where visitors were observed, rather than by number of observations. For example, out of the 199 visits on Sundays, we observed 52 groups. In other words, groups were observed during 26% of the 199 island visits on Sundays. This conversion controls for the heavy weight of observations on Saturdays and allows us to compare island use over the days of the week.

We observed visitor groups ranging in size from one to 40 individuals. The mean day-use group size was 7.28; however, the most common day-use group size was two. The most common overnight group size was also two, while the mean overnight group size was 4.54. The mean group sizes for hand-powered, sail, and motorboats were 3.75, 2.05, and 1.44, respectively. The most common hand-powered group size was two people, and single-person travel was most common for both sailboats and motorboats. Table 4 provides a breakdown of the number of visits we made to each island in the morning and afternoon, the number of visitors in the morning and afternoon on each island, and the number of visitor groups on each island in the morning and afternoon. The table shows that Green Island, Hell's Half Acre Island, and Russ Island were the most visited islands, with 91, 90, and 86 visits, respectively. Buckle Island, Wreck Island, and Steves Island were also visited

more than 70 times over the study period. These islands constitute what the Island Task Force considers to be the core of activity within the Stonington region. A total of 1,441 visits were made, and islands were visited considerably more in the afternoons and evenings (1,004 visits) compared to morning visits (437 visits). There was simply more time to visit islands in the afternoons and evenings (12 to 7 p.m.) than there was in the mornings (9 a.m. to 12 p.m.).

Green Island had the greatest number of visitors, with 506 recorded visitors, followed by Hell's Half Acre Island, with 392 visitors. However, when considered as groups, 53 visitor groups were recorded on Hell's Half Acre Island and only 44 were recorded on Green Island. The average group size on Green Island was 11.5, while the average group size on Hell's Half Acre Island was 7.4. Green Island is available to the public for day use and attracts commercial groups. Hell's Half Acre Island is a popular day use as well as camping destination located near Deer Isle, with a recommended capacity of 14 visitors on two campsites. Other popular islands included Steves, Harbor, Russ, and Wreck, which each had more than 100 recorded visitors, and Steves and Russ islands, which each had more than 30 recorded visitor groups.

Figure 4 shows the proportion of times visitors were observed over the total island visits for each day of the week. We split the observations further into day-use and overnight-use groups. We observed 193 groups of day users and 194 groups of island campers, finding the greatest percentage of day users on Wednesdays and Sundays, where visitor groups were observed during 19% and 18% of total island visits for those days, respectively. For overnight users, we observed the greatest percentage on Saturdays, Mondays, and Fridays, where island campers were recorded on 18%, 17%, and 16% of the total island visits for those days, respectively. The islands were least visited by day users on Fridays and Mondays, where groups were observed during 7% and 10% of island visits, respectively, and Thursdays and Sundays had the smallest percentage of campers, with groups observed during 6% and 9% of island visits, respectively.

Figure 5 shows the proportion of time we observed groups using the three major modes of travel

Table 4.   Island visits, number of observed visitors, and visitor groups.

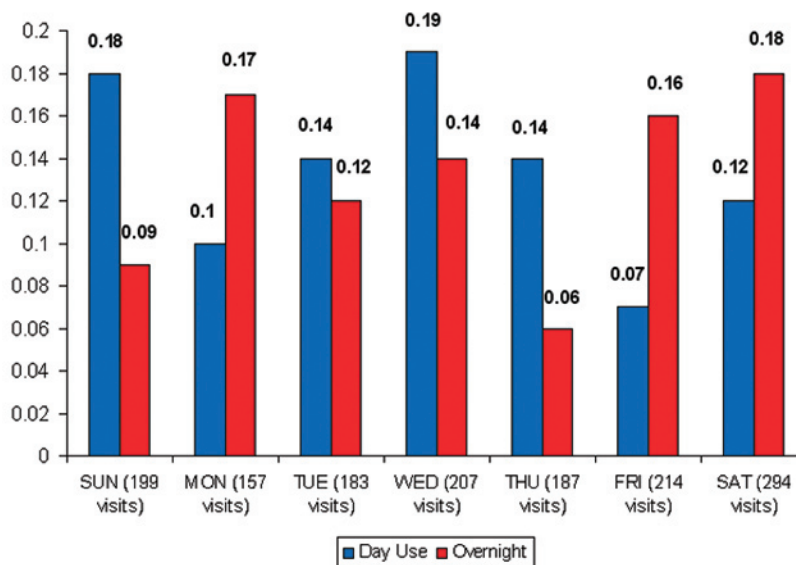| Island	Island Visits			Visitors			Groups		
	AM	PM	Total Visits	AM	PM	Total Visitors	AM	PM	Total Groups
Little Sheep	19	25	44	6	28	34	2	4	6
Hell's Half Acre	33	57	90	136	256	392	19	34	53
Steves	20	57	77	34	87	121	10	29	39
Harbor	14	50	64	26	139	165	5	23	28
Wheat	18	47	65	12	104	116	3	20	23
Doliver	8	10	18	0	0	0	0	0	0
Weir	14	38	52	0	9	9	0	3	3
Russ	36	50	86	65	127	192	11	21	32
Saddleback	24	40	64	21	13	34	6	4	10
The Fort	12	36	48	2	25	27	1	5	6
Wreck	16	54	70	35	101	136	7	14	21
Round	14	44	58	0	5	5	0	1	1
Green	31	60	91	120	386	506	13	31	44
Nathan	14	47	61	0	1	1	0	1	1
Bills	14	45	59	0	24	24	0	4	4
Millet	24	44	68	2	0	2	1	0	1
Sand	11	39	50	0	6	6	0	1	1
Fog	2	12	14	0	0	0	0	0	0
Buckle	22	55	77	11	68	79	4	18	22
Sheep	18	25	43	48	38	86	7	8	15
Rock	19	45	64	24	46	70	8	13	21
Burnt	12	37	49	0	0	0	0	0	0
Kimball	11	34	45	2	8	10	1	4	5
Other	31	53	84	52	201	253	11	27	38
TOTAL	437	1004	1441	596	1672	2268	109	265	374

Figure 4. Proportion of island visits where day use and overnight groups were observed, N = 387.
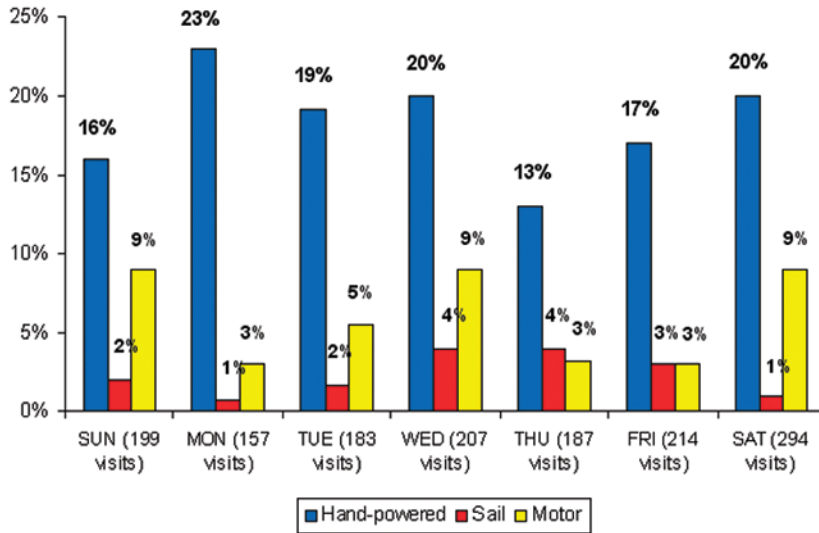
Figure 5. Proportion of island visits where groups were observed by mode of travel.
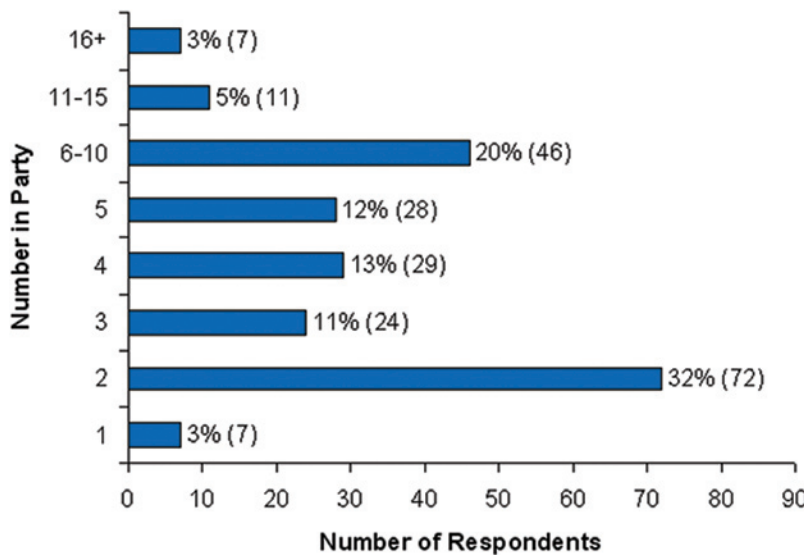

Figure 6. Visitor group sizes, N=224.

observed per visits (30%) was between August 1 and 15, where the weather conditions were conducive for ocean travel through all 12 days of observations. Between August 16 and 31, however, the weather conditions were fair for six observation days and the conditions were windy, rainy, or foggy for the other six days of observations. During this period, we observed visitor groups on an average of 30% of the island visits on fair weather days and 12% of the island visits on inclement weather days.

RESULTS

As questionnaires were returned, we coded them and entered information from them into the statistical software. We calculated frequency distributions and cross-tabulations for the data and categorized and summarized responses to open-ended questions. We have organized this section of the report using three broad categories: (1) visitor characteristics; (2) visitor experiences; and (3) visitor preferences for and satisfaction with resource and social conditions.

Visitor Characteristics

We analyzed several visitor use characteristics, including group size and type, mode of travel, access points to the water, decisions on access locations, length of stay, several socio-demographic variables, previous experience, connection to the Stonington region, and attachment to place.

Figure 6 shows visitor group sizes, which ranged from one to 50 people. The mean, median, and mode for group size were 5.3, 4, and 2, respectively. Groups of two people represented 32% of all survey participants, only seven participants traveled alone, and 37% of all participants groups included three to six people. Twenty-seven percent of the groups included at least one child under the age of 16 (Figure 7). The number of children under 16 ranged from one to 18 youths. Of these groups with children, 11% had one child, 11% had two to five children, and 5% had six

compared to the total number of island visits for each day of the week. We observed 272 groups of visitors traveling by hand-power (kayak, canoe), and observed them most frequently on Mondays (23% of island visits), Wednesdays (20%), and Saturdays (20%). We counted 39 groups of sailors using the islands, most frequently observed on Wednesdays and Thursdays (4% of all island visits). We saw 94 groups traveling by motorboat, most often on Wednesdays, Saturdays, and Sundays (9% of the visits on these three days).

The proportion of times visitors were observed over the total island visits also varied depending on the weather. The greatest percentage of groups
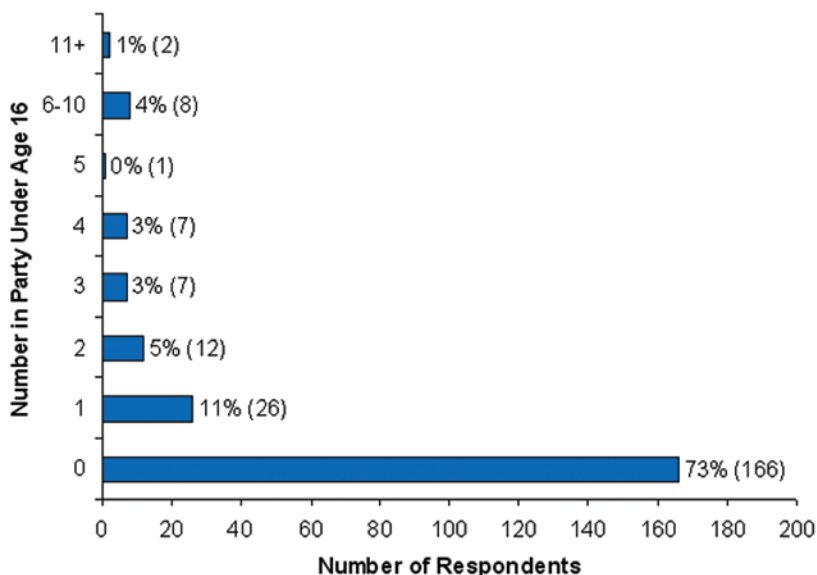
Figure 7. Groups with youth under 16, N = 229.

or more. Fifty percent of all visitor groups were made up of family or family plus friends (Figure 8), 23% were groups of friends and acquaintances, 15% were guided groups, and 7% were lead by an organization (e.g., scouts or another club).

We asked visitors if they camped on the Stonington region islands, and if so, how many nights. From their responses, we learned that 48% camped overnight, while 52% were day-use groups (Figure 9). Those who stayed overnight camped an average of approximately three nights. The highest proportion of visitors, however, camped for two nights. Figure 10 shows that 33% of study participants camped for two nights, 23% camped for one night, 18% stayed for
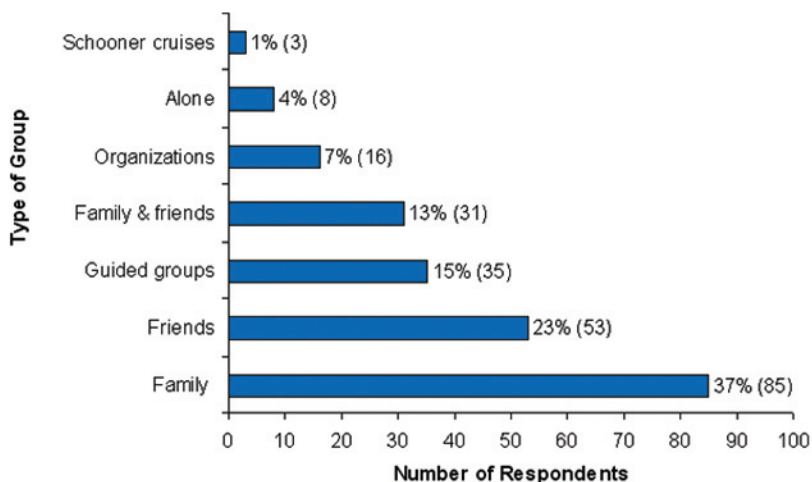
three nights, 15% for four nights, and 11% camped for five or more nights.

The survey asked participants to list the islands they camped on (Table 5) and the islands they visited for day use (Table 6). This question was only asked to participants who camped overnight in the Stonington region. The survey provided five spaces for listing islands used for camping and five spaces for listing other islands visited during the trip. The 111 participants who camped stayed on 161 islands and visited 106 islands as day-use destinations. Only 32% of the participants who stayed overnight listed the other islands they visited during their trip. Hell's Half Acre, Steves, Harbor, and Sheep islands were the most popular islands for camping, while Green, Steves, Wreck, and Hell's Half Acre islands were the most visited during the day.

The survey also asked all participants what type(s) of islands they visited (Figure 11). Of the three types of islands, public, private, non-profit, public islands were the most popular, visited by 75% of participant groups. Forty-three percent of the groups visited privately owned islands, and 43% visited islands owned by non-profit organizations. Twenty-three percent reported visiting all types of islands, and 20% did not know the ownership type of the islands they visited.

Figure 12 shows the different modes of travel used by groups while traveling between the islands. The majority (78%) of the participant groups traveled by kayak. Seventeen percent traveled by motorboat, 16% by sailboat, and 2% by canoe. The sum of percentages recorded in Figure 12 do not equal 100 because participants indicated more than one mode of travel. However, most visitors to the Stonington area traveled by a single mode; only 13% of the recorded boat types were second or third selections.

We asked the participants four questions to better understand their travel decisions. First, we asked what point of access to the

Figure 8. Visitor group types, N = 231.
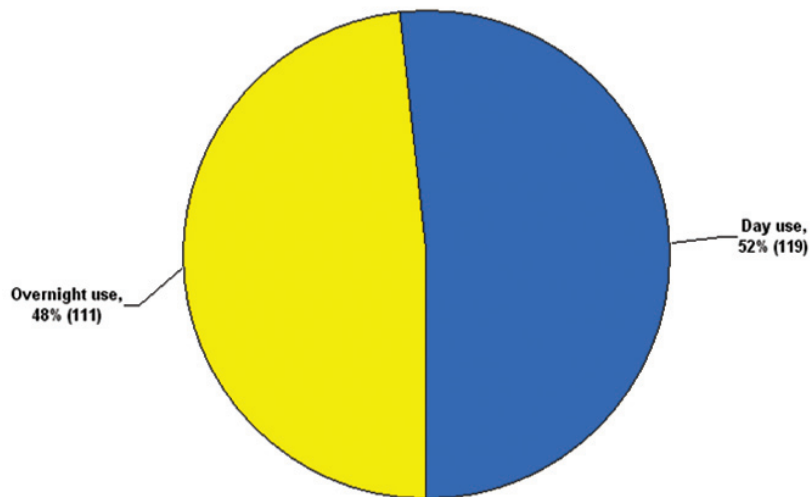
Figure 9. Overnight stay on the Stonington region islands, N=230.
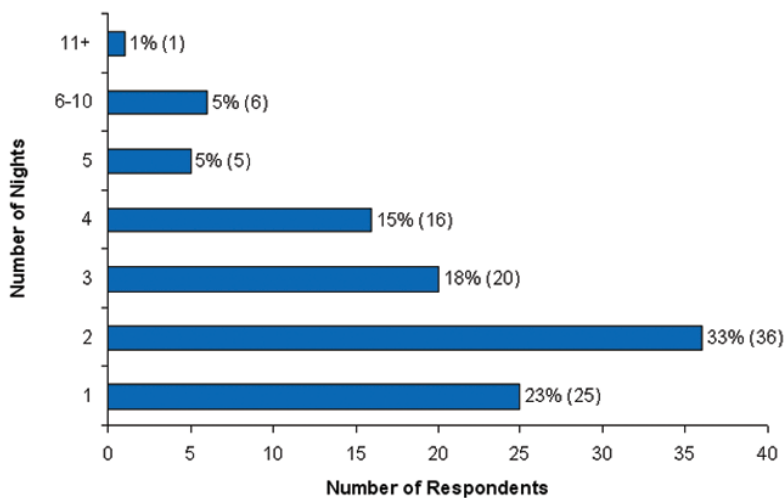
Figure 10. Number of nights camped on Stonington region islands, N = 109.

Table 5.   Islands camped on by survey participants, N = 161.

Island Type	Island	Times Mentioned
Public	Hell's Half Acre	25
	Steves	24
	Harbor	21
	Wheat	16
Private	Sheep	19
	Rock	12
	Kimball	10
	Buckle	11
	Burnt	1
Non-Profit	Russ	12
	Saddleback	8
	Round	1
	Wreck	1

Table 6. Islands visited for day use by survey participants, N = 106.

Island Type	Island	Times Mentioned
Public	Steves	14
	Hell's Half Acre	10
	Little Sheep	5
	Harbor	4
	Wheat	4
	Dolliver	2
Private	Sheep	3
	Kimball	3
	Burnt	2
	Buckle	2
	Rock	1
Non-Profit	Green	22
	Wreck	12
	Round	10
	Russ	7
	Bills	3
	Nathan	1
	Saddleback	1

Figure 11. Type of island visited, N=230.

Figure 12. Mode of travel of Stonington region island users, N=231.

Figure 13. Point of access to the shore, N = 229.

shore they used (Figure 13). Most groups accessed the shore via Old Quarry Campground (58%), located in Webb Cove, a few miles east of the town of Stonington. Thirteen percent of participants traveled through from another region, and 16% launched at th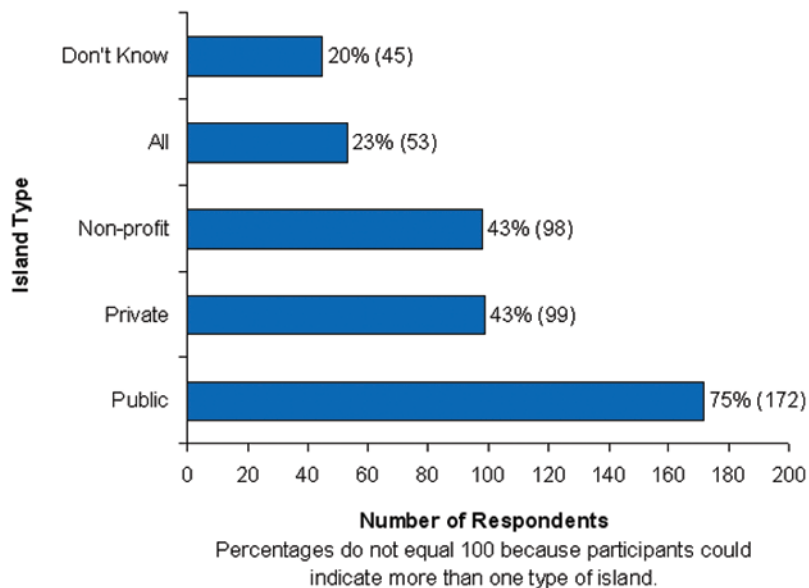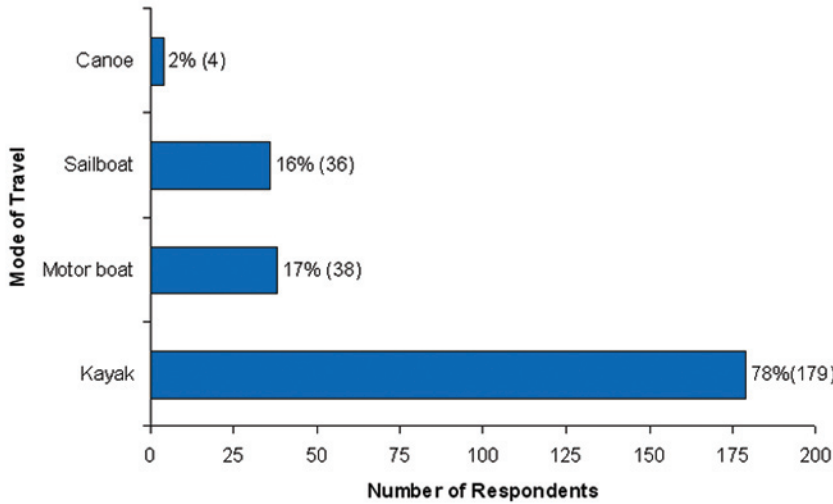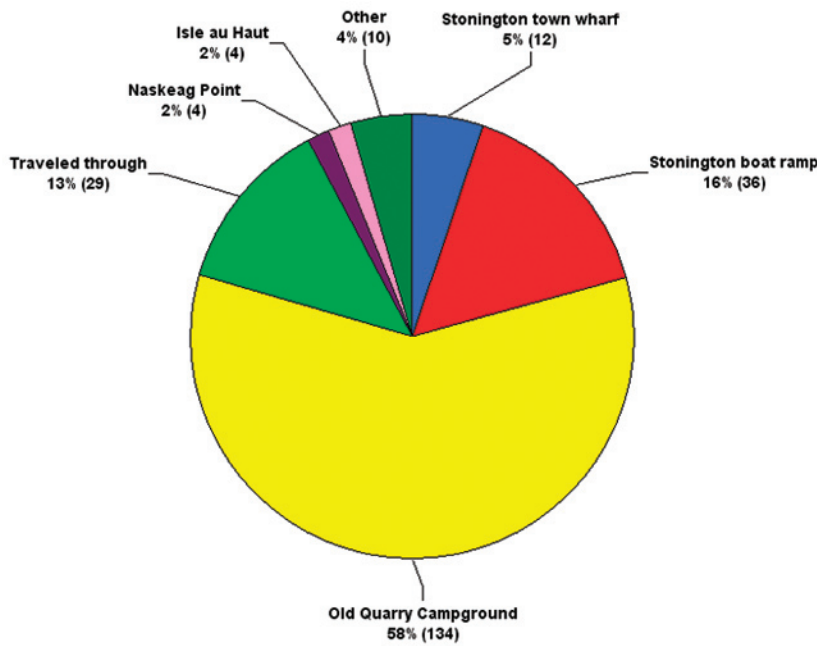e Stonington boat ramp. Second, we asked participants why they chose their water route. Table 7 shows that seeking specific islands (38%), having been there before (36%), and visiting a new area (32%) were the most popular reasons for participant group selection of their route. Twenty-four percent of participants selected other reasons for choosing their route, and

Figure 14 presents a breakdown of the other reasons. Being part of a guided group, or other group travel where the leader decided the route, was the most common other reason given (46%). Third, we asked respondents how they originally learned about or decided to come to the Stonington area. Figure 15 shows that 63% of the participants came to the area based on a recommendation, and 27% did their own research. Ten percent of the respondents learned about the Stonington area through "other" sources, and many of these participants described themselves as locals or people who have been visiting the Stonington islands for many years. Of the participants who came because of recommendations, 71% listened to family or friends, 27% were part of a guided tour/instructed group, and approximately 2% used the MITA guidebook to learn about the area. Fourth, the survey asked participants to check, out of a list, the sources of information they used to learn about the Stonington area. Table 8 outlines sources used, showing that most participants used more than one source, and that previous experience in the area was the most cited source (51%), followed by NOAA charts (42%), word of mouth (34%), and the Internet/Web sites (30%). Seventeen percent of the groups used other sources including topographical maps, advice from locals or friends, magazines, cruising guides, and various books.

Background Information

We collected and analyzed additional general information about study participants, including age, gender, and education. Figure 16 shows the age of participants, which ranged from 24 to 91 years. The mean, median, and mode for participant age were 49, 50, and 55, respectively. The greatest proportion of participants were between the ages of 46

Table 7.   Reasons for selecting water route, N = 231.

Reason	Number of Respondents	% of total respondents	Rank
Seeking specific islands	88	38	1
Been there before	83	36	2
A new area, variety	74	32	3
Weather conditions	49	21	5
Might be less crowded	42	18	6
Advice from steward	15	7	7
Other	56	24	4

Percentages do not equal 100 because participants could choose more than one reason.
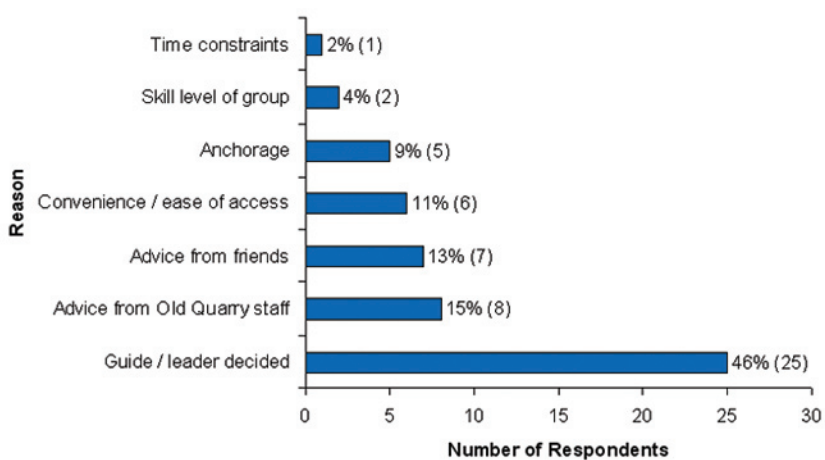

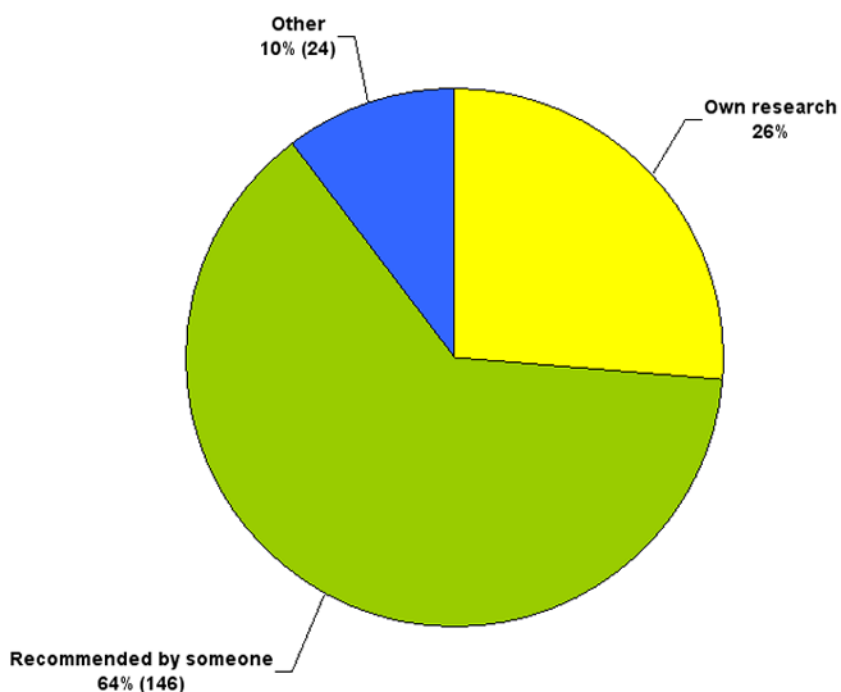Figure 14. Other reasons for route selection, N = 54.

Figure 15. How participants originally learned about the Stonington islands, N = 360.

Table 8.   Sources of information used, N = 232.

Information Source	Number of respondents	% of total groups	Rank
Been there before	119	51	1
NOAA charts	98	42	2
MITA membership handbook	96	41	3
Word of mouth	79	34	4
Internet / website	70	30	5
Guidebooks	60	26	6
DeLorme Gazetteer	46	20	7
Outfitter	37	16	8
Club	6	3	10
Don't remember	2	1	11
Newspaper	2	1	12
Other	39	17	9

Percentages do not equal 100 because visitors could choose more than one source.
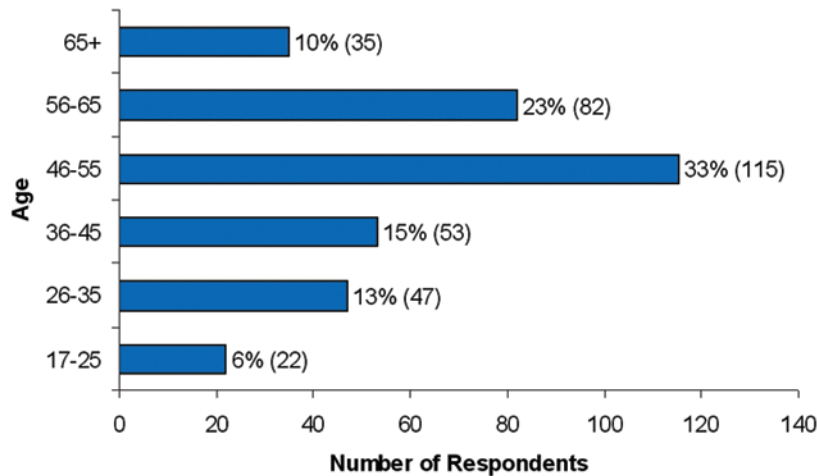
Figure 16. Participant age (years), N = 354.

and 55, followed by between the ages of 56 and 65. Only 19% of the study participants were 35 years old or younger. Participants were fairly balanced in gender (Figure 17), where 51% of participants were male and 49% were female. For level of education, results showed that 84% of participants held either bachelor or graduate degrees (Figure 18).

The survey also asked participants if they grew up in a rural, suburban, or urban area (Figure 19) and in what type of area they currently reside (Figure 20). Their responses indicate that 30% of participants grew up in rural areas, 53% grew up in suburban areas, and 17% grew up in urban areas. Currently, 36%, 44%, and 20% live in rural, suburban, and urban areas, respectively.

Visitors to the Stonington region came from 35 states, Canada, and the United Kingdom. The largest percentage of visitors were from Maine (28%), followed by Massachusetts (17%), New York (9%), Connecticut (5%), New Hampshire (5%), Pennsylvania (5%), New Jersey (4%), and Vermont (3%). International participants constituted 3% of all visitors, and eight respondents were Canadian and one was from the U.K. Of the more distant states, 3% of participants were from Virginia, 2% from Ohio, and 2% from Florida. Individuals from 24 other states represented 14% of the study participants (Table 9).
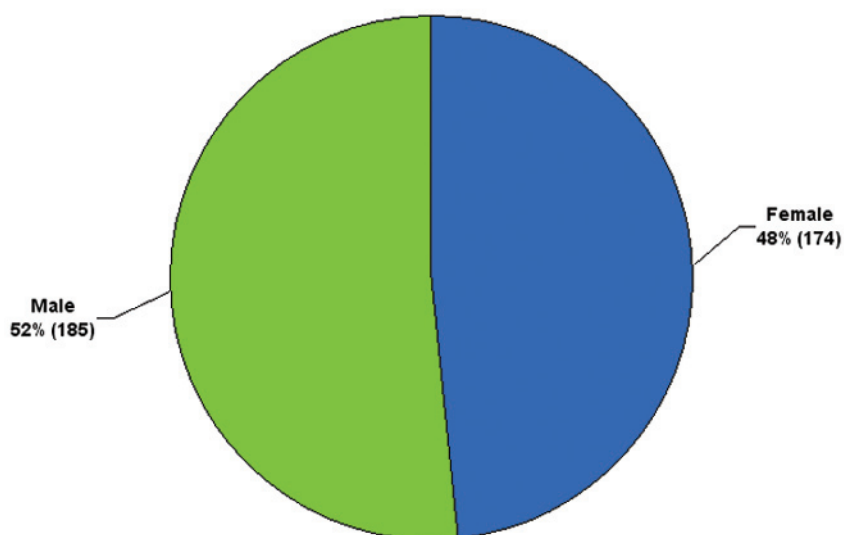
Figure 17. Gender of participants, N = 359.
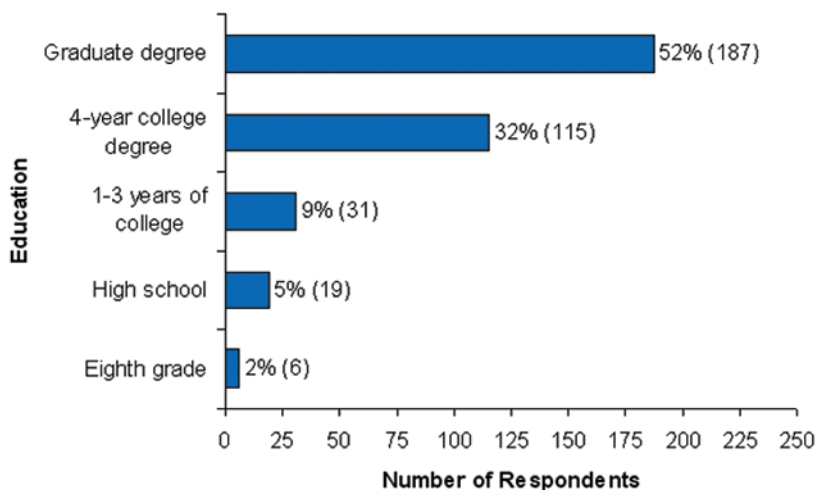
Figure 18. Level of education, N = 358.

We also asked participants about their relationship to the Stonington region (Figure 21), whether their work was dependent on the resource (Figure 22), and whether they are members of the Maine Island Trail Association (Figure 23). Most participants were visitors to the Stonington region (87%), 6% of participants were summer residents, 3% were year-round residents, and 3% either lived within an hour of Stonington, owned property in Stonington but do not stay there year-round or for the summer, guided for a commercial outfitter out of Stonington, or were visiting family in Stonington. Most respondents did not hold employment that was dependent on the resource (94%). Thirty-three percent of respondents were members of the MITA, and an additional 6% had been members in the past. Past memberships ranged between 1997 and 2005. Considering that 39% of respondents were current or past MITA members in combination with the finding that 41% of visitors use the MITA handbook as a source of travel information on the water, both current and past MITA members use their handbooks as a key source of information for trip planning.
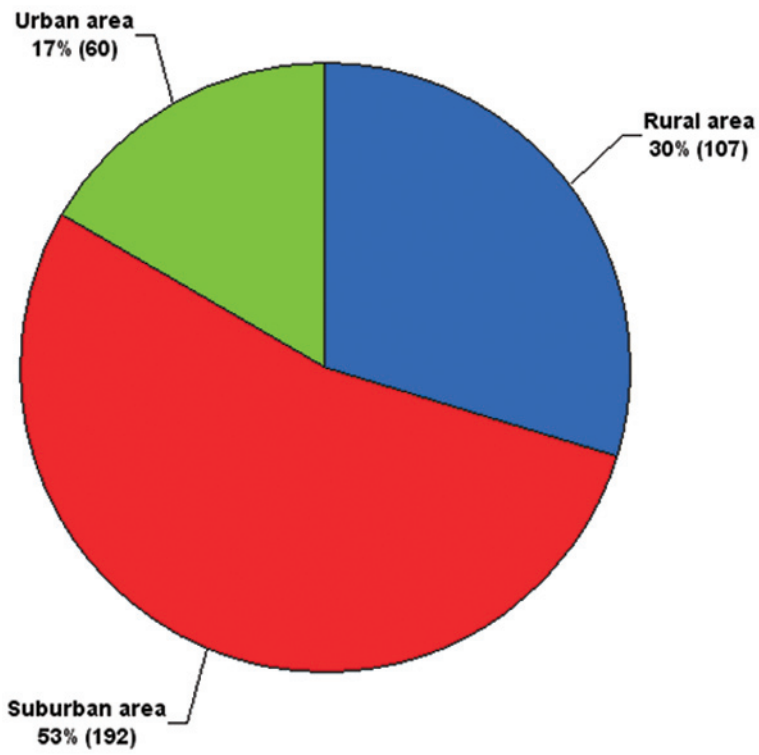
Figure 19. Types of areas where participants grew up, N = 359.
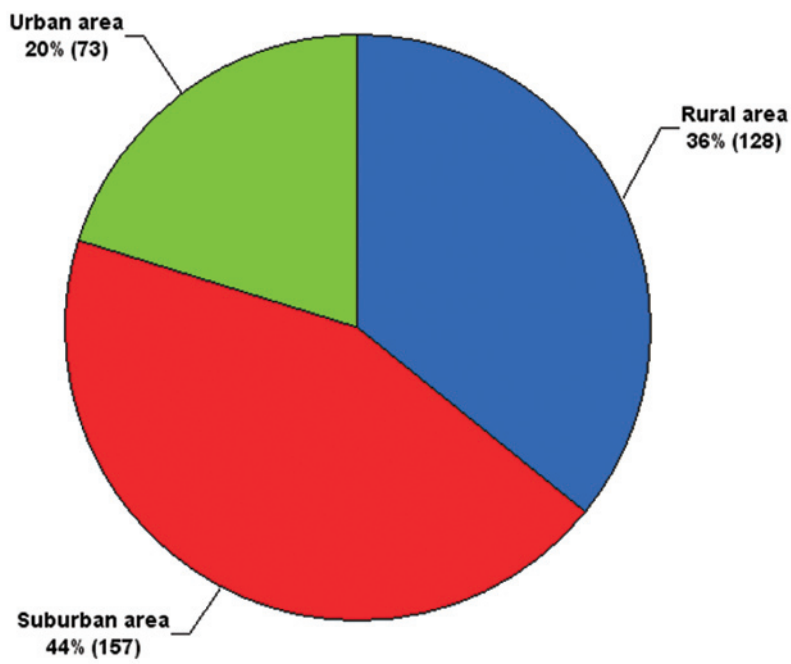
Figure 20. Types of areas where participants currently reside, N = 358.

Table 9.   Year-round residence of participants, N = 351.

Residence	Number of participants	% of total participants
Maine	98	28
Massachusetts	59	17
New York	33	9
Connecticut	19	5
New Hampshire	17	5
Pennsylvania	17	5
New Jersey	13	4
Vermont	12	3
Virginia	9	3
Ohio	8	2
Florida	7	2
Other states	50	14
International	9	3
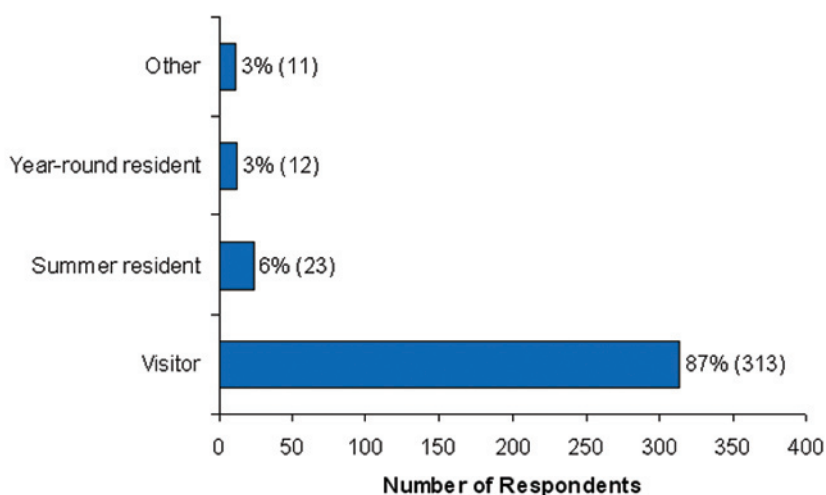
Figure 21. Relationship to the Stonington region, N=359.

Visitor Experiences

One of the main objectives stated in the *Recreation Management Plan for the Public Islands on the Maine Island Trail, 2004–2014* is to provide the setting for high-quality coastal island recreational experiences. High-quality experiences are defined by seven characteristics:

1. The sense of relatively wild, undeveloped character of the islands;

2. The interrelationship between the sights, sounds, and natural elements of the ocean, wind, fog, salt, air, and tides;

3. The powerful sense of solitude, as well as the opportunity for reflection and self-discovery;

4. The sense of adventure and exploration evoked on coastal expeditions;

5. The personal challenge of self-sufficiency in terms of both boating and camping skills;

6. The presence of minimal structures and educational signs; and

7. The exposure to fish, birds, mammals, wildlife habitat, in-shore and ocean-going vessels, scenic lighthouses, and navigational buoys.
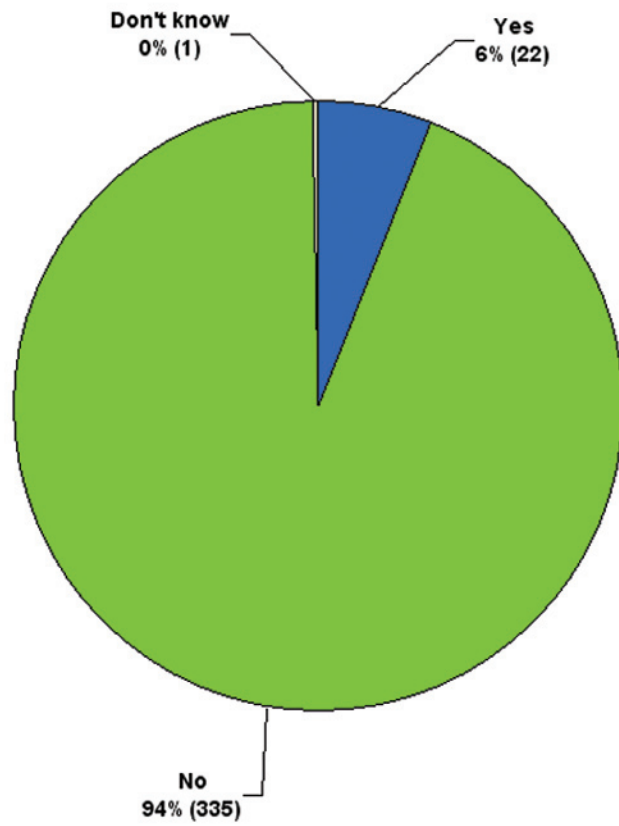
Figure 22. Percentage of participants whose work is dependent on the resource, N = 358.
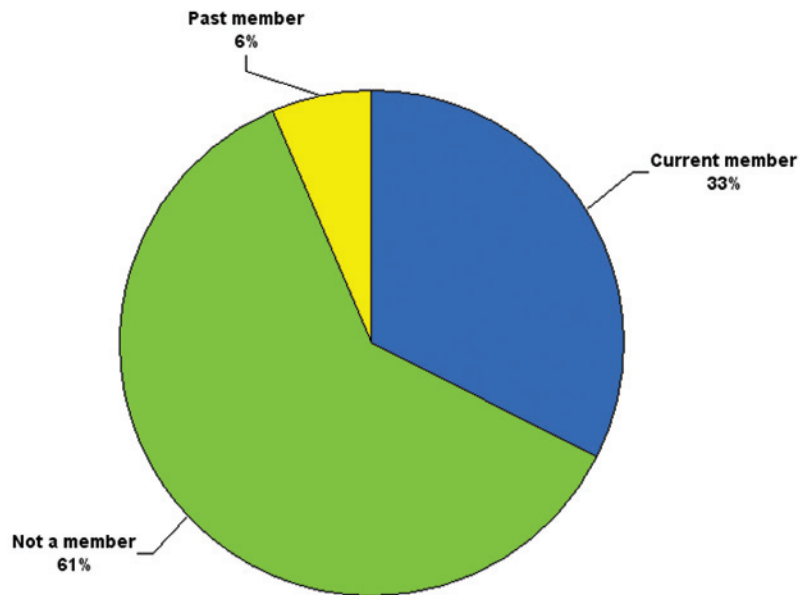
Figure 23. Maine Island Trail Association membership, N=359.

To evaluate visitor experiences in terms of these objectives, we asked participants to rate the importance of 17 reasons for their visit to the Stonington region islands by selecting the level of importance on a five-point Likert scale. Table 10 shows the frequencies and percentages allocated to each degree of importance for the 17 characteristics. The most important characteristics, or those that obtained important or very important ratings by more than 90% of study participants, are scenic quality, nature/wildlife appreciation, distinctive coastline, and exploration. Between 80% and 90% of the respondents rated six characteristics as important or very important: solitude; remoteness; alternative to daily routine; ocean travel; adventure/excitement; and exercise and health. The characteristics that received the fewest ratings as important or very important (below 50%) are the working waterfront/commercial fishery, schooners/sailboats, meet new people, fishing/clam digging/mussel picking, and picnic outings.

The survey also asked participants to select, out of the 17 characteristics, the three most important considerations in their decision to visit the islands. Figure 24 represents the number of respondents who rated each characteristic among the top three considerations and shows that scenic quality was clearly the most important consideration in decisions to visit the Stonington region islands (rated by 69% of respondents within the top three). More than 25%

of respondents rated adventure/excitement, being with family and/or friends, the distinctive coastline, and nature/wildlife appreciation within the three most important considerations. The survey also asked participants to indicate additional important characteristics to the Stonington region islands, and Table 11 summarizes the ones that were mentioned and the number of times it appeared. Participants most commonly mentioned the opportunity for kayaking and camping as important in their decisions to visit the islands.

To assess the experience of camping on the Stonington region islands, we asked participants who camped overnight about the number of groups camped within clear sight or earshot of their campsites and about how much those other campers interfered with their island recreational experiences. The survey asked how many groups were camped within clear sight or earshot on an average night. Responses ranged from zero to three. Figure 25a shows that 64% of respondent groups reported no other groups and 30% reported one other group camped within sight or sound on an average night. Figure 25b shows the number of other groups camped within clear sight or earshot on the most-busy night, excluding participant groups who responded zero. Here, 80% of respondent groups reported one other group nearby on the most-busy night, and 18% reported having two other groups within sight or sound on the most-busy night. Two percent of the

Table 10. Reasons for visiting the Stonington region islands.

	Very Unimportant	Unimportant	Neither	Important	Very Important	Total
	%					#
Scenic quality	1	0	0	17	81	360
Nature / wildlife appreciation	1	1	2	31	65	360
Distinctive coastline	1	0	4	28	68	360
Solitude	1	3	11	39	46	360
Remoteness	1	3	13	42	42	357
Exploration	1	2	7	39	51	360
Alternative to daily routine	1	3	10	35	51	356
Ocean travel	1	2	12	36	48	353
Adventure / excitement	1	3	8	39	50	358
Exercise and health	1	4	15	43	37	359
Skill development	2	12	25	40	22	357
Commercial fishery	8	23	35	26	8	359
Schooners / sailboats	10	20	34	24	13	358
Be with family / friends	3	7	13	31	46	358
Meet new people	12	18	40	24	7	360
Fishing / clam digging	19	27	34	18	3	357
Picnic outing	11	18	28	31	13	354

Table 11. Other important characteristics in participant decisions to visit, N=71.

Key Characteristics	Number of times mentioned
Opportunity for kayaking	20
Experience of camping	16
Opportunity for sailing	4
Accessibility	4
Place-based education	4
Spiritual connection	3
Work	2
Photography	2
Seafood	2
New place	1
Artistic inspiration	1
Coastal culture	1
Local history and lore	1
Stonington attractions (local businesses)	1
Personal challenge	1
Vacation home	1
Part of larger trip	1
Island preservation	1
Recreational options	1
Island clean-ups	1
Swim in quarry	1
Close to home	1
Tradition of visitation	1

Table 12. Reasons for not taking first available campsite, N = 47.

Reason	Number of times mentioned
Chose to explore campsite options first	19
Campsite already occupied	13
Others nearby	6
Condition of campsite	3
Size of campsite	2
Access to campsite	2
Other	2

participants reported having three other groups camped within sight or earshot of their campsite on the busiest night.

We also asked participants who camped overnight to what degree the number of people they could see or hear interfered with their recreation experience. Figure 26 shows that, excluding participants who recorded no groups within sight or sound, 60% of respondents felt other groups did not interfere with their experiences. Twenty-eight percent reported other groups interfered somewhat, 7% reported that other groups interfered, and 4% felt other groups interfered significantly in their camping experiences on the islands. It was only possible to isolate one island-specific occasion, on George's Head Island (a private island that was not part of this study), where participants' experiences were interfered with or significantly interfered with by other groups. The other 11 participants who reported having other groups interfere or significantly interfere with their experiences either failed to note which island they camped on, or camped multiple nights, making the direct association impossible.

We asked campers if they took the first available campsite where they intended to stop each night, and 73% responded that they did take the first available site (Figure 27). Of the 27% who did not take their intended site, 64% did not take the first available site for only one night of their trip, 19% did not take their intended site for two nights, and 12% did not take their intended site for three nights (Figure 28). Table 12 lists the reasons why participants did not take their intended site or the first available campsite. Nineteen respondents out of the 47 who provided explanations did not take their intended site or the first available site because they chose to scout around to see what other options existed. Thirteen did not stay at their intended site because the site was already occupied. Encouragingly, only two respondents mentioned campsite size as a reason for not taking a site (in both cases they were looking for a larger site), and only two mentioned access to the campsite as a reason for not choosing the intended site. Also, very few participants (three) mentioned the condition of the campsite as their reason for not staying, and six participants wrote that the presence other people nearby caused them to continue on to another site. The survey also asked participants whether they had difficulty finding an alternative campsite if the site they had planned to use was occupied. Figure 29 shows that 79% of participants did not encounter this situation, and of the 21 individuals who did, 19 reported having no difficulty finding an alternative site.
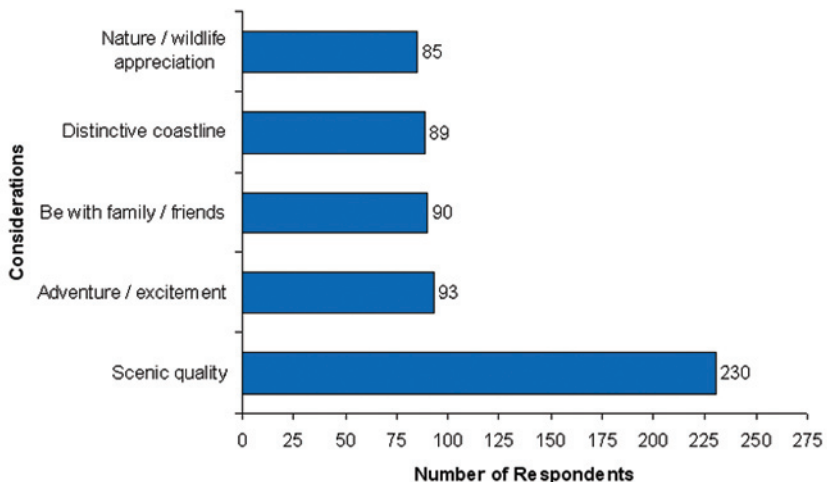
Figure 24. Most important considerations in decision to visit, N=334.
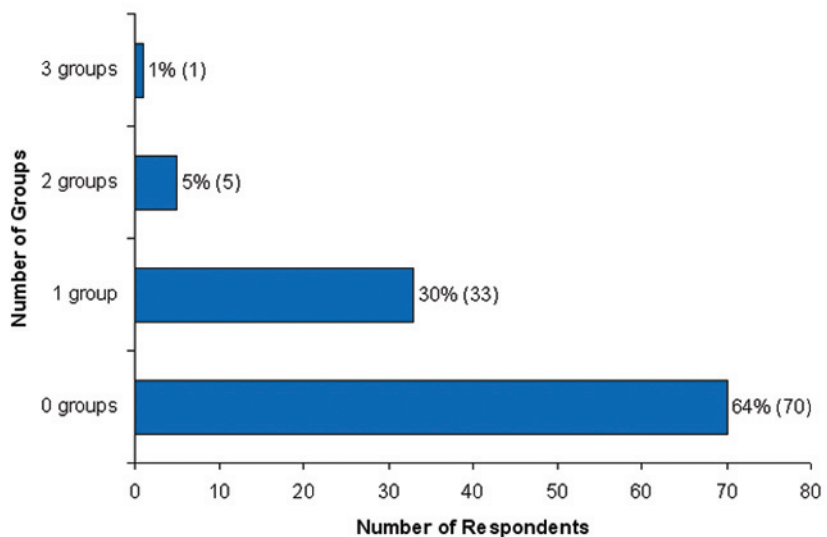
Figure 25a. Number of groups within sight or sound on an average night, N = 109 groups.
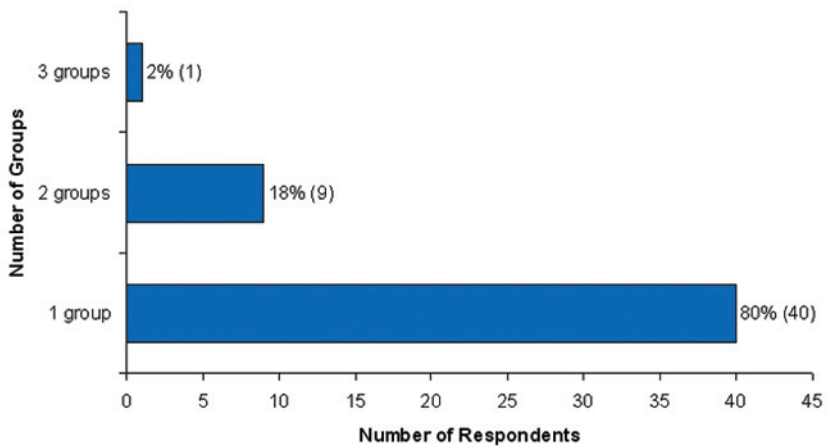
Figure 25b. Number of groups within sight or sound on the most busy night, N = 50 groups.
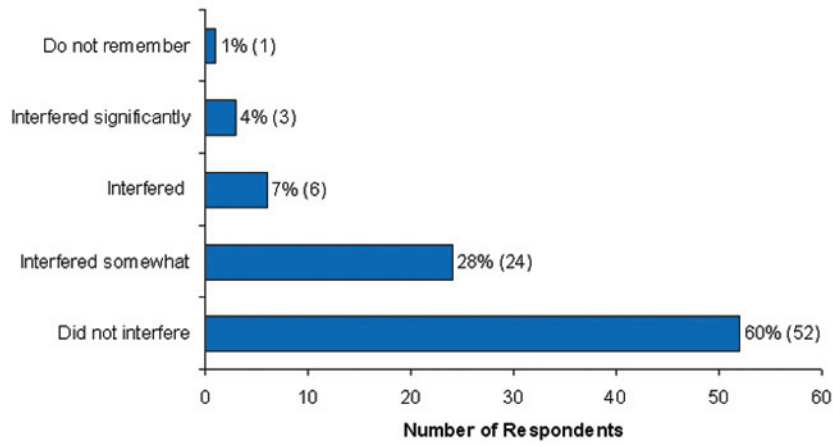
Figure 26. The degree to which other people interfered with camping experiences, N = 86.
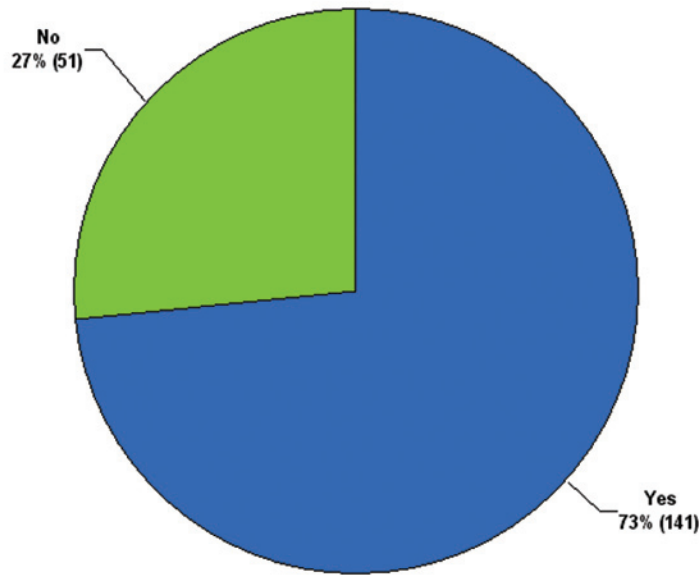
Figure 27. The proportion of participants who took the first available campsite, N = 192.
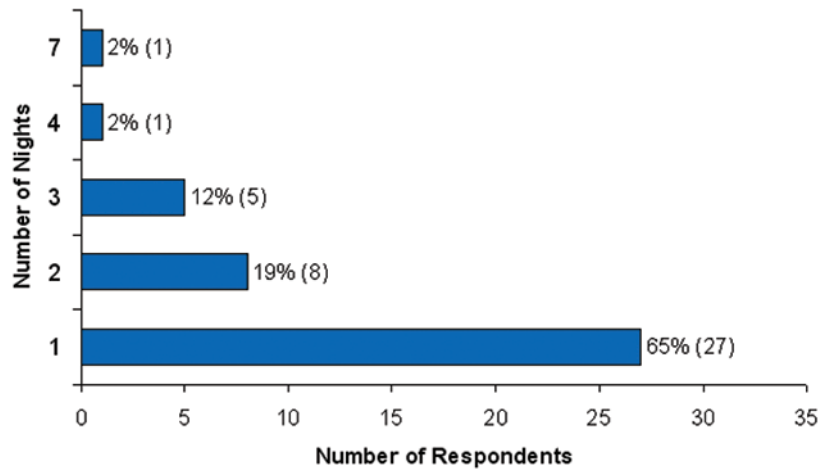
Figure 28. Number of nights participants did not take first available campsite, N = 42.
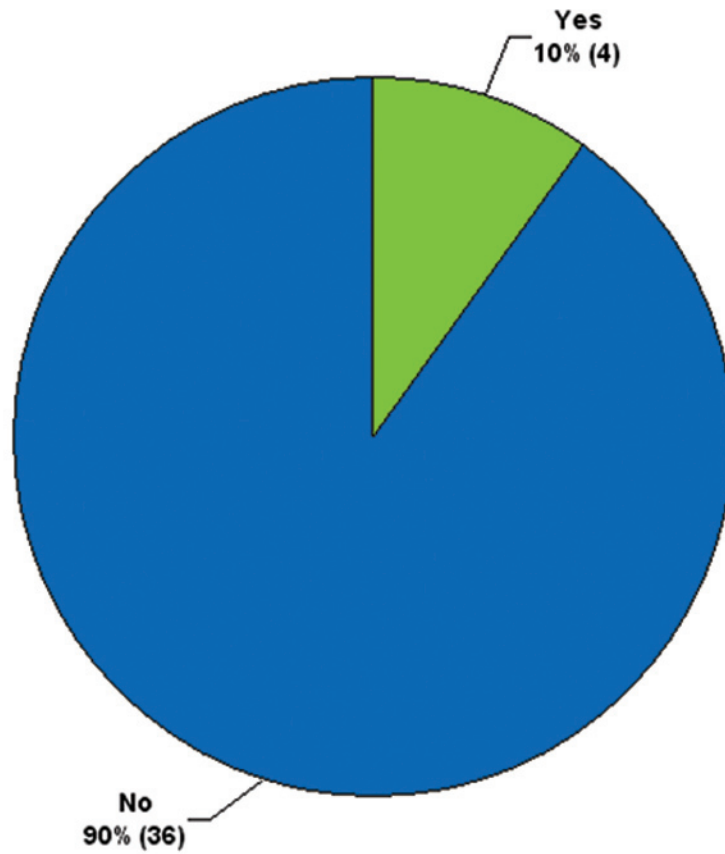
Figure 29. The proportion of participants who had difficulty finding an alternative site if the site where they intended to camp was occupied, N=187.

In the survey we asked about participants' previous coastal recreation experiences. Sixty-one percent of participants had previously visited the Stonington region for recreation, 73% had previous coastal recreation experience at locations other than the Stonington region, and 84% of study respondents had either previous experience in Stonington or at other coastal areas. To obtain a measure of local experience, we asked participants how many years they have been visiting the Stonington islands (Figure 30), how many times they visited the Stonington islands last year (Figure 31), and whether they visit most years (Figure 32). Although responses ranged from zero to 60 years, the average number of years that participants had been visiting the Stonington islands was 12.4. The greatest proportion of participants, however, had been visiting for two years. The average times visited last year was 2.4, the greatest proportion of participants reported visiting once last year, and responses ranged from zero to 50 visits. Seventy percent of participants visited the Stonington region islands most years. We excluded first-time visitors to the Stonington region islands from these three calculations.

To obtain general coastal travel experience, we asked participants how many years they had been visiting coastal islands outside of the Stonington region (Figure 33) and how many times they visited other coastal islands last year (Figure 34). Not including participants who had not visited other islands (n = 102), the number of years visiting other coastal islands ranged from one to 70, the mean number of years was 15.19, and the greatest proportion of participants had been visiting other coastal islands for 10 years. Also without including participants who did not report having visited other islands, the number of visits to other coastal islands last year ranged from zero to 25, the mean number of visits was 3.38, and the greatest proportion of participants visited other coastal areas zero times last year.

For the participants who had previously visited the Stonington region, there were also questions about which other coastal island regions in Maine and outside of Maine they had visited. Figure 35 shows the percentage of participants who have visited other regions along the Maine coast and areas outside of Maine. Participants had most commonly visited the Mount Desert Island area (76%), followed by the Penobscot area/west (66%), and Casco Bay (54%). The region east of Schoodic was less commonly
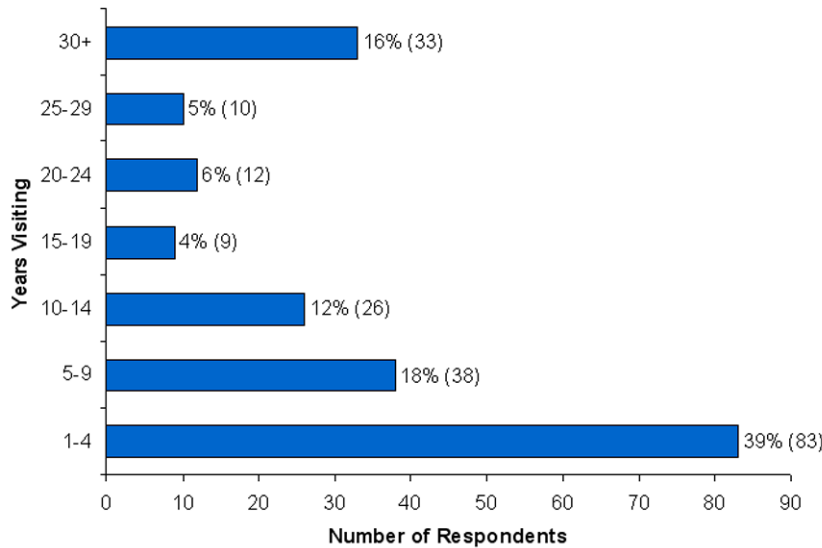

Figure 30. Number of years visiting the Stonington region islands, N = 211.
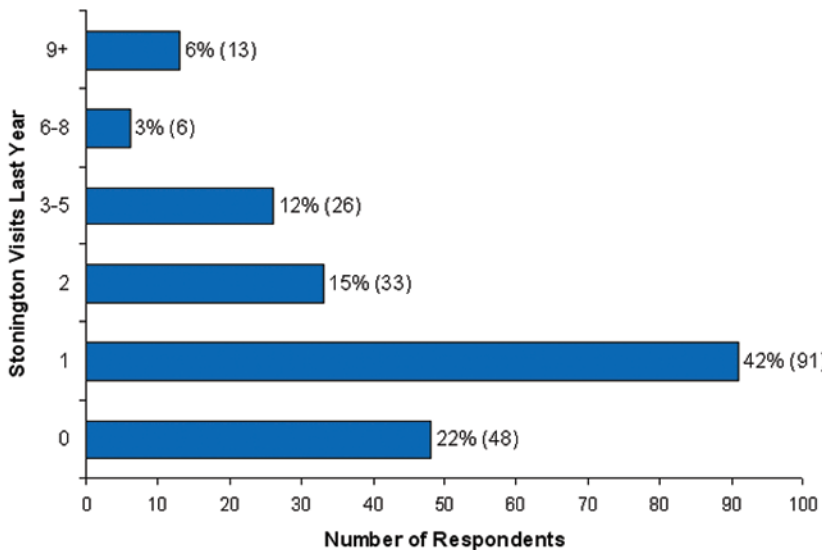

Figure 31. Number of visits to the Stonington region islands last year, N = 217.
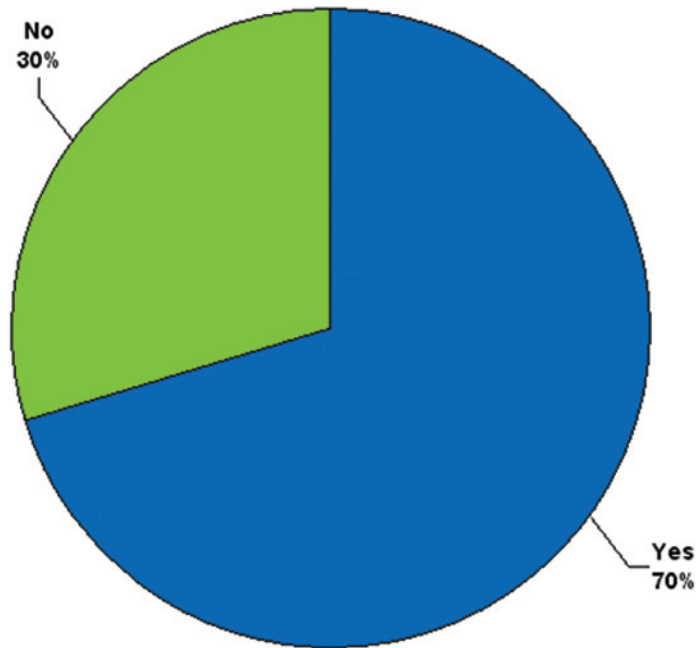
Figure 32. Percentage of participants who visit the Stonington region islands most years, N = 202.
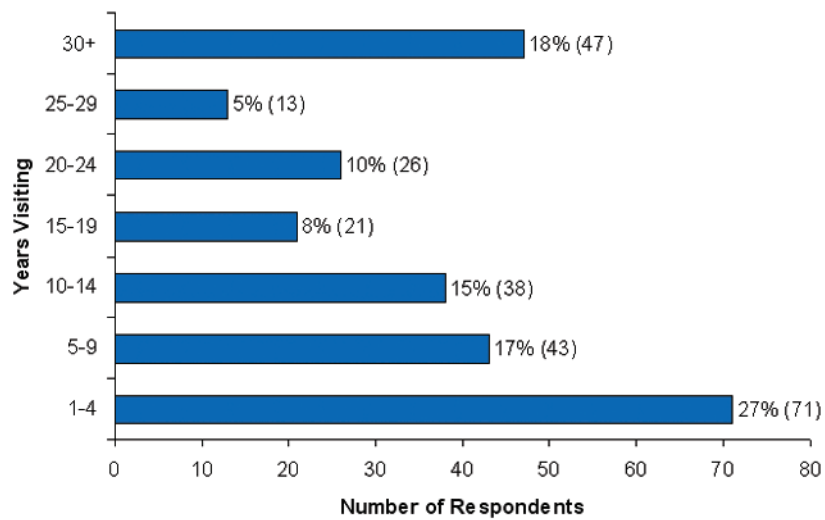
Figure 33. Number of years since first visit to any other coastal islands, N = 259.
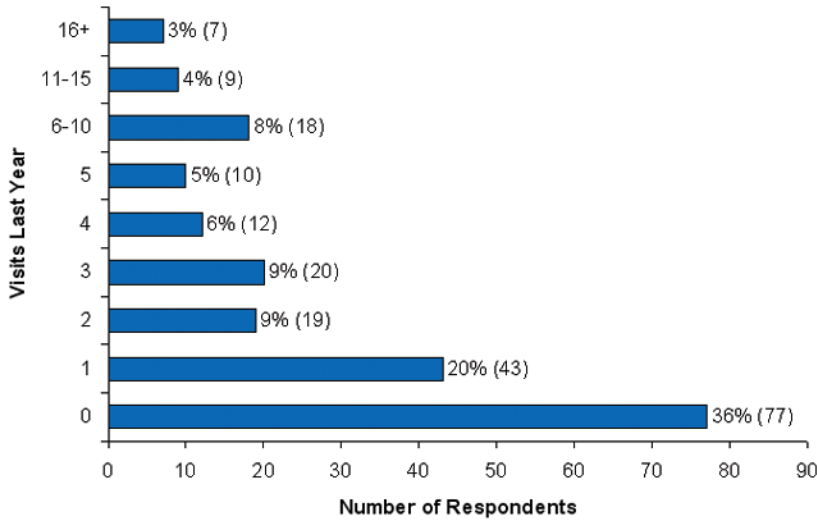
Figure 34. Number of visits to any other coastal islands last year, N = 215.

The sum of percentages does not equal 100 because visitors could indicate more than one area visited
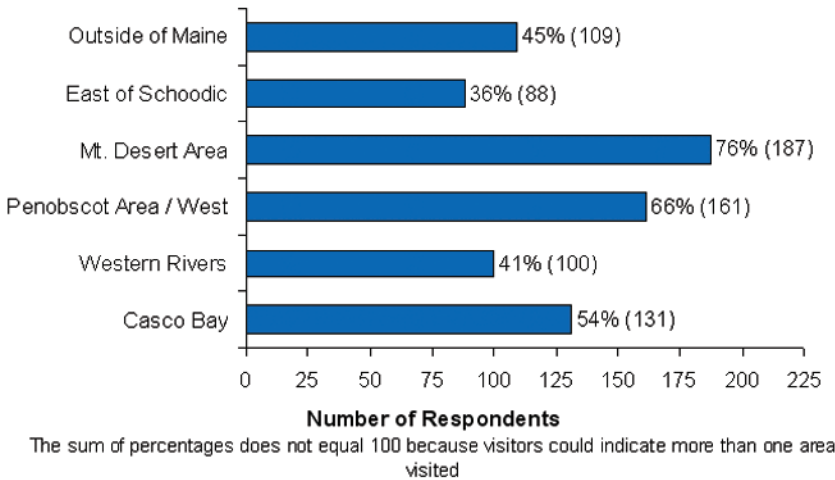
Figure 35. Other coastal regions in Maine and outside of Maine visited, N = 245.
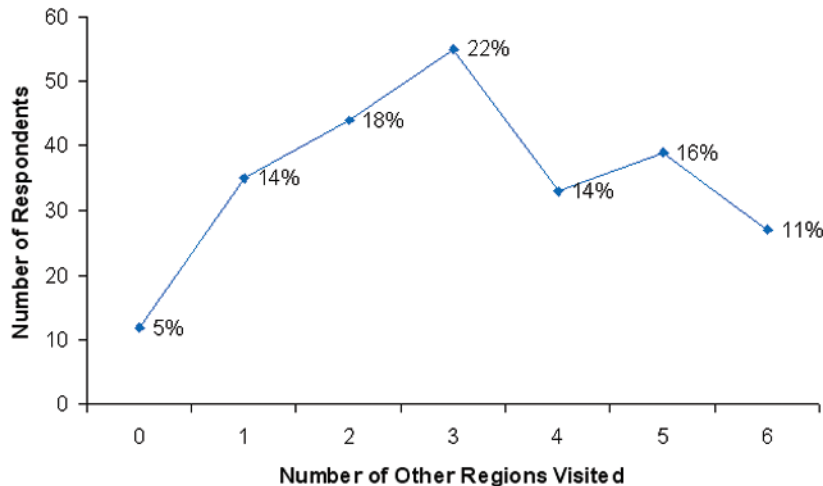
Figure 36. Number of other regions in Maine and Outside of Maine visited, N = 245.

visited (36%). Forty-five percent of participants visited coastal island regions outside of Maine. Figure 36 shows that the greatest percentage (22%) of participants who had previously visited the Stonington region had also visited three of the regions listed in Figure 35. Only 5% of visitors who had previously visited Stonington had not visited any other regions, and 11% had visited all six of the other regions listed.

The survey contained a set of questions about place meanings. To understand how strongly visitors feel attached to the Stonington region landscape, we asked four questions about how they identify with the region and four questions about the degree to which their experiences depend on the Stonington region islands. Table 13 shows how participants rated the place identity and place dependence questions on a five-point Likert-type scale, ranging from strongly disagree to strongly agree with the option to select "don't know." The place identity question most strongly agreed with, this place means a lot to me, received the greatest percentage (92%) of agree/strongly agree responses. The other three identity questions were rated agree/strongly agree by between 60% and 70% of the respondents. Three of the four place dependence questions were rated agree/strongly agree by less than half of the respondents, and one, the time I spent here could have just as easily been spent someplace else, was rated strongly disagree/disagree (this question was reverse coded) by 74% of the study participants.

Table 13. Rating of place attachment, N = 357.

Place Attachment Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Don't Know
			%			
Place Identity						
This place means a lot to me	0	1	7	32	60	0
I feel like this place is a part of me	1	15	24	31	29	1
I am very attached to this place	2	8	21	39	30	0
I identify strongly with this place	2	5	24	37	31	1
Place Dependence						
I wouldn't substitute any other area for doing the type of things I did here	2	25	27	22	23	1
I get more satisfaction out of visiting this place than any other recreation place	2	24	37	21	15	1
This area is the best place for what I like to do	2	10	36	27	24	1
The time I spent here could have just as easily been spent somewhere else	29	45	10	14	2	0

Leave No Trace Knowledge and Behavior

The visitor education program, as outlined in *The Recreation Management Plan for the Public Islands on the Maine Island Trail, 2004–2014,* highlights both the challenges associated with visitor education on Maine's public islands and ongoing and future initiatives for improving visitor education with respect to Leave No Trace techniques. The major challenge, of course, is that there is no central access point to the islands or registration system that would facilitate information dissemination. In addition to the educational signs posted on the public islands, the management plan describes six priorities for educating visitors that range from developing new educational and outreach materials to effectively distributing the material, setting up a visitor education task force, and a host of other new programs to adopt.

To evaluate the awareness, attitudes, and behavior of study respondents regarding Leave No Trace practices, we asked participants several questions about their knowledge and opinions about Leave No Trace recommendations and their choice of related behaviors while visiting the islands. The survey asked participants if they were familiar with Leave No Trace techniques. Figure 37 shows that the vast majority of visitors (92%) reported awareness of Leave No Trace techniques. We then asked participants how important they believe it is to follow Leave No Trace recommendations, and Figure 38 shows that 99% felt the recommendations are either very important or important. To better understand participant behavior related to Leave No Trace, we asked participants whether they remove litter/trash when they notice it on the islands (Figure 39), how they disposed of human waste (Figure 40), and how they disposed of leftover food (Figure 41). Eighty-five percent of participants always or often remove litter/trash when they noticed it. Furthermore, not considering those who reported disposal of human waste and leftover food did not apply, 80% of respondents reported carrying out human waste, and 89% reported carrying out leftover food.

The survey also included questions about whether participants built a wood fire and/or used a camp stove (Figure 42). Of the participants who responded positively to these questions, 14% built a fire, 67% used a camp stove, and 19% used both. We compared day users and overnighters in their use of camp stoves and wood fires to check for unexpected patterns of behavior. Interestingly, day users were more likely to build wood fires, with 17% of the day users and only 4% of overnight users building wood fires. We also compared wood fire use and types of group and wood fire use and mode of travel to look for further explanation of which day users tend to build fires. The comparisons highlighted the high percentage of guided groups who use camp stoves (70% of participants in guided groups), but no other notable patterns between type of group and use of wood fires/camp stoves. When we compared modes of travel and use of wood fires/camp stoves, we found
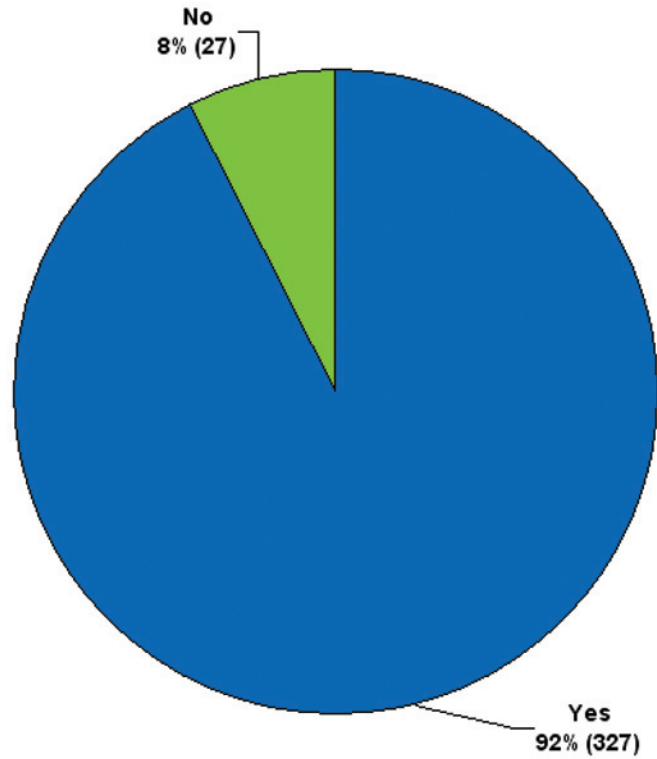
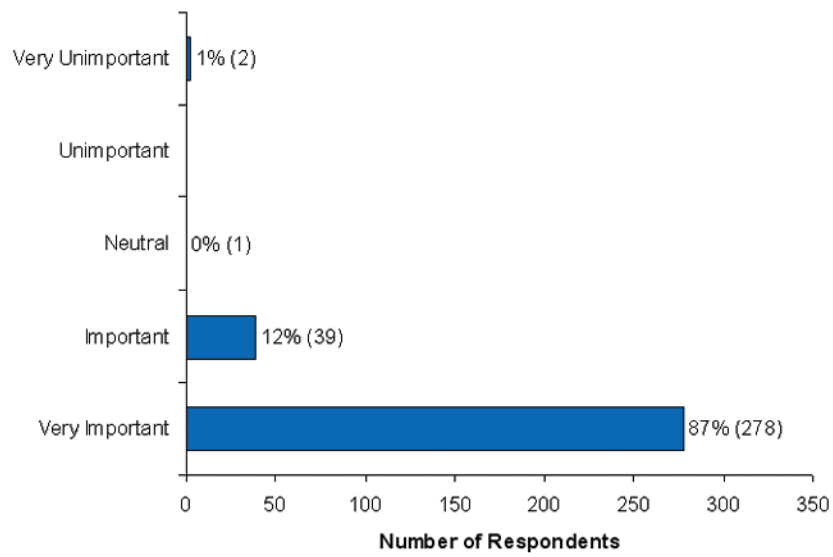*Figure 37. Awareness of Leave No Trace techniques, N = 354.*

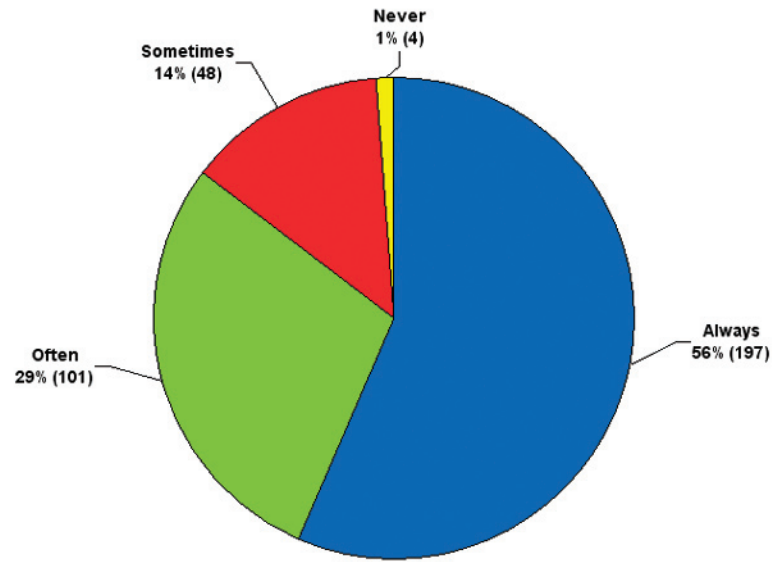*Figure 38. Importance of Leave No Trace recommendations, N = 320.*

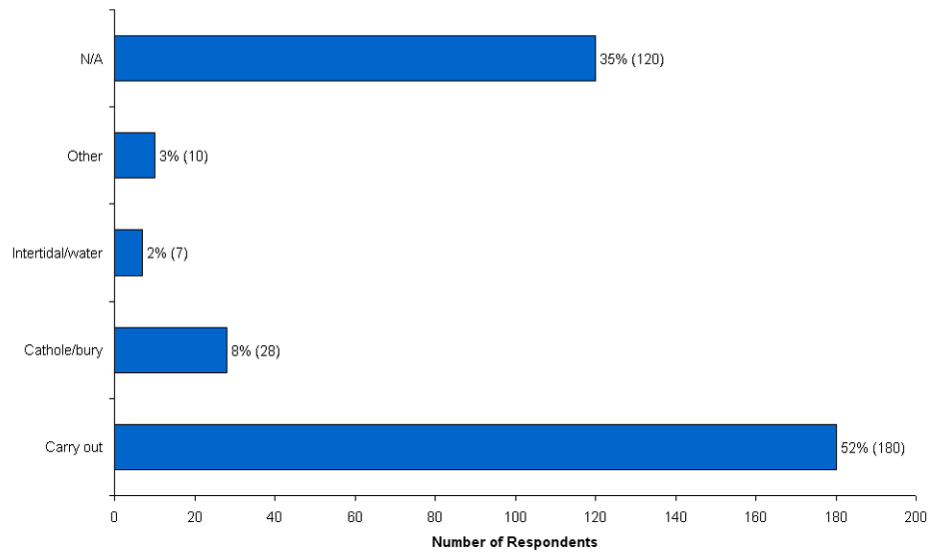*Figure 39. Participant removal of litter/trash noticed on islands, N = 350.*

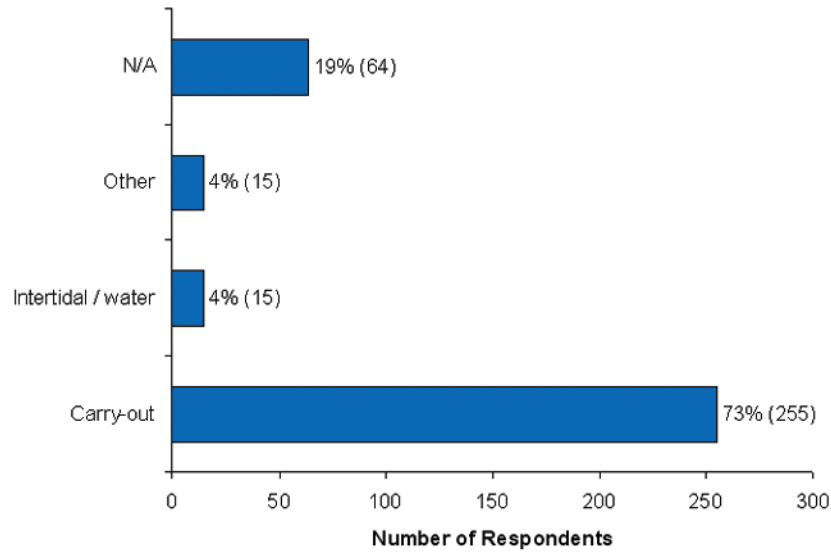*Figure 40. Mode of disposal of human waste, N = 345.*

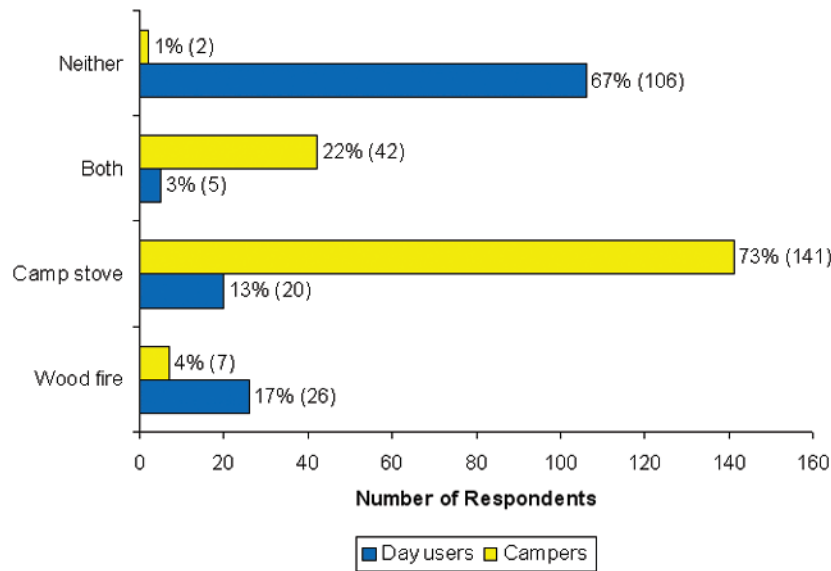*Figure 41. Mode of disposal of leftover food, N = 349.*

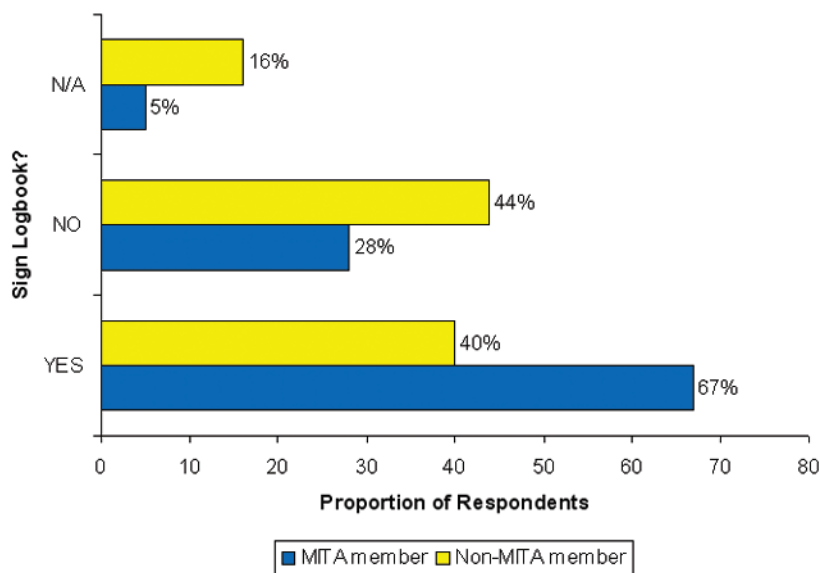*Figure 42. Use of wood fires and camp stoves, N = 349.*

Figure 43. Proportion of visitors who reported signing logbooks, N = 290.

Visitor Preferences for and Satisfaction with Resource Conditions

To understand what conditions influence visitors' experiences, we asked participants how much a series of eight island conditions mattered to them. Respondents rated each condition on a five-point Likert-type scale, ranging from not at all to extremely. Table 14 shows the percentage ratings participants, separated into day-user and overnight-user groups, attributed to each condition. Overall, the conditions that most influenced the quality of visitors' experiences, or those that were rated as very much or extremely influential by at least 90% of respondents, were the amount of litter/trash around a campsite and the amount of litter/trash along a shoreline. Four conditions were rated very much influential or extremely influential by less than 50% of the study participants: the availability of flat campsites; the availability of single party islands; having the choice of several different places to pitch a tent; and having small campsites with only one or two places to pitch a tent.

that 41% of sailors built wood fires, and considering 85% of sailors were day users, it is likely that the greater use of wood fires by day users is attributable to sailors.

The survey also questioned whether visitors signed logbooks when visiting the islands (Figure 43). Forty-nine percent of the participants signed the island logbooks, 39% did not sign the books, and 12% did not see, or visited islands that did not contain, logbooks. In an interesting comparison between MITA members and non-MITA members, we found that 67% of MITA members signed logbooks and 40% of non-MITA members signed the log books.

Comparing day users and overnight users to identify whether conditions are particularly important for either groups, we found significant differences between day users and overnight users for several conditions, including the amount of vegetation loss and bare ground around a campsite ($\chi^2 = 16.05$, 4

Table 14. The degree to which island conditions influence visitor experiences.

Condition	Not at all		Slightly		Moderately		Very much		Extremely		Total
					%						#
Amount of vegetation loss*	14	2	6	7	27	35	36	35	17	21	343
Availability of flat campsites*	32	2	15	14	27	42	22	34	4	8	344
Number of damaged trees	7	3	4	6	15	17	39	39	35	35	345
Amount of litter around campsite	6	2	1	1	3	2	17	22	73	73	350
Amount of litter along shoreline	4	3	2	2	3	5	14	25	77	65	351
Availability of single party islands*	24	5	15	13	23	38	22	26	16	18	349
Having choice of sites to pitch tent*	32	7	11	17	31	45	20	24	6	7	341
Availability of small campsites*	31	13	13	21	30	35	17	21	9	10	338

Bold items represent responses of day users, Italics items represent responses of overnight users.* signifies responses of day users are significantly different (P < 0.05) from those of overnight users.

Table 15. Other important conditions that influence visitor experiences, N = 73.

Condition	Number of times mentioned
Access/landing sites	13
Leave No Trace training of other visitors	8
Level of noise	6
Respectfulness of other visitors	5
Evidence of other visitors	4
Proximity to populated areas	3
Place for groups (10–15 people)	3
Number of people on small islands	3
Mosquitoes	3
Campsites with ocean views	2
Size of other groups	2
Wildlife	2
Trails on islands	2
Campsites with beaches	2

df, P = 0.003), the availability of flat campsites (χ^2 = 64.27, 4 df, P = 0.000), the availability of single party islands (χ^2 = 28.79, 4 df, P = 0.000), having the choice of several different places to pitch a tent (χ^2 = 36.82, 4 df, P = 0.000), and having small campsites with only one or two places to pitch a tent (χ^2 = 17.04, 4 df, P = 0.002). Considering most of these conditions describe the conditions of campsites, it is not surprising that day users consistently rated the conditions as less important than did overnight users.

In the survey, we also asked respondents to list other conditions that influenced the quality of their experience on the islands. Although they listed more than 30 conditions, the most common were access/ landing sites (mentioned 13 times), Leave No Trace training (mentioned eight times), and the amount of noise (listed six times). Table 15 shows other conditions mentioned by more than one visitor. A range of conditions were listed by only one person, such as the number of signs on islands, place to store boats and gear, provision of a compost facility, removing lobster equipment from along the shorelines, space between campsites and islands, provision of information on island vegetation and history, being bothered by Maine Island Trail Association people, information on the location of fresh water sources, the mosquitoes, provision of tent platforms, among other conditions.

To better understand support for possible management actions, we asked study participants for their opinions concerning a series of management strategies that could be used on the Stonington region islands. Table 16 shows how participants rated each of the management actions on a five-point Likert-type scale, ranging from very much in favor to very much opposed. The only management action for which more than 80% of respondents chose somewhat or very much in favor of was maintaining existing trails on the islands. Between 70% and 80% of the participants indicated some degree of support for three other management actions: posting signs outlining Leave No Trace recommendations; restricting use areas to manage impact and protect the islands; and providing the presence of a roving steward for the Stonington area. Less than

Table 16. Opinions of participants concerning management actions.

Management Action	Very much opposed	Somewhat opposed	Neutral or undecided	Somewhat in favor	Very much in favor	Total
	%					#
Provide tent platforms	15	17	30	25	13	353
Create trails on islands	7	19	20	34	20	357
Maintain existing trails on islands	2	3	14	41	40	356
Post interpretive/educational signs	9	20	22	33	16	357
Post Leave No Trace recommendations	1	9	13	32	44	357
Post signs of recommended campsite capacities	4	9	19	37	32	353
Dismantle visitor-made modifications	3	13	38	25	22	355
Restrict use areas to manage impact	2	10	13	40	35	355
Presence of a roving steward	3	5	22	37	33	353

half of the study respondents supported providing tent platforms on the islands, posting interpretive/educational signs on islands, and dismantling visitor modifications on the islands (benches, rock sculptures, etc.). We also asked participants to list other management actions they would like to see implemented on the islands (Table 17). Fifty-one respondents listed alternative management actions, for a total of 27 different actions. Provision of public education about island access and recommended use was the most popular suggestion (mentioned by 10 individuals). Re-designing and posting signs more discretely (mentioned by five individuals) and enforcing rules against damaging behavior with signs (mentioned by four individuals) were other common suggestions. Several suggestions were mentioned by only one individual, ranging from displacing visitors when necessary to providing information at put-ins, designating cooking areas, re-naming some islands, cleaning islands and campsites, providing tables and tarp supports, providing moorings, focusing management on commercial outfitters, placing sheep on islands, providing greater Maine Island Trail Association presence, and constructing more rock stairs from beaches to campsites/trails.

To assess overall satisfaction with the recreation experience on coastal islands in the Stonington region, the survey asked participants how valuable experiences like the Maine coast islands are to them personally (Figure 44) and also to rate their trip to the Stonington region islands (Figure 45). Ninety-seven percent of the participants rated experiences like the Maine coast islands as extremely valuable or very valuable. Ninety percent of the participants rated their trip A, very good, and 9% rated it B, good. We also asked what it was about their trip that made them rate the experience in this way, and respondents listed several qualities that contributed to overall positive evaluations. Table 18 shows the key qualities that contributed to overall positive evaluations. The most frequently mentioned qualities related to the scenic beauty of the Stonington region islands, being with friends and family, the weather, peace and quiet, and activity/adventure.

Table 17. Suggested island management actions, N = 51.

Management action	Number of times mentioned
Public education	10
Signs that are more discrete	5
Fines for damaging behavior	4
Require site log-ins	3
Build outhouses	3
Re-evaluate maximum capacity guidelines	2
Allow reservations	2
Signs at landing locations	2
Encourage visitors to collect litter/trash from islands	2

Table 18. Key qualities that contributed to a positive evaluation, N = 359.

Key qualities	Number of times mentioned
Scenic beauty	164
Friends/family	84
Weather	80
Peace and quiet	73
Activity/adventure	57
Geographical layout	48
People met on trip	36
Wildlife/nature	36
Less crowded than other places	30
Opportunity to camp on/visit islands	28
Clean islands	24
Other reasons	44

MANAGEMENT IMPLICATIONS

The Maine Island Trail Association, the Department of Conservation, local island managers, and local businesses should be encouraged by how highly the study participants rated their experience, where 99% of visitors rated their trip to the Stonington region islands as very good or good. The responses to the survey show that visitors to the area share the management plan emphasis on high-quality experiences that involve enjoyment of the scenic quality, distinctive coastline, nature and wildlife appreciation, solitude, adventure and excitement, and exploration. These results also demonstrate support for the importance of stewardship in protecting the islands, as 97% of study participants rated their experiences on the Maine coast islands as extremely valuable or very valuable.
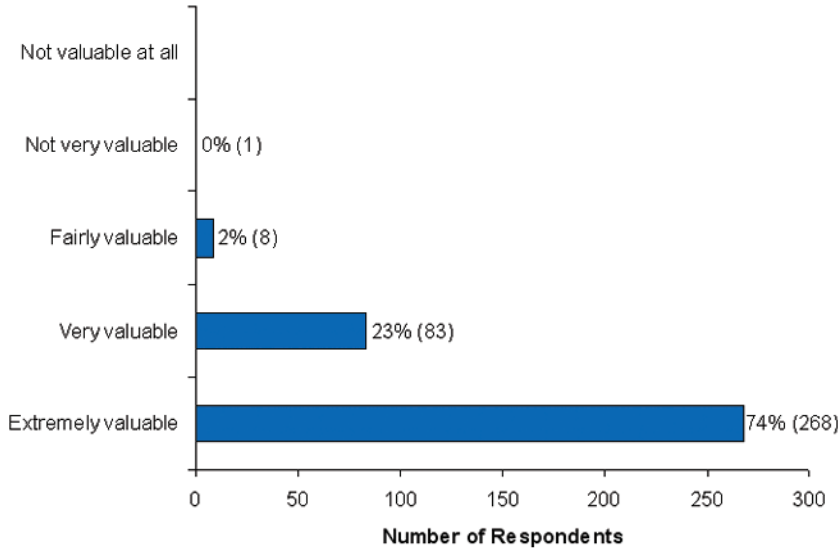
Figure 44. Participant rating of value of experiences like the Maine coast islands, N = 360.
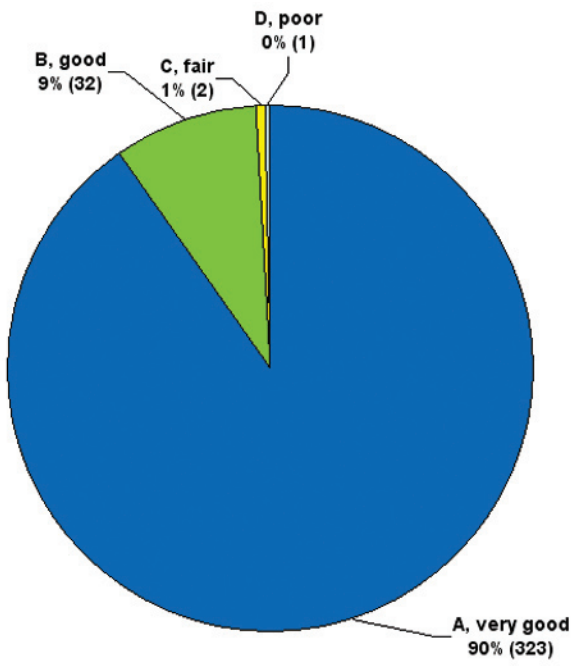

Figure 45. Participant rating of their trip to the Stonington region islands, N = 358.

These islands are clearly important to protect for Maine residents and for the many people who visit them from out of state.

This report can be used for studying current visitation to the Maine islands, for planning educational programs, for selecting indicators for limits of acceptable change applications, and for establishing management objectives. Since recreation visitors come with a variety of desired experiences and preferences for social and resource conditions, it is important to select the right indicators of quality experiences and standards.

As this study shows, visitors to the Stonington region islands come with a diversity of interests and preferences for management. For example, 31% of respondents rated the commercial fishery as unimportant in their decision to visit whereas 34% rated it as important. Similarly, the presence of schooners and sailboats were unimportant for 30% of respondents, but important for 36%. Opinions also vary regarding support for several potential management interventions. For example, 32% of the respondents opposed the provision of tent platforms on the islands, while 38% of the respondents were in favor of the idea. Also, our observations of island use demonstrate that visitors are willing to seek out different types of islands to suit their desired experiences. These findings suggest the importance of conserving a range of island characteristics that allow for the combinations of experiences that recreationists desire.

This survey provided a large quantity of data about visitor characteristics, experiences, preferences, along with some information regarding their behaviors while visiting the islands. Based on the data, we have developed a series of five management recommendations for island managers to consider in the upcoming years. Island managers should be encouraged that these recommendations support their current efforts, but suggest potential ways to diversify and expand on existing programs.

1. Continue to focus on visitor education programs. Educational outreach efforts should not be limited to locals or even Maine residents: only 28% of visitors are from Maine (and only 9% are year-round or summer residents). Thirty

percent of respondents were from the other New England states, and 40% of the respondents were from 28 other states. Information should target organizations and small groups that travel in the area regularly; however, the largest proportion of visitors travelled in pairs, suggesting educational outreach should be widespread.

We suggest two main topics of education:

a) *Leave No Trace:* Island managers should be encouraged that 92% of the island visitors reported awareness of Leave No Trace techniques, and that 99% rated them as very important or important. Moreover, 85% of the study respondents indicated they always or often remove litter when they notice it on the islands. Only 10% of the respondents reported disposing of human waste in the intertidal zone or by use of a cathole, which suggests that educational efforts are working and that these efforts should continue to reach the remaining 10%. Approximately three-quarters of respondents are somewhat or very much in favour of posted Leave No Trace recommendations on the islands. Continual efforts to expand efforts are particularly important considering the prediction that demand for water-based recreation will increase (Bureau of Parks and Lands 2003). We suggest the following:

- Implement a visitor education task force to develop new strategies to reach a broader audience, keeping in mind that 60% of the survey respondents who were not familiar with Leave No Trace were either sailors or motor boaters, and that 85% of those unfamiliar with Leave No Trace did not camp overnight.

- Diversify outreach efforts. Consider all the information in the MITA book that non-members do not receive. For example, all island visitors could benefit from the full list of Leave No Trace guidelines including examples on how to dispose of human waste, the list of helpful tips for island visitors including determining alternative camping/lodging options, and the list of coastal travel resources and articles.

b) *Island ownerships and types:* Outreach efforts should focus on educating the recreationists who travel the Maine coast without knowing which islands are publicly or privately owned. An educational outreach program is needed to inform visitors to the Maine coast which islands are open to the public. The survey results demonstrated that 20% of participants did not know what type of island they visited. Many of these people likely visited islands that were not open to the public.

Educating people about island types is particularly important on the Maine coast where MITA manages islands with a spectrum of visitor use recommendations. Island visitors would likely also benefit from understanding the different management concerns island owners have (e.g., certain owners may be particularly concerned about nesting habitat or protecting coastal plants). Also, types of recreation infrastructure such as tent platforms may be identified for certain islands and may also help to reduce environmental impacts. *The Recreation Management Plan for the Public Islands on the Maine Island Trail, 2004–2014* outlines an excellent series of educational programs. We suggest information be available at key access locations and from individuals who are likely to interact with island visitors such as staff at the Old Quarry Campground.

2. Monitor the use and resulting impact of campfires. Thirty-three percent of island visitors built a fire. Dedicate efforts to ensure that fires are being built in the intertidal zone (we observed several that were not) and to monitor the availability of drift wood for building fires. Since downed and decomposing trees are a highly important component of the island ecosystem, it is important that there is enough wood to sustain campfires and to maintain wildlife habitat. Therefore, an assessment of the amount of downed wood surrounding campsites should be included in the island campsite ecological assessments (Cole and Dalle-Molle 1982; Hammitt and Cole 1998).

3. Encourage island visitors to sign log books. Approximately half of the study respondents signed logbooks, with only 40% of visitors who are not MITA members doing so. This suggests that, for islands that have them, they are a useful indicator but not a complete assessment of total island use. We suggest:

- Explain why signing the logbooks is important in the MITA book, in other educational outreach material, and on the logbook containers themselves. Place emphasis on the long-term/big-picture monitoring of the islands. This is particularly important since the logbooks are the only full-time monitors the islands have. Even if MITA's volunteer monitor stewards could be on the

water every day, there are too many MITA islands, too widely spread out, to be able to monitor with 100% accuracy. For example, our number of total visitor observations was similar to the number of observations collected in the island logbooks for the 2006 summer season. Only half of the survey participants reported signing the logbooks, therefore, it is possible that we observed approximately half of the visitors the islands received.

· Encourage island visitors to write comments in the logbooks regarding the quality of island visitation experiences. This information will provide a way to track visitor experiences during years when a visitor survey is not conducted.

4. Continue to monitor social conditions on the Maine Island Trail. The survey data indicates that the private islands on the Maine Island Trail are alleviating use that would otherwise be focused on the public islands. Eighty-six participant groups camped on public islands, while 53 groups camped on private islands. Nearly two-thirds (64%) of the respondents who camped overnight reported no other groups within sight or sound on an average night. However, the survey data suggest that managers should pay close attention to the social conditions regarding campsites. The finding that 11% of the participants said that the presence of other groups nearby interfered or interfered significantly with and 28% reported other groups somewhat interfered with their camping experiences warrants attention. More research may be needed to identify the nature of this conflict for some visitors. This also highlights the importance of identifying management indicators and standards and of monitoring conditions with a plan in place in preparation for the event that a quality standard is violated. For example, managers might consider reducing the recommended number of parties per island if further social monitoring indicates that visitor interference comes from multi-party islands. It may also be desirable to inform private landowners of the valuable role they play in decreasing the density of visitors on public islands in the area and in contributing to positive experiences and the diversity of recreation opportunities.

5. Continue to motivate individuals to be volunteer island stewards. MITA's program of volunteer island stewards does an excellent job of caring for the islands, and our findings highlight the importance of these efforts. For example, the presence of litter around a campsite and along a shoreline greatly influenced the quality of visitor experiences (these were very much or extremely influential for at least 90% of island visitors), and MITA's volunteers play a large role in ensuring the islands are free of litter and serve as role models motivating visitors to remove litter themselves. The presence of litter was much more important than other conditions such as the availability of flat campsites, the availability of single party islands, or having the choice of several different places to pitch a tent. This may be no surprise to the volunteers, many of whom are visitors themselves, but it reinforces the important role they play in contributing to the positive experiences of other visitors.

Overall, the survey data demonstrate MITA is accomplishing its goal of providing a high-quality coastal island recreational experience, as defined in the *Recreation Management Plan for the Public Islands on the Maine Island Trail, 2004–2014.* Not only have island visitors rated their experiences on the islands very highly, they also have indicated that they feel emotionally attached to Stonington region in particular. Ninety-two percent of the participants indicated that the Stonington region islands mean a lot to them, and three-quarters of the respondents do not think that their time in Stonington could easily be spent someplace else. Not only is MITA a group of devoted island managers, it is supported by volunteer monitors who care deeply for the islands and by visitors who form strong emotional connections to the landscape.

RESEARCH IMPLICATIONS

The study provides baseline data of visitor characteristics, experiences, and perceptions on the Stonington region islands. Trends in recreation activities suggest that there will be an increased demand for these water-based recreational opportunities (Bureau of Parks and Lands 2003; Cordell et al. 2004). Therefore, additional baseline studies are needed for other regions of the Maine islands, and follow-up research is required in the Stonington region to determine trends in recreational visitation and to learn more about the visitors' experiences.

For this study we used a multi-method approach to gain a sense of the use of the islands, the visitors' experiences, and the campsite conditions associated with the use. Aside from the visitor observations and survey results presented in this report, we

are developing a campsite-monitoring system for recording and mapping the physical condition of campsites. We have recorded impact parameters and photographic documentation for the study sites, and we continue to refine the campsite-assessment method. We will continue further development of campsite-assessment procedures in the region over the summer of 2007, and managing organizations must commit to continue monitoring the character of the island campsites over time.

Additional information is required regarding the amount of use the islands receive and the effect of human use on the natural character and other species that depend on the islands. While our observations of island use provide an idea of the amount of visitation, one person monitoring 24 islands is insufficient to gain a clear understanding of island visitation. Island managers would benefit from a more in-depth study of island use, and there are several methods of gaining this information. In the Stonington region, it would be most effective to closely monitor island use on two or three of the islands that hosted the greatest number of visitors in this study, such as Hell's Half Acre, Green Island, and Steves Island. Information gathered by this monitoring then could be used to assess the effectiveness of management strategies such as Leave No Trace. A future visitor survey in the Stonington region might focus on whether visitors are aware of the different types of islands available for camping and whether they purposefully visit islands that match their desired experiences. More research is needed to identify the nature of some conflict identified where people camped in proximity of each other. This would help managers to devise educational strategies and may help in efforts to better disperse visitors to different islands.

Our observations of island use could also be combined with other information, such as nesting bird counts and vegetation inventories to better understand the coexistence of island visitation with the natural processes on the islands. The current observations, combined with future observations and species inventories could provide a highly valuable understanding of the resilience of the islands and changes in the landscape over time.

Finally, further research is required into the assumptions made about the experiences visitors desire on Maine islands and toward developing an understanding of how island users and individuals who do not currently visit the islands weigh the importance of recreational opportunities. The Maine coast is a quickly changing landscape facing a high degree of development pressure and the related loss of coastal access. It is important for island managers to understand the social dynamic of users and non-users in this time of change and to be proactive in facilitating a balance between the diverse needs of these groups. The multitude of islands along the Maine coast make it a place that is capable of satisfying a broad array of needs, and this type of research is important to help managers to select the most effective approach for ensuring access while protecting the natural character of Maine's beautiful islands.

LITERATURE CITED

Cole, D.N., and J. Dalle-Molle. 1982. Managing campfire impacts in the backcountry. General Technical Report INT-135 U.S. Department of Agriculture, Forest Service, Intermountain Research Station, Ogden, UT.

Cordell, H.K. 2004. Outdoor Recreation in 21st Century America. Venture Publishing, Inc., Champaign, IL.

Daigle, J.J. 2004. Allagash Wilderness Waterway Visitor Survey 2003. Maine Agricultural and Forest Experiment Station Miscellaneous Report 436.

Daigle, J.J., J. Hannon, and C. Stacey. 2003. Factors influencing experience quality: comparing user groups and place attachment to the St.Croix International Waterway. In Seventh World Wilderness Congress Symposium: Science and Stewardship to Protect and Sustain Wilderness Values, ed. A. Watson and J. Sproull. RMRS-P-27 U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Ogden, UT. pp 133–141.

Bureau of Parks and Lands (BPL). 2003. Maine State Comprehensive Outdoor Recreation Plan 2003–2008. Maine Department of Conservation, Bureau of Parks and Lands, Augusta.

Dillman, D.A. 2000. Mail and Internet Surveys: The Tailored Design Method. John Wiley & Sons, New York.

Hammitt, W.E., and D.N. Cole. 1998. Wildland Recreation: Ecology and Management, 2nd ed. John Wiley & Sons, New York.

Lucas, R.C, and G.H. Stankey. 1985. Role of research in applying the limits of acceptable change system. In Proceedings: Southeastern Recreation Research Conference, ed. A.E. Watson. Statesboro, GA. pp 1–15.

Maine Department of Conservation. 2003. The Recreation Management Plan for the Public Islands on the Maine Island Trail 2004–2014. Maine Department of Conservation, Augusta.

Maine Island Trail Association (MITA). 2006. 2006 Stewardship Handbook & Guide. MITA, Portland.

Manning, R.E. 1999. Studies in Outdoor Recreation: Search and Research for Satisfaction, 2nd ed. Oregon State University Press, Corvallis.

Salant, P., and D.A. Dillman. 1994. How to Conduct Your Own Survey. John Wiley & Sons, New York.

Springuel, N. 2007. Island Monitoring Task Force Three-Year Pilot Project 2004-2006: Final Report. Unpublished Technical Report. University of Maine Sea Grant, Orono.

SPSS. 2001. Statistical Package for the Social Sciences. Chicago.

Stankey, G., D. Cole, R. Lucas, M. Peterson, S. Frissell, and R. Washburne. 1985. The limits of acceptable change (LAC) system for wilderness planning. Gen. Tech. Report INT-176. U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station, Ogden, UT.

APPENDIX A—
SAMPLE EDUCATIONAL SIGN AS ON MITA-MANAGED PUBLIC ISLANDS

HELL'S HALF ACRE ISLAND

Welcome to this public island!

Hell's Half Acre Island is yours to protect and enjoy. It is state-owned and managed by the Maine Island Trail Association for low impact recreation. By following the guidelines listed below you will help to protect the natural integrity of the island and preserve a high quality experience for others.

Length of Stay:	2 nights maximum
Island Capacity:	14 overnight campers maximum

Organized Groups: Maine state law requires that individuals leading trips for compensation hold the appropriate license from the Maine Department of Inland Fisheries and Wildlife (207-287-8000).

Note: If conditions make it unsafe to follow these guidelines, please do not place yourself or others at risk to adhere to them. Also, please respect the rights of private landowners and access only the islands for which you have been given permission.

LEAVE NO TRACE GUIDELINES FOR LOW IMPACT USE

Travel & camp on durable surfaces
Walking: Travel on sand, stone, resilient grass and established trails. Avoid vegetation, dirt banks, boggy areas, mosses and lichens.
Cooking: Cook on rugged surfaces such as sand, gravel, or ledges below the high tide line.
Camping: Tent only in designated campsites; **please do not expand existing campsites or establish new ones.** In an emergency, try to squeeze in or bivouac on durable surfaces.

Dispose of waste properly
Human waste: Please carry off all solid human waste and toilet paper and dispose of it properly on the mainland. Do not bury waste or leave it in the woods or intertidal zone.
Trash: Pack out all personal trash and remove flotsam from the island when you can.

Respect wildlife
Keep wildlife wild: Store food securely, observe wildlife from a distance, and leave pets at home. If you bring a pet ashore, keep it on a leash and carry off all solid waste. Never feed wildlife!

Be considerate of others
Island Etiquette: Preserve the peace and quiet of the island and be respectful of those who live and work in the local area. Set up camp on the day of your overnight, not in advance. Break camp in the morning of your departure day.

Minimize campfire impacts

Fire hazard! Always carry a stove; it is often better than a campfire due to weather, safety considerations and fuel supply.
Safe campfires: MITA recommends no fires. If you do plan to kindle a fire, you must first obtain a permit from the Maine Forest Service (1-800-750-9777). A safe, low impact fire is built below the high tide line in a fire pan or on sand or gravel. Use only driftwood gathered from below the high tide line or wood you brought, and burn all wood to a fine ash and douse with sea water. Please do not cut tree limbs or collect downed wood from the island. Please do not create new fire rings. *In an emergency use VHF channel 16 or call 1-888-900-FIRE.*

Leave what you find
Allow others a sense of discovery: Please leave all rocks, plants, archaeological artifacts, and other natural objects where you found them.

Plan ahead & prepare
For your next trip: Familiarize yourself with the regulations, guidelines, potential hazards, and use levels of the islands you intend to visit. Plan for safety and alternative destinations.

Thank you for cooperating with these user-developed, voluntary guidelines. For more information on Leave No Trace, *please call 1-800-332-4100 or visit www.LNT.org.*

ME Bureau of Parks & Lands
22 State House Station
Augusta, ME 04333
www.state.me.us/doc/parks
(207) 287-3821

Maine Island Trail Association
58 Fore St, Bldg 30, 3rd Floor
Portland, ME 04101
www.mita.org
(207) 761-8225

The goal of the Maine Island Trail Association is to establish a model of thoughtful use and volunteer stewardship for the Maine islands that will assure their conservation in a natural state while providing an exceptional recreational asset that is maintained and cared for by the people who use it.

APPENDIX B—MAINE COASTAL ISLAND VISITOR SURVEY 2006,
DEER ISLE/STONINGTON REGION

Maine Coastal Islands
Visitor Survey 2006
Deer Isle / Stonington Region

THE UNIVERSITY OF

MAINE

Parks, Recreation, and Tourism

In Partnership With:

Maine Coast Heritage Trust
A Statewide Land Conservation Organization

MAINE ISLAND TRAIL®
ASSOCIATION

DEPARTMENT OF
CONSERVATION
STATE OF MAINE

Thank you for volunteering to participate in this study. Your information is important in helping determine the best ways to manage the Maine recreational islands. Your name and personal information are confidential. The results will be available in about eight months through the University of Maine. This survey involves the Deer Isle/Stonington region islands, which, for the purpose of simplicity will be referred to as the Stonington region islands.

A. In this first part of the survey, we would like to know why you came to the Stonington islands. We would like to understand what features are important to your Maine coastal island recreation experience.

1. How did you originally learn about or decide to come to the Stonington area for a coastal island recreation experience?
___ Own research (ex. internet, travel/outdoor books, TV commercials, etc.)
___ Recommended by someone (describe your relationship with them:_____)
___ Other (describe: _____)

2. How **valuable** are recreation experiences like the Maine Coast islands to you personally?
_____ Extremely valuable
_____ Very valuable
_____ Fairly valuable
_____ Not very valuable
_____ Not at all valuable

3. To what extent were the following reasons for your visit to the Stonington islands? Please rate each consideration in terms of **importance**.

		Very Unimportant	Unimportant	Neither	Important	Very Important
a.	Scenic quality	❏	❏	❏	❏	❏
b.	Nature / wildlife appreciation	❏	❏	❏	❏	❏
c.	Distinctive coastline	❏	❏	❏	❏	❏
d.	Solitude	❏	❏	❏	❏	❏
e.	Remoteness	❏	❏	❏	❏	❏
f.	Exploration	❏	❏	❏	❏	❏
g.	Alternative to daily routine	❏	❏	❏	❏	❏
h.	Ocean travel	❏	❏	❏	❏	❏
i.	Adventure / Excitement	❏	❏	❏	❏	❏
j.	Exercise and health	❏	❏	❏	❏	❏
k.	Skill development	❏	❏	❏	❏	❏
l.	Working waterfront / commercial fishery	❏	❏	❏	❏	❏
m.	Schooners / sailboats	❏	❏	❏	❏	❏
n.	Be with family and/or friends	❏	❏	❏	❏	❏
o.	Meet new people	❏	❏	❏	❏	❏
p.	Fishing / clam digging / mussel picking	❏	❏	❏	❏	❏
q.	Picnic outing	❏	❏	❏	❏	❏
r.	Other: _____	❏	❏	❏	❏	❏

4. Which out of the list above were the **three most important considerations** in your decision to visit the Stonington region islands?
   a. First most important _____
   b. Second most important _____
   c. Third most important _____

5. We are interested in finding out what conditions on the islands influence the quality of your experience in the Stonington region. For the items listed below, please tell us how much each matters to you.

I care about:	Not At All	Slightly	Moderately	Very Much	Extremely
The amount of vegetation loss and bare ground around a campsite	❏	❏	❏	❏	❏
The availability of flat campsites	❏	❏	❏	❏	❏
The number of trees around a campsite that have been damaged by people	❏	❏	❏	❏	❏
The amount of litter/trash around a campsite	❏	❏	❏	❏	❏
The amount of litter/trash along a shoreline	❏	❏	❏	❏	❏
The availability of single party islands (where your group is alone on the island)	❏	❏	❏	❏	❏
Having the choice of several different places to pitch a tent	❏	❏	❏	❏	❏
Having small campsites with only one or two places to pitch a tent	❏	❏	❏	❏	❏
Other: _____	❏	❏	❏	❏	❏
Other: _____	❏	❏	❏	❏	❏

6. Island managers are faced with the challenge of protecting the natural character of the islands while allowing recreational use. Below are examples of actions that might be used on the Stonington region islands. Please indicate your opinion concerning each statement.

	Very Much in Favor	Somewhat in Favor	Neutral or Undecided	Somewhat Opposed	Very Much Opposed
Provide tent platforms on islands	❑	❑	❑	❑	❑
Create trails that circumnavigate islands	❑	❑	❑	❑	❑
Maintain existing trails on islands	❑	❑	❑	❑	❑
Post interpretive / educational signs on islands	❑	❑	❑	❑	❑
Post signs outlining Leave No Trace recommendations	❑	❑	❑	❑	❑
Post signs outlining recommended island and campsite capacities	❑	❑	❑	❑	❑
Dismantle visitor modifications on the islands (benches, rock sculptures, etc.)	❑	❑	❑	❑	❑
Restrict use areas to manage impact and protect the islands	❑	❑	❑	❑	❑
Presence of a roving steward for the Stonington area	❑	❑	❑	❑	❑
Other actions that you feel managers might take: (List below)					
_____	❑	❑	❑	❑	❑
_____	❑	❑	❑	❑	❑

B. In this section, we would like to know more about your travel during your recent visit. This information will help us document how much use the Islands receive.

1. How many people were in your party on this visit, including yourself? ____
How many were under 16? ____
Was your group:
___ Family or families   ___ Friends and acquaintances
___ Family plus friends   ___ From an organization (scouts, etc.)
___ A guided group   ___ Schooner cruise
___ Alone   ___ Other (describe _____)

2. How did you travel on the coast? (check all that apply, but if more than one, underline the way you travelled most)
___ Powerboat   ___ Canoe
___ Sailboat   ___ Kayak
___ Other (describe _____)

3. What point of access to the shore did you use in order to visit the Stonington region islands?
___ Stonington town wharf   ___ Naskeag Point
___ Stonington boat ramp   ___ Isle au Haut
___ Old Quarry Campground
___ Travelled through from other region (from where: _____)
___ Other (describe: _____)

4. For what reasons did you choose your water route? (check all that apply)
___ A new area, variety   ___ Been there before
___ Might be less crowded   ___ Advice from steward
___ Seeking specific islands   ___ Weather conditions
___ Other (describe: _____)

5. What sources of information did you use to learn about the Stonington area? (Please check all that apply)
___ NOAA charts   ___ Word of mouth   ___ Newspaper
___ DeLorme Gazetteer ___ Outfitter   ___ Club
___ Been there before   ___ Guidebooks   ___ Don't remember
___ Internet / website   ___ MITA membership handbook
___ Other (describe: _____)

6. Did you visit public, private or islands owned by non-profit organizations on this trip? (check all that apply)
___ Public   ___ All
___ Private   ___ Don't know
___ Non-profit organization

7. If the island you visited has a log book, did you fill it in? ____ No   ____ Yes

8. Did your party **camp overnight** on an island?
___ No - please go to Section C below
___ Yes - please continue

9. What islands did you camp on?

Island:	# Nights:	Other islands visited:
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

10. How many other groups camped within clear sight or clear earshot of your campsite?
   a. On an average night: ___ groups
   b. On the most busy night: ___ groups

11. How much did the number of other people you could see or hear interfere with your recreation experience in the Stonington region? (Please check one)
___ Did not interfere   ___ Do not remember
___ Interfered somewhat
___ Interfered
___ Interfered significantly

12. Did you take the first available campsite you found where you intended to stop each night?
          ___ No   ___ Yes
If no, how many nights did you not take the first available campsite? ___; what was the reason for this decision (for example: too small, other party camping nearby, condition of campsite, etc.)? Please describe:
_____

13. If the island campsite where you had planned to camp was occupied, did you have difficulty finding an alternative campsite?
___ Yes (please explain: _____)
___ No

C. We are interested in your knowledge and opinions towards minimal impact recommendations. Understanding your awareness of Leave No Trace principles will help island managers design appropriate educational materials.

1. Are you familiar with Leave No Trace techniques?
___ Yes   ___ No (please go to **Question 3**)

2. How **important** did you believe it was to follow Leave No Trace recommendations during your recent visit to the Stonington region islands?
___ Very important   ___ Unimportant
___ Important   ___ Very unimportant
___ Neutral

3. Do you remove litter/trash when you notice it on the islands?
___ Always   ___ Sometimes
___ Often   ___ Never

4. How did you dispose of human waste during your recent visit to the Stonington region islands?
_____
_____

5. How did you dispose of leftover food?
_____
_____

6. Did you build a wood fire ___; or use a camp stove ___; or both ___?

D. This section will provide us some background information about you and your experiences in this area.

Some information about you

1. In what year were you born?   19___

2. Are you?   ___ Male   ___ Female

3. What is the highest level of education you have completed?
___ Eighth Grade
___ High school
___ 1-3 years of college (includes 2-year degree)
___ 4-year college degree
___ Graduate degree

4. Are you and/or anyone in your household currently employed in a job directly related to the Gulf of Maine resource (e.g. fishing, ocean-related tourism)?
___ Yes   ___ No   ___ Not sure / don't know

5. Are you currently a member of the Maine Island Trail Association?
___ Yes   ___ No → Have you been a member in the past? ___ Yes (date: _____)
                                                                ___ No

6. Did you grow up in a: (Please check one)
___ Rural area   ___ Suburban area   ___ Urban area

7. What type of community do you live in now?
___ Rural area   ___ Suburban area   ___ Urban area

8. What is your year-round zip code? _____

Your experience with the landscape

1. Was this your first visit to the Stonington region islands?
___ Yes - go to question 5   ___ No - continue with question 2

2. Briefly describe your first trip to the Stonington region islands:
_____
_____

3. <u>How many years</u> have you been visiting the <u>Stonington Islands</u>? _____
<u>How many times</u> did you visit the Stonington islands last year? _____
Do you come most years? ___ Yes   ___ No

4. Please check **other coastal island regions** you have visited (refer to map below for locations):
___ Casco Bay   ___ Mt. Desert Area
___ Western Rivers   ___ East of Schoodic
___ Penobscot Area/West
___ Outside of Maine (describe: _____)

5. How many years have you been visiting any other coastal islands? _____
How many times did you visit other coastal islands last year? _____

6. Please describe your **connection to the Deer Isle/Stonington area**: (Please check one)
___ I am a year-round resident
___ I am a summer resident
___ I am a visitor to this area
___ Other (please continue and describe: _____)

7. This is a set of questions used consistently in outdoor recreation research about place meanings. Please try your best to answer them by indicating the extent to which each statement below describes your general feelings about the Stonington region of the Maine Coast.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Don't Know
a. This place means a lot to me	❑	❑	❑	❑	❑	❑
b. I wouldn't substitute any other area for doing the type of things I did here	❑	❑	❑	❑	❑	❑
c. I get more satisfaction out of visiting this place than any other recreation place	❑	❑	❑	❑	❑	❑
d. This area is the best place for what I like to do	❑	❑	❑	❑	❑	❑
e. I feel this place is a part of me	❑	❑	❑	❑	❑	❑
f. The time I spent here could have just as easily been spent somewhere else	❑	❑	❑	❑	❑	❑
g. I am very attached to this place	❑	❑	❑	❑	❑	❑
h. I identify strongly with this place	❑	❑	❑	❑	❑	❑

E. Your closing comments and feedback are important to us.

1. How would you **rate this trip** to the Stonington region islands? (please check one)
___ A, very good
___ B, good
___ C, fair
___ D, poor
___ E, very poor

What was it about this trip that made you feel this way?
_____
_____

2. Is there **anything else** about the Maine Coastal island experience you would like to share with us?