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Evaluating the Economic Benefits and Future Opportunities of the Maine Island Trail Association*

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2011 Policy Analysis Exercise

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March 22, 2011

Evaluating the Economic Benefits and Future Opportunities of the Maine Island Trail Association

Policy Analysis Exercise

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EXECUTIVE SUMMARY

The Maine Island Trail is a 375-mile island trail stretching from the southern coast of Maine to the Canadian Maritimes. The 183 islands that comprise the trail are used recreationally by boaters and campers and are owned by land trusts, private individuals, and local, state, and federal governments. The Maine Island Trail Association (MITA) is a non-profit organization that partners with island owners to provide recreational access to these islands for visitors and acts as the sole steward of the island chain. MITA relies on donations, grants, and membership dues to finance its operations.

The goal of this study is to evaluate the economic impact that MITA provides to its various stakeholders. To answer this question, we addressed three sub-questions. First, what is the value of the Maine Island Trail as a recreational asset? Second, how does MITA actualize this value through its activities? Finally, how can MITA improve its operations to increase its value delivery?

We focused on four principal types of value and associated stakeholders: boaters and campers who derive use value; supporters of the Maine Island Trail who derive non-use value; local communities benefiting from tourism dollars; and the state government promoting public recreation and gaining tax revenue from tourism. We relied on three main data sources to quantify these sources of value: island log book entries from 2002-2010; a 2006 census conducted on user characteristics and attitudes toward the trail; and a detailed survey we fielded from December 2010-January 2011 on usage and spending patterns.

To measure the use value of the Maine Island Trail, we adopted an individual travel cost method to model demand for the trail using visitors' travel costs to the trail as a surrogate admissions price. From our demand function, we calculated that the Maine Island Trail affords users a consumer surplus of $91/person-day on average, or $3.2 million annually.

We measured the local economic impact of the Maine Island Trail by calculating total visitor spending in local communities and employing the IMPLAN input-output model to estimate the impact in the state economy. We found that $1.75 million in spending by visitors to the trail resulted in $2.1 million in gross output. We also performed a baseline study in which we excluded any visitors who would likely have spent money in the state of Maine anyway and found that annual baseline visitor spending of $553k resulted in $674k of impact. These value estimates should be considered lower bounds on the true value. In each assumption made, we consistently opted for a conservative posture. Furthermore, we chose not to estimate the non-use option and existence value due to measurability challenges.

We also found that the value of the Maine Island Trail would not be well-realized without MITA's activities. Through interviews with visitors, volunteers, outfitters, related organizations, and state government officials, we found that the Maine Island Trail's value was enabled due to MITA's access, information, and stewardship activities.

Finally, we assessed how MITA could best use these findings and improve its operations. Given that MITA's greatest value is derived by trail users, we feel MITA's current mission of responsible island recreation should not be altered despite its economic development benefits. However, MITA should leverage these findings to secure financial support from the municipal, state, and federal governments that benefit from its activities. We also felt MITA would greatly benefit by employing a Balanced Scorecard framework to guide and measure their operations, and to adopt activity-based costing to better align their expenditures with their mission. We also believe further data collection would help corroborate some of our critical assumptions. Finally, as our study did not assess the environmental impact of MITA's activities, we recommend a comprehensive ecological impact study be conducted.

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This study would not have been possible without the support of a number of people. We would first and foremost like to thank Doug Welch and the MITA staff enormously for their constant help and dedication to this project, for showing us the trail, and for making their organization and people accessible to us. With the generous help of Brian Marcaurelle, Eliza Ginn, and Danielle Chaput, we had access to every piece of information we requested.

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We owe a special thanks to Andrea Ednie for her census data and advice, and to Todd Gabe at the University of Maine for his tireless efforts to run our spending impact model. Thanks also to John Loomis at Colorado State University for his advice and expertise on the travel cost method.

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1: INTRODUCTION

The Maine Island Trail Association (MITA) is a non-profit organization dedicated to the responsible use of the Maine Island Trail, a collection of 183 coastal islands accessible to boaters and campers. Through partnerships with federal, state, and municipal governments, private island owners, and land trusts, MITA has converted a disparate collection of islands into a single water-based trail stretching from the Southern Coast of Maine to Eastern Canada.

As the sole steward of these islands, MITA provides island and trail information to users, arranges island access, and promotes responsible ecological use of the islands. However, MITA does not have a measureable sense of the value it delivers to different stakeholders, including its members, non-member trail users, local communities, and the state government. Furthermore, MITA finds itself confronting a changing landscape. The current management plan between MITA and the State of Maine's Bureau of Parks and Lands expires in 2014, and MITA is looking to build new relationships with the state government after the latest state election brought new leadership to Augusta.

The purposes of this study are to measure MITA's economic impact on its stakeholders and recommend areas of future opportunity. We structure this study by addressing three sequential questions: 1) What is the value of the Maine Island Trail as a recreational asset? 2) How effectively does MITA actualize this value to its stakeholders? 3) How can MITA improve its strategy and value delivery?

Section 2 of this paper addresses the first question, employing a travel cost model and input-output model to measure the value of the Trail to users and local communities, respectively. Section 3 provides background on MITA's organization, activities, and sources of value. In Section 4, we identify future opportunities for MITA and make recommendations. Section 5 summarizes our findings and concludes.

2: VALUING THE MAINE ISLAND TRAIL

Background on the Trail

The Maine Island Trail is a 375-mile island trail stretching from Maine's southern coast to the Canadian Maritimes in Eastern Canada. Approximately a third of the 183 islands are publicly owned by municipalities, the State of Maine, or the federal government; another third are owned by private individuals or businesses; and the remaining islands are held by private land trusts and conservancies. The ownership breakdown of the Maine Island Trail is diagrammed in Appendix 1. By partnering with the Maine Island Trail Association (MITA), these owners add their islands to the Maine Island Trail. This partnership commits MITA to steward the islands, while the owners agree to make their islands accessible to trail users.

Users visit the Maine Island Trail from all over the United States and Canada, along with a few overseas visitors, but they visit predominantly from New England (45% are from Massachusetts and Maine) (Ednie 2007). The island trail is divided into nine main regions. From south to north, they are: Southern Coast, Casco Bay, Western Rivers, Muscongus Bay, Penobscot Bay, Deer Isle, Mount Desert, Downeast, and the Canadian Maritimes. Appendix 1 provides a map of the trail broken down by region. Regions near population centers and with calm waters, like Casco Bay and Deer Isle, attract widespread use, while the more hazardous waters of Downeast and the Maritimes see little use.

The predominant activities on the Maine Island Trail are boating and camping. Kayakers comprise more than half of users, with sailors and power boaters frequenting more popular regions. The most popular islands have campgrounds and latrines set up by MITA, while others have no infrastructure at all. Depending on the ecological needs of the islands and preferences of the owner, some islands specify restrictions such as a cap on visitors or day-use only. Boaters often hire guides (15% of groups) or rent boats and equipment from local outfitters (Ednie 2007). About half of users visit the trail for a day trip, while the other half stay for an overnight trip of two to three days on average.

Stakeholders and Types of Value

The first step in assessing the value provided by MITA is deriving the value of the Maine Island Trail itself. Valuing a recreation site is quite different than valuing a market asset that could be valued through discounted cash flow analysis, for example. Recreation sites typically have multiple types and recipients of value, and minimal cash flows. The Maine Island Trail has four unique types of value for its four primary stakeholders.

Users (Use Value)

Users of the Maine Island Trail are the kayakers, power boaters, sailors, and campers that visit the island trail. The value they derive from the trail, use value, is the most obvious source of value for any recreation site. Quantifying use value, however, is challenging. The travel cost method is the most popular and theoretically sound way to estimate the use value of a recreation site. In Section 2(B), we utilize survey data and ArcGIS™ mapping to employ an individual travel cost method to model the demand for the Maine Island Trail and estimate the aggregate consumer surplus for users.

Potential Users and Supporters (Non-use Value)

Recreation sites and environmental resources are also unusual goods in that they provide significant value for non-users as well as users. The value provided to non-users can be decomposed into two categories: option value and existence value.

As Weisbrod describes, option value accrues to "people who anticipate purchasing the commodity (visiting the park) at some time in the future, but who, in fact, never will purchase (visit) it" (1964). It is derived from the uncertainty of both future demand and supply of the recreation site (Freeman 1984). An individual might be uncertain of his future demand for the recreation site due to price or income uncertainty, or for exogenous reasons like weather or scheduling (demand uncertainty). He might also be unsure of the future availability or quality of the site in question (supply uncertainty). Concretely, the option value would manifest as an insurance premium paid to maintain the option of future use, above the consumer surplus derived from the visit.

Value also accrues to individuals who place a value on outdoor recreation sites for their sheer existence. As Stavins describes, existence value can be broken down into enjoyment derived from the knowledge that others are enjoying the site (vicarious consumption) and value derived from the knowledge that the wilderness is protected and recreation is promoted (stewardship). (1984)

Option and existence value are very difficult to quantify in practice, particularly because preferences are unrevealed, in contrast to use value. Option value is sometimes expressed as some multiple of use value in economic literature. However, the

theoretical grounds behind this practice are not firmly established, and this study will not attempt to quantify option or existence value.

Local Communities (Local Economic Impact)

Recreation sites also benefit neighboring communities through tourism spending by users. Maine Island Trail users buy fuel at local gas stations, eat at local restaurants, stay at bed and breakfasts, and rent and purchase equipment from outfitters. We term this value "local economic impact" (LEI). LEI includes direct spending at local establishments, the pass-through spending received by other establishments (indirect spending), and further spending induced by the increased income of employees and proprietors (induced spending). In Part 2(c), this study utilizes the IMPLAN input-output model to quantify the indirect and induced effects of tourism spending on local communities.

State Government (Tax Revenue)

The Maine Department of Conservation's Bureau of Public Lands (BPL) contributes $50,000 to MITA each year for stewardship operations on state islands. The BPL derives value from this investment not only in fulfilling its responsibility to promote recreation and protect natural areas in Maine, but also through tax revenue collected from user spending on the Maine Island Trail. Section 2(C) also calculates the portion of the State's investment that it recovers through additional tax revenue.

2(A): DATA SOURCES

Our study draws upon three principal sources of data: (1) island log-book entries from 2002-2010; (2) a 2006 census of island visitors to the Deer Isle region of the Maine Island Trail; and (3) an online survey of a sample of users of the Maine Island Trail conducted from December 2010-January 2011.

Log Books

Since 2002, MITA has distributed log books to the campgrounds of high-traffic islands on the Maine Island Trail at the start of each season. Users of the trail are encouraged but not required to log their stay. Log books ask for users' name, home state, type of boat, date of visit, length of stay, type of party, and comments on their stay. A sample log book entry can be found in Appendix 2. These entries provide MITA with a valuable source of feedback on the quality of islands, campgrounds, and services. Over the course of nine seasons, log book entries were collected from 85 different islands, for a total of 13,416 entries. These provide our basis for quantifying the total number of visitors to the Maine Island Trail.

Deer Isle Census

In 2006, MITA and the Maine Department of Conservation jointly commissioned a project to better understand visitor characteristics and attitudes toward the Maine Island Trail. The Deer Isle region of the trail was selected because of its popularity, geography, and nature as a working waterfront. Deer Isle, the main island in this archipelago, is located approximately 55 miles south of Bangor, Maine. The study sampled across 23 islands in this region, including some islands stewarded by other

organizations, but the focus was on the seven public islands managed by MITA (Ednie 2007).

The survey was conducted through a brief on-site visitor interview accompanied by a more extensive mail-back questionnaire. Andrea Ednie of the University of Maine at Machias conducted the interviews in person, visiting each island at least once during the day and once in the evening or early morning to intercept both overnight and day users (Ednie 2007). Ultimately, 435 individuals were interviewed and agreed to participate in the mail-back survey, of which 361 were actually completed. From this survey, information was collected on visitor demographics, usage patterns, and recreation attitudes. Critically, the census found the response rate for island log books, allowing a full estimate of island visitations.

Online Survey

Our study also required data beyond the two existing sources, so we we designed and fielded an online survey. Survey participants were asked about their spending patterns while visiting the Maine Island Trail, details about their travel to the trail, and demographic and use information to supplement and corroborate our census and logbook data. This study was designed and conducted using *SurveyMonkey*, a leading online survey service. The survey was distributed in late December 2010 to MITA's mailing list of roughly 7,000 recipients, including members and non-members, users and non-users. A total of 785 responses were collected for approximately one month, from December 17, 2010 until January 20, 2011.

The survey questions were carefully designed not only to answer our questions, but also to minimize bias. Couper highlights four major sources of error that arise in web surveys, including sampling, coverage, non-response, and measurement error (Couper 2000). In order to minimize these types of error, we were careful to ask very specific questions and to avoid hinting at the intended use of our survey, among other measures. A print version of the survey can be found in Appendix 3.

2(B): CALCULATING USE VALUE

Use value is the most intuitive benefit of a recreational site. In the case of the Maine Island Trail, it is the value provided to the boaters and campers who visit the trail. Use value for recreational sites is typically measured as the consumer surplus received by visitors.

The consumer surplus for a standard market good is the difference between a consumer's willingness-to-pay (reservation price) for a marginal unit and the price at which it is actually consumed, aggregated over the total quantity consumed. In general, the demand curve for a standard market good slopes downward because a consumer is less willing to pay for a second unit than for the first. Figure 2.1 shows the consumer surplus for a standard market good.

Figure 2.1: Demand for a Market Good

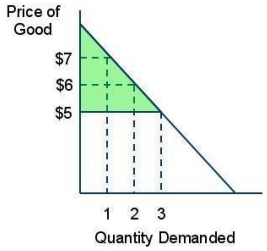
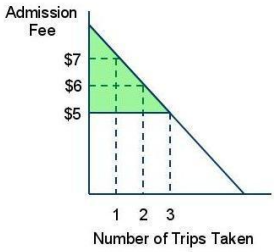


Figure 2.2: Demand for a Recreation Site



Demand for a recreation site can be visualized in a similar manner, with the admissions fee as the price, and the number of trips made to the site as the quantity, shown in Figure 2.2. However, the admissions fee the Maine Island Trail is zero, making it a non-market good. Demand for site visits cannot be

derived from observable use responses to the admissions price. An alternate estimation technique is required.

The three most common methods of estimating the value of a recreational resource are: (1) unit day values, (2) contingent valuation, and (3) travel cost method. The unit day values method relies on the informed opinion of experts to approximate the willingness-to-pay of users of a recreational site (Stavins 1984). It is the simplest but also least sophisticated method. The contingent valuation method asks users their willingness to pay for access to a recreation site (equivalent variation) or their willingness to be compensated for the removal of this access (compensating variation) (McConnell 1985). This method tends to exhibit bias due to strategic responses from users (who might want to see a particular outcome) and due to its hypothetical nature.

Travel Cost Method

The leading method to model demand for a recreation site is the Travel Cost Method (TCM), which is based on the fact that recreation sites are unique in that users must travel to the site in order to consume them, and that the travel and time spent at the site implies a number of indirect costs that dominate any access fee paid. These travel costs provide a "surrogate price" for the consumption of a recreation site (Burt and Brewer 1971).

The Travel Cost Method was first proposed by Harold Hotelling in response to a request from the National Park Service asking for methods to measure the economic benefits of national park areas (McConnell 1985). It was later formalized by Marion Clawson (1959), predicting the visitation rates of certain U.S. National Parks per 100,000 population as a function of the cost per visit (McConnell 1985). The TCM is accepted by the U.S. Water Resources Council for estimating non-market use value in water-based recreational resource studies (Bowker et. al. 1996).

This study employs a version of the TCM known as the Individual Travel Cost Method, which derives consumer surplus from the individual visitors themselves instead of average visitation from geographic zones, as the model was originally specified. This Individual Travel Cost Model (ITCM) preserves the heterogeneity of the visitor travel costs and of the visitors themselves. Moreover, Brown and Nawas, who first focused on the topic of aggregation, found that using individual observations instead of aggregating them into zones results in higher efficiency of estimates, reduces intercorrelation, and permits an estimation of distance and costs simultaneously (Brown and Nawas 1973).

Limitations, Assumptions, and Alternatives

While used extensively in recreational valuation studies, the Individual Travel Cost Method we use is bound by several assumptions:

- Individuals respond to changes in the travel-related component of the cost of a visit in the same way they would respond to a change in the price of admission.
- There is no pleasure or displeasure derived from the travel to and from the site. For those who reach the Maine Island Trail by sailboat, for example, special consideration must be paid.
- An individual's most recent visit to the Maine Island Trail is representative of all previous visits (in terms of length, activity, and mode of transportation).
- Visits to the Maine Island Trail are not part of a multi-destination trip.

A few of these assumptions inform specific data analysis decisions, as described below.

Functional Form: Modified from Stavins (1984)

The functional form of the ITCM participation function is:

$$V_i = f(TC_i) \quad (1)$$

where:

V_i = the number of visits individual i made to the Maine Island Trail in 2010

TC_i = the travel cost for individual i

For users who drive to the Maine Island Trail, TC_i is the product of the round-trip distance traveled from origin to the site (D_i), the cost per mile (CPM_i), and the number of cars taken ($CARS_i$), divided by the size of the party (N_i).

$$TC_i = (D_i)(CPM_i)(CARS_i) / (N_i) \quad (2)$$

For users who fly to the Maine Island Trail, we use the round-trip airfare from origin to destination airport.[1] Long-distance boaters' direct cost of transportation is assumed to be zero because they presumably derive significant utility from the mode of transportation, violating an assumption of the travel cost method.

The opportunity cost of the time spent traveling to the site and time spent at the site is sometimes included in user travel costs (Freeman 1993). The most common estimate of the opportunity cost of leisure time is as a proportion *k* of the individual's wage rate, W_i.[2] Including these time costs, however, is quite challenging and contentious in economic literature due to the fact that leisure time is not necessarily interchangeable with working time and the value of an hour of time is highly subjective from person to person (Smith *et al.* 1983). The fraction *k* thus varies in literature from 0% to 100% of the full wage. In order to provide a confident baseline use value, we decided to exclude time costs from our consumer surplus estimation. However, we do include the opportunity cost of on-site time in order to identify multipurpose users, explained below.

Estimating travel distance and time

Accurately employing the travel cost method depends on precision in calculating these travel costs. As Bateman *et al* (1996) note, "distance and duration data underpinning most TC studies have often been obtained through very crude simplifications," using the unweighted centroid of large zones as origin points or assuming a constant speed of travel from every origin point.

To improve the reliability of our findings, we employ a Geographic Information System (GIS)-based method to calculating travel distances and times for visitors who drove to the trail (constituting the overwhelming majority of visitors). The ArcGIS™ software, combined with a supplemental North American street-map database containing local road and speed limit information, allows precision in estimating travel distances and times for each individual.

[1] We use 2011 airfares found on kayak.com from origin airport to Portland airport (PWN) during the first week (Friday to Friday) during the month traveled.

[2] Wage rate is calculated as annual income divided by hours worked per week and a fifty week work year. Since income level was only identified through bands instead of explicit levels, we imputed an explicit income level within each band using median income levels in 2009 US Census income brackets.

The survey employed in our study collected information on both the individual's origin zip code and the destination region on the Maine Island Trail. Where no zip code was provided, one was imputed if the individual provided a city and state instead. For each destination region, we imputed the zip code corresponding to MITA's most-used launch ramp to access the islands. Since many individuals visit multiple regions along the trail, we calculated the least-time roundtrip route from the origin zip code to each launch point visited. A map of the routes from New England-based users is included in Appendix 4.

In order to translate travel distance into travel cost, we used AAA's calculation of operating costs. In 2010, the operating cost (including gas, maintenance, and tires) of a medium sedan was 17.3¢ per mile (AAA 2010). Notably, this figure excludes insurance and vehicle depreciation, some fraction of which would accrue regardless of vehicle use.

Multi-purpose Trips

One of the principal challenges to the single-site travel cost methods this study employs is the fact that many visitors travel to Maine for multiple purposes, only one of which is using the Maine Island Trail. Attributing the entirety of users' travel costs to the Maine Island Trail would thus inflate our calculation of their willingness to pay and consumer surplus. Ideally, we would include these rival destinations in our estimations and generate a price for them as well. However, this presented an unmanageable number of rival sites.

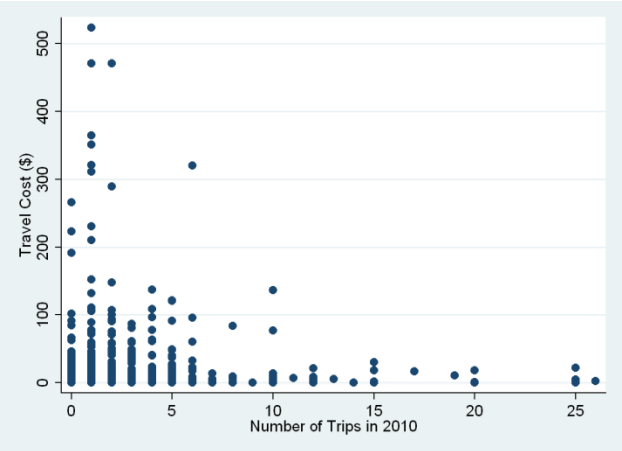
Instead, we utilized two mechanisms to filter out survey respondents on a multipurpose trip. First, we excluded survey respondents who said the Maine Island Trail was not the primary purpose of their trip. Second, we excluded respondents whose travel costs exceeded the opportunity cost of their time on the trail. Our formula for the opportunity cost of on-site time is given in equation (3). It is the product of the opportunity cost of leisure time kW_i, the number of days on-site (T_i), and the number of hours worked per day (H_i).[3] We choose k=0.3, assuming that 30% of full wage represents the opportunity cost of an hour of leisure. This is a common choice for k in similar literature (Amoako-Tuffour and Martinez-Espiñeira 2008).

$$OCS_i = (k)(W_i)(T_i)(H_i) \qquad (3)$$

While we did not include the opportunity cost of onsite time in our travel costs, we felt it was appropriate to use this time cost to screen out multi-purpose visitors, under the assumption that users would require enough time on the site to make the travel worth it if it was the sole purpose of the trip.

Empirical Estimation

Figure 2.3: Demand for the Maine Island Trail



[3] We assume a five-day work week

Table 2.1: Travel Cost Data Summary

	Trips Per Year	Travel Cost ($)	Party Size	Trip Length (Days)	Annual Income ($)
Mean	3.86	29.09	3.84	3.1	110,802
Median	2	8.74	3	2	97,222
Min	0	0	1	1	20,938
Max	70	553	30	90	425,226
Variance	35.23	4160.31	12.34	26.69	543.4
N	525	569	586	576	614

Table 2.1 provides basic summary data on travel costs and visitor usage, and Figure 2.3 shows the individual demand curve. Using the travel cost function (2), we can now estimate the demand function (1).

As Ziemer, Musser, and Hill (1980) note, the choice of the functional form of the demand equation can dramatically affect consumer surplus calculations. Recreational demand studies in the past have often chosen from among linear, semi-log, or double-log forms. Recently, use of Poisson and negative binomial regression methods has gained popularity in recreation demand estimation. Both methods are well-suited for ITCM participation functions given the non-negative, integer nature of the dependent variable. Negative binomial regression is often used in place of Poisson regressions when the variance of the dependent variable is significantly greater than the mean – a phenomenon known as over-dispersion. Negative binomial regressions capture the extent of over-dispersion in a constant α.

The negative binomial regression provided the best fit for our data, particularly given the large difference between mean and variance in the dependent variable, V_i. We did not need to run the zero-truncated version of the negative binomial regression because we have cost data even for those users who did not take a trip in the past year. The dependent variable is the number of trips to the Maine Island Trail in 2010 per visitor. We include travel costs, income level, trip duration, and year of birth as regressors. We exclude the 99th percentile of both trip frequency and total cost to eliminate extreme outliers. The regression results are presented in Table 2.2.

Table 2.2: Regression Results
(N = 291, p-values in parentheses)

Travel Cost	-0.00353 (0.012)
Length of Last Trip	-0.075 (0.115)
Income	0.00000107 (0.184)
Year Born	-0.000167 (0.977)
Constant	1.622 (0.888)
α (Overdispersion)	-0.452 (0.001)

The travel cost coefficient is negative, demonstrating that users visit fewer times as the travel cost increases, and this finding is significant at the 5% level. The constant α is highly significant, indicating that the over-dispersion in this sample is significant, so the negative binomial form is appropriate.

Consumer Surplus Estimation

The final step of benefit valuation is estimating consumer surplus using the regression results above. For a negative binomial regression, the consumer surplus per trip is equal to the negative reciprocal of the regression coefficient on travel cost (Loomis and Creel 1990). We thus calculate a consumer surplus per person per trip of $283.29. An average trip lasts 3.1 days, translating into a consumer surplus per person per day of $91.38. This is

consistent with consumer surplus estimations in similar studies. From 1967-2003, the US Department of Agriculture compiled 20 studies valuing economic benefits from floatboating, rafting, and canoeing, which had a mean consumer surplus estimate of $100.91 per person per day(Loomis 2005).

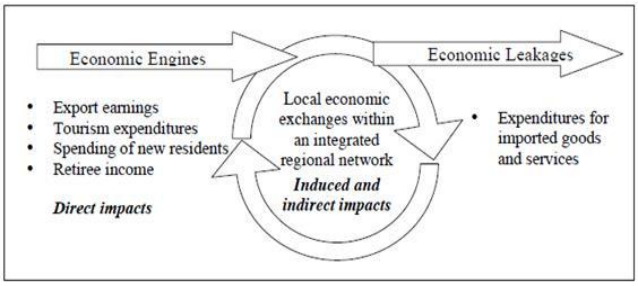
To calculate the aggregate annual consumer surplus from the Maine Island Trail, we rely on 2002-2010 season logbook data, which provides the number of group trips and average group size. After accounting for non-response in logbooks using 2006 census data, we find an average annual visitation rate of 11,385 person-trips. We consequently find an annual consumer surplus of $3.23 million.

2(c): Local Economic Impacts (LEI)

In addition to the pure recreational value of the Maine Island Trail, we seek to measure the local economic impact (LEI) of visitor spending on local communities and on the state of Maine as a whole. Visitors to the trail often stay overnight in hotels, purchase meals in local restaurants, rent boating equipment, and hire guides for their visits. The businesses which are patronized by visitors benefit from the revenues they receive. The benefits or so-called "producer surplus" to such businesses can be calculated as the difference between these revenues and the minimum payments the businesses would require to produce (Stavins 1984).

The benefits to the local community extend beyond this direct producer surplus, though. A restaurant in Maine might purchase lobster from local fishermen, while a hotel might purchase linens from a local supplier. Additionally, the servers at the restaurant are likely to spend a portion of their wages at other local businesses. Such indirect and induced impacts are more difficult to track than the direct impacts from a visitor's spending, but they are no less important to the economy of the local community. These secondary expenditures circulate through the local economy until they eventually "leak" out of the local region to purchase goods and services produced externally or to pay federal taxes, for example. When expenditures circulate in the economy, an expenditure of one dollar usually causes a local impact greater than one dollar. In order to account for this, "multipliers" must be determined empirically. The cycle of expenditure, circulation, and leakage is shown below in Figure 2.4.

Figure 2.4 Economic Impact Model (Pollock 2007)



Challenges

Data Collection

A number of challenges exist in calculating LEI for a recreational site such as the Maine Island Trail. Pollock noted in 2007 that such an assessment can be particularly difficult "in areas with a large geographic range, poor use records, multiple access points, and great variation in users and visitation rates." With 375 miles of trails, no controlled access, and countless launch points along the coast of Maine, the Maine Island Trail fits this description. As a result, we must rely on a variety of unique and complementary sources of data so that the gaps and idiosyncratic biases of one dataset may be corrected by another dataset.

Counterfactual

A further challenge arises in identifying what would have happened if the users did not visit the Maine Island Trail. It turns out that not all visitor spending should be counted. For any expenditure in the local community, it is critical to answer the question, "Would this spending have occurred in the absence of the recreational site?" Only if the answer to this question is clearly "no" should such expenditures be included in a calculation of local economic impact. In order to account for this, many studies exclude the spending of local visitors because they likely would have spent money locally regardless of the existence of the trail (Stynes et al, 2000). In our study, we have chosen to be even more conservative by highlighting the spending of two highly restricted types of users:

1. Out-of-state users who visited Maine primarily to use the Maine Island Trail and who were not considering a visit to other destinations in Maine. The expenditures of such users can be classified as tourism exports in the "Economic Base Model" described by Pollock (2007).
2. In-state users who visited the coast primarily to use the Maine Island Trail who strongly considered alternative destinations outside of Maine. The expenditures of such users can be classified as import substitutes, and are likely to be significantly smaller in magnitude than the out-of-state category (Power 1996).

Economic Impact Framework

In order to determine the local economic impact of national parks, an economic impact framework dubbed "Money Generation Model" (MGM) was developed in 1995 for the US National Park Service (NPS). In 2000, Drs. Stynes and Propst of Michigan State University released an updated version of the model, MGM2 (Fish 2010). These models are designed specifically to examine the LEI of park visitor spending. While we do not use the MGM2 model itself in this analysis, we have adopted its framework.

According to Stynes et al (2000), economic impact to the local community can be defined in terms of the sales revenue generated for local firms, the number of jobs supported by visitor spending, the personal income created for employees and business owners, or the total value added to a community measured as the sum of personal income, business profits, and tax revenues. The link between visitor spending and these economic impacts can be defined in terms of economic multipliers. The resulting MGM2 framework to calculate the LEI of a recreational site is as follows:

$$\textit{Economic Impact} = \textit{\# Groups} \times \textit{Spending per Group} \times \textit{Multiplier}$$

This framework breaks the challenge of calculating economic impact into three distinct parts:

1. *Economic multipliers* are usually calculated using an input-output model of a region's economy, such as RIMS or IMPLAN.
2. *Average visitor spending* which, since it is spread heterogeneously through the economy of a region, must usually be derived by surveying recreational users.

3. *Number of visitors* can be derived using a variety of methods. It is important to note that number of visitors can vary by orders of magnitude from one recreational site to another, making it the most significant factor in this LEI framework.

Within this framework, it is critical to "margin" visitor spending. In other words, some fraction of visitor spending is immediately passed to indirect suppliers, only some of whom are in the local community. For example, expenditures at a gas station in Maine are heavily margined, resulting in direct effects which are small relative to total expenditures.

Input-Output Models

In order to understand the LEI that results from visitor spending, it is critical to understand the structure of the local economy. Input-output models are detailed mathematical models that delve into the complex interrelationships among the participants of a local economy. For example, the RIMS II system (Regional Input-Output Modeling System) developed by the Bureau of Economic Analysis at the US Department of Commerce is based on a massive "I-O Table" which represents national and regional data for the inputs and outputs of nearly 500 distinct industries (BEA RIMS).

In this study, we have chosen to use the IMPLAN input-output model developed by MIG, Inc. We used an IMPLAN data package which models the flow of money and more than 500 commodities among 440 distinct industries in and between each of Maine's sixteen counties. Furthermore, IMPLAN calculates "Social Accounting Matrices" (SAM) to account for not only market but also non-market transaction such as taxes and unemployment benefits (Alward 2009). In addition, IMPLAN models such effects as the differences in spending patterns between low income and high income individuals in a community (Lynch 2000). Due to these and other powerful features of the IMPLAN model, it is commonly used for recreational economic impact studies (Pollock 2007 and Stynes 2000).

IMPLAN, like other input-output models, calculates economic impact in a number of ways, as defined below (Stynes 2000):

- *Sales:* the sales of local business to recreational users.
- *Employment:* the number of jobs supported by visitor spending.
- *Personal Income:* wages, salaries, benefits, and earnings of employees and business owners supported by visitor spending.
- *Output:* The gross product supported by visitor spending.
- *Taxes:* Local, state, and federal tax revenue supported by visitor spending.
- *Direct effects:* the changes in employment, personal income, and output in businesses that directly receive visitor spending.
- *Indirect effects:* the changes in employment, personal income, and output in industries that supply goods and services to the firms that sell directly to recreational visitors. For example, a restaurant will have numerous "backward linked" industries including farms and furniture manufacturers, some fraction of which may be within the local region.
- *Induced effects:* the changes in employment, personal income, and output that result from household spending from personal income earned in directly and indirectly impacted industries.

Spending Categories

For the purpose of this study, visitor spending was divided into a number of distinct categories. These distinctions were made for two critical purposes. First, each category of spending has different impacts on the local economy. For example, spending at restaurants tends to have fairly high multipliers compared to gasoline expenditures in which only a small margin stays within Maine. Second and no less important, the variety of spending categories was meant to remind survey respondents of the types of expenditures they made during their visit.

Respondents were asked to report their personal expenditures (or their household's expenditures if they traveled with family) for eleven categories: Admissions and Access Fees, Boat / Equipment Purchases, Boat / Equipment Rentals, Camping Fees, Clothing, Groceries, Local Transportation or Ferries, Hotels / Motels, Mooring / Dockage Fees, Professional Guides, Restaurants / Bars. Expenditures within a twelfth category, Transportation Fuel, were imputed based on the distance the respondent drove within Maine.

In order to evaluate economic impact, each of these spending categories was matched to one of the 440 IMPLAN industries. The corresponding industries are detailed in Appendix 5.

Stratified Sampling

For the purposes of visitor spending, we anticipated that different types of trail users might exhibit significantly different visitation and spending patterns. This, combined with the fact that we felt that different user types might be represented at different rates in the survey versus the logbooks, led us to explore a stratified sampling of the survey respondents.

Among the stratification dimensions that we explored were visitor origin, destination, trip length, vessel type, and group size.

- *Origin*: Survey respondents were classified into three categories: local visitors from Maine, non-local visitors from Maine, and out-of-state visitors.
- *Destination:* The 183 islands of the Maine Island Trail are divided into nine regions. Each survey respondent was classified according to their destination region along the coast of Maine.
- *Trip Length:* Survey respondents reported the number of days they spent on the trail.
- *Vessel Type:* Visitors were classified according to the type of vessel they used to access the trail: sailboat, powerboat, or paddle-boat.
- *Group Size:* Survey respondents reported the number of people in their groups.

While exploring these stratification options, we remained cognizant that stratification would reduce the sample size of each stratum, potentially negatively affecting the confidence of our conclusions. As a result, we sought to segment respondents into a small number of categories that were relevant to this study while exhibiting statistically significant spending and visitation variations.

Use of Data Sources

The LEI analysis made extensive use of each of the three main sources of data. The logbooks contain a highly detailed record of visitation patterns along the Maine coast over a long period of time. As such, we used the logbooks to determine the number of visitors to the trail, classified along the same stratification dimensions listed above.

To fully determine visitation rates the logbooks could not be used on their own, however.

Since visitors to the trail were not required to fill out logbooks, we relied on the 2006 census to determine the non-response rate. In the census, Ednie found that 49% of the visitors who were interviewed completed a logbook entry. She also found significant variations in non-response rate for certain types of users. (Ednie 2007)

Since the census and the logbooks contained no spending information for visitors, the survey was used to determine the average spending per group in each of the spending categories listed above. The survey was also used to understand whether visitors had other reasons the fraction of visitors who have determine whether the respondent's time and expenditures in Maine

Results

Spending per Group

In order to calculate spending for each group, we needed to adjust the survey respondents' reported spending numbers based on the size of the group. Respondents were asked to report their total household spending. For each group, we therefore needed to estimate the number of family members as well as the number of non-family members. For example, if a respondent reported traveling with a spouse in a group of six people, we divided the self-reported spending values between the two family members to estimate spending per person. We then multiplied the spending per person by the group size of six to calculate the total spending per group.

We also adjusted for two important types of outliers. First, three respondents reported anomalously large equipment purchases. Since these three data points heavily skewed our data toward high spending values and each of these three respondents reported that their visit to the Maine Island Trail was not the primary reason for their visit to Maine, we felt that it was both justified and conservative to ignore these three expenditures in our analysis. Second, during the process of converting self-reported household spending values to total group spending, a small number of groups exhibited anomalously large increases. We attributed these increases to two sources: respondents who paid the expenses for most of the group members, and respondents who reported the total expenditures of the group instead of his or her household. For the ten percent of groups in which self-reported spending values inflated most heavily during our adjustment to total group spending, we chose to use the self-reported values. Again, we felt this to be a justified and conservative assumption.

Upon completing these steps, we found that the average survey respondent had a total group spending of $660, almost two thirds of which was spent on groceries, restaurants, and lodging. We needed to go further, though, and determine the best way to segment the survey respondents.

Across each of the stratification dimensions described above, we found interesting heterogeneities. For example, as MITA predicted the average sailboat user reported spending more than the average kayaker, though this discrepancy was statistically insignificant and was almost completely explained by the fact that sailboat groups are larger and spend more time on the trail than kayak groups. In the end, we chose to segment recreational users of the Maine Island Trail into four categories:

1. In-State Daytrip: Daytrip groups from Maine spent an average of $114 per group.
2. In-State Overnight: Multiday groups from Maine spent an average of $408 per group.

3. Out-of-State Daytrip: Daytrip groups not originating from Maine spent an average of $684 per group.
4. Out-of-State Overnight: Not surprisingly, multi-day groups not originating from Maine spent more than other groups, averaging $1,177 per group.

These four categories exhibited large and statistically significant ($p<.001$) variations in spending. Furthermore, each category had a large number of respondents, and could be uniquely identified in both the survey and the logbooks.

In Appendix 6, spending data is detailed for each of the four visitor segments, as well as by vessel type and destination region.

Number of Groups

In order to determine the annual number of groups by segmentation type, we combined logbook data with the non-response ratio found in the 2006 Census. From the logbooks, we attempted to classify each of the 12,022 entries from the eight year period 2003 through 2010 into one of the four user segments. Based on the very large sample size of the logbooks, we felt comfortable further stratifying these responses by the region of the trail they visited, leaving us with a total of 32 groups (four user types for each of the eight regions of the trail within Maine; the ninth region of the trail, the Canadian Maritimes, was lightly represented in the survey data, absent from the logbook data, and lies across the Canadian border, and was thus excluded).

Unfortunately, a large number of logbook entries (~49%) lacked data on the state of origin. In order to determine if such incomplete entries were more likely to pertain to one of the four categories of visitor, we performed a detailed review of the comment, name, and group affiliation data for a random sampling of numerous entries with incomplete state data. Based on this meticulous review, we were able to positively discern the state of origin for only two of the entries we inspected: one was from in-state, and one was from out-of-state. One can certainly imagine that distant travelers or local residents might be more eager to identify their origin; however, in the absence of clearer data, we assumed that in-state visitors had the same propensity to omit information about their state of origin as out-of-state visitors. This assumption allowed us to complete the logbook stratification.

In order to determine the total number of visitors, we needed to estimate the number of visitors who did not complete a logbook entry. Ednie found in the 2006 Census found that 49% of the visitors surveyed had completed a logbook entry. Interestingly, she found that 67% of MITA members completed a logbook entry whereas only 40% of non-members completed a logbook entry. Since Ednie encountered a very high rate of out-of-state visitors, we hypothesized that there might exist a similar disparity in logbook completion rates for in-state visitors compared to out-of-state visitors.

We contacted Ednie who was able to retabulate her census results according to in-state and out-of-state visitors. We found only an insignificant discrepancy: 50.0% of the 84 visitors from Maine reported completing a logbook compared to 47.7% of the 220 visitors from out-of-state. Due to the statistical insignificance of this result, we chose not to stratify the census results for logbook non-completion, instead keeping the 49% value that Ednie originally reported.

The logbook non-completion figure plays a central role in our economic impact analysis. Unfortunately, we had no option but to assume that Ednie's findings from one summer of use of the Deer

Isle region of the Maine Island Trail could be applied to our entire data set. Future studies would be well served by a more refined understanding of logbook non-completion rates in various regions of the trail and by different types of users.

Based on our analysis of the logbooks and Ednie's non-response rate, we estimate that 3064 groups visit the Maine Island Trail per year. 41% of these groups spent at least one night on the trail while 51% traveled from out-of-state. The most popular regions of the trail were Casco Bay and Deer Isle, which received more than two-thirds of visitors; the Muscongus Bay region ranked a distant third with 400 annual visiting groups. Visitation data is presented in detail in Appendix 7.

Counterfactual and Baseline Spending

For those concerned with the local economic impact of visitor spending on the trail, it is critical to ask, "Would this spending have occurred were it not for the Maine Island Trail?" As described previously, we applied a rigorous test based on survey responses for both in-state and out-of-state visitors.

On average, we found that 23.3% of survey respondents passed this counterfactual test. As with group expenditures, though, we chose to calculate the rate at which respondents pass the counterfactual test for each of the four aforementioned strata. The percentage of spending in each segment which passed the test was classified as "baseline" spending. Not surprisingly, we found very significant variations among the baseline spending rates for each visitor segment:

1. In-State Daytrip: Only 1.9% of daytrip groups from Maine passed the test.
2. In-State Overnight: 4.2% of multiday groups from Maine were classified as baseline.
3. Out-of-State Daytrip: 20.6% of daytrip groups not originating from Maine were classified as baseline.
4. Out-of-State Overnight: 51.5% of multiday groups not originating from Maine were classified as baseline.

Because of the rigor of this test, it seems likely that the true economic impact of the Maine Island Trail lies somewhere between the baseline spending figure we calculate and the total spending values.

Local Economic Impact Results

Based on the total number of each type of visiting group for each region of the park, combined with the typical spending patterns found for each type of group, we were able to estimate the total spending for each spending category in each region of the trail. In order to input our analysis to IMPLAN, we linked each spending category to one of IMPLAN's 440 industries. Due to some overlap between categories, the twelve spending categories we examined were reduced to nine IMPLAN categories. We further classified these expenditures by county: the eight regions of the trail that we examined were situated within seven counties.

We estimate that visitors to the Maine Island Trail spend a total of $1.75 million in the local community each year. Of this, $1.4 million comes from out-of-state visitors and $550,000 can be classified as baseline spending. Appendix 8 presents total and baseline annual expenditures by region and spending category.

Using IMPLAN to perform an analysis for the entire state of Maine, we found that total visitor spending supported $2.1 million in total state output, and provided $760,000 in income to 27 workers. If we focus only on baseline spending, we esti-

mate that visitor spending supported $674,000 in total state product while providing $240,000 in income to 9 workers. These baseline expenditures also result in $54,000 of local and state tax revenue, a figure which is noteworthy for exceeding BPL's annual grant to MITA. As mentioned previously in the discussion on baseline spending, it is likely that the true economic impacts of the Maine Island Trail on the local community lie somewhere between the baseline figures and the total impact.

The local economic impact of the trail is detailed in Appendix 9, in which impact is also categorized by industry and county.

A Note on Guided Groups

In our analysis, we found that visitors to the Maine Island Trail spend $52,000 per year on professional guiding services, representing only 3% of total visitor expenditures. However, a 2004 report conducted in collaboration with the Maine Association of Sea Kayak Guides and Instructors (MASKGI) estimates that the 22 Maine outfitters affiliated with MASKGI generated $4.5 million in gross revenue (Gabe 2004).

The sharp discrepancy between these two values may be explained by outfitter customers who are not visiting MITA islands. Alternatively, it may be an indicator that visitors hiring guides comprised a disproportionately small fraction of the population that received our survey (namely MITA's membership mailing list), which would bias our results downward.

In fact, there seems to be strong evidence for both explanations. The owner of one outfitter in the Deer Isle region reported many types of income, with guided visits to the Maine Island Trail accounting for just a subset of those revenues (Baker Interview 2011). This owner also reported that MITA members (i.e. those represented in our survey results) tended to know the trail well, often using the outfitter's low revenue "park and launch" services as opposed to full-fledged guiding services.

3: VALUING MITA'S ACTIVITIES

Section 2 of this study identified the economic value of the Maine Island Trail to its primary stakeholders. We cannot assume, however, that MITA's economic value is equal to that of the trail itself. MITA's value is shaped by the extent to which it enables and actualizes the value of the Maine Island Trail. In other words, would the Maine Island Trail's value be realized without MITA? A comprehensive treatment of this question requires first understanding MITA's background and current relationship with the Maine Island Trail, then identifying MITA's sources of value and value chain.

MITA Background

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.

- MITA's Mission Statement

In 1979, Philip Conkling and Barry S. Timson of the Mahoosuc Corporation submitted *A Management Plan for the Unregistered Coastal Islands of Maine* to the Maine Department of Conservation's Bureau of Public Lands. In that document, the authors highlighted the recreational potential of 125 unregistered islands off the coast of Maine. In the mid-1980's the Bureau of Public Lands, with the help of the Island Institute, surveyed each of the 125

islands, eventually identifying 40 islands capable of supporting recreational activities. (Nixon 2003).

In 1987, Dave Getchell, Sr., of the Island Institute's evaluation team advocated the idea of a water trail joining these 40 islands in an article for *The Island Journal*. In this article, he articulated the justification for and requirements of such a trail. In response to a proposal submitted to the Bureau of Public Lands by the Island Institute, the Maine Island Trail Association was formed in April 1988 as a partnership between the Island Institute, L.L. Bean, and the Bureau of Public Lands. In 1993, MITA separated from this partnership, forming the independent non-profit organization that exists today. (Nixon 2003) MITA was organized around a model of volunteer stewardship, through an Adopt-an-Island Program to partner island visitors with properties and spring and fall Cleanup Programs.

Beginning in 1995, MITA began to shift from self-directed volunteer stewardship to proactive management (Nixon 2003). The trail began expanding and diversifying in ownership type, and use increased significantly on public islands. Recreational activity on public Trail islands increased by approximately 50% between 1996 and 2003 due to booms in sea kayaking popularity and outdoor recreation generally, along with a positive economic climate and demographic shifts.

To respond to this booming demand, MITA and the Bureau of Parks and Land (BPL) hosted a series of island stakeholder meetings from 1999-2003. Stakeholders participated in the formation of MITA's new strategies. As Bill Baker, manager of Old Quarry Ocean Adventures, a Deer Isle-based outfitter noted, "There were meetings up and down the coast, with lots of questionnaires and discussions. They would discuss what to do with the islands, whether there should be campsites, how many of them, and on what islands. I got to know [MITA] well that way" (Baker Interview 2011).

These stakeholder meetings informed the drafting of "The Recreation Management Plan for the Public Islands on the Maine Island Trail: 2004-2014" between MITA and the BPL. This plan outlines the goals and activities of the organizations in managing the Maine Island Trail. Since that time, MITA has grown to include 183 islands, and has continued to expand the range of services provided to its stakeholders.

Organization, Activities, and Budget

Despite having moved into proactive management of the Maine Island Trail from volunteer-based stewardship, MITA remains a small organization, with six staff members and a $513,943 budget for 2011. This financial and human capital is supplemented by a large volunteer base and partnerships with numerous island owners and organizations. Its organizational structure is summarized in Appendix 10.

MITA's activities are primarily oriented towards serving MITA's members, who numbered 3,561 in 2010. While the 2006 Census found only 33% of visitors were MITA members (Ednie 2007), these members get access to privately-owned islands on the Maine Island Trail, an online and physical guidebook cataloging each island and instructing on responsible use, discounts from partners like L.L. Bean, and regular updates from the organization.

Producing and updating this guidebook and other publications is one of MITA's dominant activities, comprising the largest line-item spending category after payroll. MITA's other major activities are coordinating trail volunteers for cleanups and island operations; maintaining and building relationships

with trail stakeholders; and organizational support activities including fundraising.

To fund these activities, MITA relies on three primary sources of revenues of roughly equal shares: membership dues, grants, and other donations. Membership dues for 2011 are projected at $188,244, or $52.86 per member on average. Compared to MITA's other sources of revenue, these memberships are highly valuable since they are stable from year to year. Executive Director Doug Welch noted, "A lot of nonprofits live grant to grant and don't have that base. Our base is people writing $50 checks" (Welch Interview 2011).

MITA also projects $111,000 in grants for 2011, which can be much more volatile from year to year due to their "binary" nature. Of this amount, $50,000 comes from the BPL. Half of BPL's funding is designated for a permanent island caretaker, while the other half can be used for general island operations on public islands. While this BPL grant has been reliable in recent years, there is no formal contract between the State of Maine and MITA guaranteeing funding. In addition to the BPL funding, MITA occasionally receives state grants for special projects like adding new islands.

Finally, MITA collects its largest share of revenues from private donations, forecast at $193,049). One substantial donor base is MITA's own Board of Trustees which provides $38,000 in donations. In-kind donations of boats and equipment are not included in the budget but are quite common and important to MITA. MITA also issues periodic appeals for donations to support stewardship operations (Stewardship Fund) and general island access (Annual Fund). Finally, MITA receives matching gifts from corporations and major gift donations of $250 or more.

MITA's 2011 budget is broken down in Appendix 11.

MITA's Sources of Value

MITA relies on these contributions to fund their activities, which fall into three principal types of value delivery: access provision, information delivery, and quality maintenance.

Access

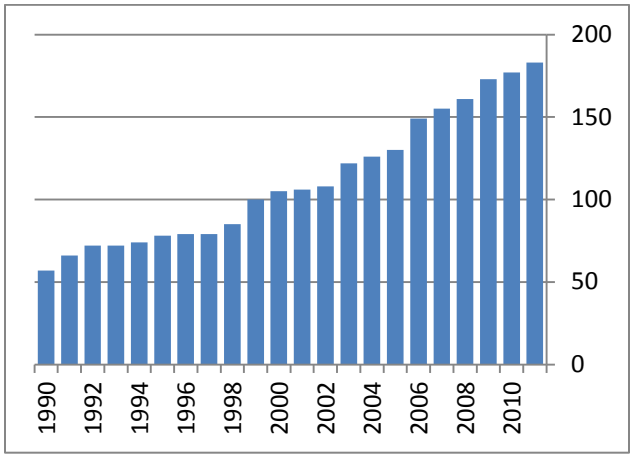
Promoting access to the islands of the Maine Island Trail is embedded in MITA's core activities. As the designated steward of the 183 islands of the Maine Island Trail, MITA secures the agreement from island owners to make their properties open to use. Users can gain access to 112 private islands only by becoming a MITA member and taking MITA's pledge to abide by "Leave No Trace" practices and respect property and landowner requests.

As a former MITA staff member noted, "When I grew up, everyone figured that all islands were fair game, but as property and privacy attitudes have changed, it became more difficult to know where you were welcome and where you weren't" (Anonymous Interview 2011).

Even public islands, which have open access for all, benefit from MITA's activities. Island clean-ups and latrine and campground installations increase the accessibility of these islands.

Figure 3.1 below shows the rapid growth in the number of islands available to Maine Island Trail visitors.

Figure 3.1: Islands under MITA Stewardship



Information

MITA also functions as the principal source of information about the 183 islands it is entrusted to steward. The MITA annual guidebook catalogs each island's history, ownership, special use considerations, camping capacity, and access instructions. A sample page from this guidebook is included in Appendix 12.

The grouping of the many coastal islands into an island trail provides standards of use and a common platform for stakeholder cooperation. As BPL Deputy Director Alan Stearns noted, "If they were just scattered islands, it would be very confusing to tell the public how to experience them" (Stearns Interview 2011). A MITA volunteer elaborated, "The established trail concept itself invites us to explore where we otherwise might not go on our own" (Anonymous Interview 2011).

MITA also provides information to users about outfitters up and down the trail that they can use for rentals, guides, launch points, and parking. While outfitter listings are not included in MITA's guidebook, this service provides a significant source of customers to local outfitters. MITA is also regularly present at meetings of the Maine Association of Sea Kayaking Guides and Instructors (MASKGI), exchanging information about trail usage patterns and considering outfitter concerns.

Quality

MITA's mission of responsible recreation on the Maine Island Trail carries an inherent tension between promoting use and maintaining island ecological and aesthetic quality. Many islands on the Maine Island Trail support fragile ecosystems and wildlife, and irresponsible use can easily upset or destroy them. "One visitor can damage one island," noted Stearns (Stearns Interview 2011). MITA has consequently adapted the "Leave No Trace" principles from the Center for Outdoor Research to coastal recreation.

MITA improves island quality on a volunteer basis. Volunteers can participate in island cleanups to clear brush, remove trash and waste, and maintain walking trails. Members can also volunteer to care for a particular island through the Adopt-an-Island program. Volunteer monitor skippers clean campsites, record information for MITA, and educate users about low-impact use.

While MITA's guidebook and access activities are particularly targeted toward their members, its island quality activities are geared toward the public at large. "We're trying to spread the gospel of 'Leave No Trace' in general," said Doug Welch. "The more people who are out there believing that and practicing that, the more it has an impact on the well-being of an island" (Welch Interview 2011).

As Stearns noted, MITA has to shift focus between their twin goals of recreation and conservation based on use trends. "In the 1990s, sea kayaking was booming. There was a worry that the Maine Island Trail would be damaged by too many plastic kayaks, and lots of concern about too much use of the islands. In recent years, the pendulum has

swung: there's concern of less usage, and MITA (and others) are thinking more about promotion. Soon the pendulum will swing back again" (Stearns Interview 2011).

Actualizing Value

Having outlined MITA's contributions, activities, and value provision (laid out visually in Appendix 13), we return to the initial question in this section: would the Maine Island Trail's value be realized without MITA? This question is worth considering given that MITA is not the only organization to provide island access, information, and ecological quality for Maine's coastal islands. Organizations like the Maine Coastal Heritage Trust also work with local communities to promote the ecological well-being of Maine's coastal islands, and outfitters arrange independent partnerships with island owners.

However, it is doubtful that the value of the Maine Island Trail would be realized in the absence of MITA. As sole steward of the 183 islands currently comprising the trail, MITA establishes a unique partnership between governments, land trusts, and private citizens, and its model manages to successfully pursue a balance of use and preservation. Jen Scribner, manager of Sunrise Canoe and Kayak in the Downeast region of Maine, noted, "We're really lucky to have such a system where the islands are being well preserved and they're not being abused and overused" (Scribner Interview 2011). Given the diversity of island owners and the absence of existing communication among them, it is unlikely that such a model would exist without a single coordinating steward for all the islands. Almost certainly, the concept of a unified island trail as a recreational destination would be lost without this coordination.

From the perspective of the State of Maine, MITA provides a service that is beyond the government's financial capacity. The State of Maine's annual investment of $50,000 leverages MITA's membership and volunteer resources. "If someone calls with a complaint, MITA takes care of it instead of us," said Stearns. "It's a good deal for the BPL if the alternative is for us to hire rangers or other staff with 100% state funds. We have been static from a resource perspective, while there has been remarkable growth in state land acquisitions, stretching us thinner and thinner and resulting in increasing need for external partnerships like this" (Stearns Interview 2011).

4: Future Opportunities and Recommendations

In this study, we have examined the activities undertaken by MITA and described qualitatively and quantitatively the value created for stakeholders. Three overarching questions emerge from these findings:

1. How can the results of our research be used as feedback into MITA's operations as it pursues its mission?
2. How can MITA better understand the link between its activities and the value it creates?
3. What further research should be conducted to illuminate the link between MITA's activities and its mission?

To address the first and second questions, we recommend that MITA develop a "Balanced Scorecard" system of performance measurement in tandem with the implementation of Activity-Based Costing. To address the third question, we recommend a study of the conservation and environmental benefits provided by MITA, as well as refinement of the most critical assumptions of our analysis.

Balanced Scorecard

The Balanced Scorecard (BSC) was originally described by Kaplan and Norton in 1992 for use within for-profit companies that found traditional financial accounting measures to be ineffective at steering company operations. Within private companies financial measures were found to be lagging indicators, in that the previous quarter's bottom line was the result of actions taken long before. Furthermore, it was difficult or impossible to link financial metrics back to specific company activities or initiatives. In order to drive success, Kaplan found that it was important to measure and track leading indicators across all aspects of a company's strategy. Kaplan soon adapted the BSC for use in nonprofit organizations, and noted in 2001 that "the opportunity for the scorecard to improve the management of nonprofits should be even greater" (Kaplan 2001).

In Kaplan's adaptation for the nonprofit sector, he further notes that, "A nonprofit agency's mission represents the accountability between it and society – the rationale for its existence. The mission should therefore be featured and measured at the highest level of its scorecard" (Kaplan 2001).

Below the organization's mission, the BSC focuses on four perspectives of an organization's performance: the financial perspective, the stakeholder perspective, internal processes, and learning and growth. Within each level, the BSC details a carefully refined list of objectives believed to be essential to achievement of the organization's mission. Critically, each of these objectives is associated with a very specific quantitative or qualitative measurement which can be monitored relative to targets.

In the MITA Value Chain framework presented in Appendix 13, we highlight the link between contributions to MITA, activities performed by MITA, and the value created for stakeholders. Our analysis has quantified stakeholder value in a number of ways. At this point it is important to ask, "How can MITA leverage our analysis and adapt its operations to enhance the value created?" We felt that the BSC is a tool perfectly suited to MITA's needs.

In Appendix 14, we present a sample BSC for MITA with 17 distinct measurable objectives. If MITA chooses to implement a Balanced Scorecard, it should be developed internally by MITA managers, staff, and associates: those who know the organization best. The objectives and the indicators used to measure them should arise from internal discussion, collaboration, and even testing. The BSC we present should be considered merely an example. That said, we would like to highlight a small number of the objectives we present in our sample scorecard:

<u>Promote Member Stewardship</u>

A central and unique aspect of MITA's mission is that the Maine islands should be "maintained and cared for by the people who use it." In fact, MITA is quite successful in this regard. With only five full-time staff members, MITA leverages the assistance of hundreds of volunteers every year. In our sample BSC, we recommend monitoring this aspect of MITA's mission, using a quantitative metric such as "percent of MITA members who volunteer."

<u>Support Many Volunteers with Limited Staff</u>

Volunteer efforts are central to MITA's operations. Unfortunately, the recruitment and coordination of volunteers requires substantial efforts by staff members. To monitor the cost effectiveness of volunteer programs, MITA may want to focus on a measure such as "overhead cost per volunteer-hour."

Promote "Leave No Trace" Practices

In its efforts to ensure the conservation of islands, MITA works hard to promote "Leave No Trace" practices, in which visitors make sure to leave islands with no trace of their visit. We recommend monitoring MITA's performance in this regard by keeping track of the number of complaints received about islands impacted by visitors.

Ensure Sustainability of Membership Base

MITA is dependent upon a sustainable and energetic membership base to achieve its objectives. However, as pointed out by BPL Deputy Director Alan Stearns, "Inherent in the [membership] model is a bias toward more comfortable people happily paying money for an occasional experience, as opposed to youth and dynamism" (Stearns Interview 2011). Our survey results support Stearns' assertion, showing that only 17% of MITA's members are younger than 45. MITA should track such figures and, depending on the extent to which MITA agrees with this objective, implement initiatives to achieve higher youth membership rates, such as a reduced-price student membership program.

Increase Donations and Grants

Representing approximately 2/3 or MITA's revenues, donations and grants are essential to MITA's functioning; this objective is clearly already on MITA's radar. In our study, we found that MITA achieves significant impacts with a small budget. We also found that by far MITA's greatest local economic impact per capita is in the sparsely populated Knox County. Results like this can and should be leveraged to seek new sources of funding, as well as to maintain existing funding.

Productive Marketing Outreach

In order to spread the word about the Maine Island Trail, MITA relies on word of mouth and viral marketing. When it comes to major magazine features, MITA Executive Director Doug Welch says, "We've had remarkable luck of having them come to us. [The Maine Island Trail] is a story that sells…. We don't have a PR person" (Welch Interview 2011). We recommend a simple measure of marketing impact such as the number of monthly visitors to the MITA website. This would allow MITA to experiment with advertising campaigns as well as to detect shifts in the effectiveness of MITA's current "hands-off" marketing approach.

Activity-Based Costing

MITA performs a diverse array of critical activities from forming partnerships to running volunteer programs. Unfortunately, since nearly three quarters of MITA's expenses are in the form of overhead such as payroll, benefits, and office expenses, the true cost of MITA's various activities is not clear. Some of the metrics that we recommended for the Balanced Scorecard require determining the effectiveness of overhead for various activities. Such measurements would arise naturally from the implementation of Activity-Based Costing (ABC).

With traditional line-item accounting, the expenses associated with overhead resources are specified on a line-by-line basis. With ABC, each line-item resource should be associated with an appropriate "cost driver." For example, payroll and benefit overhead may be allocated on an hourly basis, whereas office rent can be allocated on a square-foot basis. Since MITA already tracks staff time for various initiatives, payroll overhead (the largest fraction of total overhead) can be easily divided among MITA's primary activities.

The selection of MITA's activities is an important step for ABC. If MITA chooses to implement ABC, its operations should be broken down into enough activities to be useful, but not so many that the tool becomes burdensome. We have generated a list of four activities as a starting point:

Running Volunteer Programs

One of MITA's most important activities is the operation of volunteer programs. Some parks have found the overhead used for volunteer programs to be very costly (Bilmes 2011).

Forming Partnerships

MITA staff spends much of its time forming partnerships with various organizations, from kayak outfitters to outdoor retailers.

Guidebooks and Other Media

Production of MITA's guidebooks, newsletter, and other media are clearly one of MITA's most expensive activities. The direct expenses alone for guidebook production were approximately 14% of MITA's total budget in 2010. It may be beneficial to split this category into a separate activity for each of the most expensive media productions.

Trail Expansion

MITA works hard to bring new islands onto the trail, and to prevent the loss of existing islands.

For each activity, expenses should include overhead as well as those direct expenses already allocated in a line-item budget, such as guidebook printing costs. The final step of ABC would actually divide aggregated activity expenses among individual "cost objects" to determine, for example, the total cost per guidebook printed or the total cost per volunteer-hour.

In the MITA Value Chain in Appendix 13, Activity-Based Costing clarifies the links between the contributions to MITA and its operations.

Environmental Impact Study

MITA's mission is focused on both recreation and conservation. In our analysis, we calculated the value of recreation on the Maine Island Trail. We did *not* calculate the conservation benefits generated by MITA. In effect, we focused on only one half of MITA's mission. We therefore recommend a study of "the other half" of MITA's mission, namely the environmental benefits that MITA generates.

In 2006, the Island Monitoring Task Force published the results of a three year baseline study of several MITA islands (Springuel 2006). This study recommended implementing a long-term monitoring plan for the Maine islands, along with numerous methodological improvements. We feel that their study would serve as a valuable launching point for a full-fledged evaluation of the environmental impacts resulting from MITA's activities.

In order to complete such a study, the potential exists to partner with organizations such as the Maine Coastal Heritage Trust (MCHT). MCHT is dedicated to the environmental conservation of Maine's coast, and employs biologists in measuring environmental quality. In the past, MITA's recreational mission has generated tensions with MCHT. A study of environmental impacts at MITA could ease such tensions while helping to steer between the occasionally conflicting demands of recreation and conservation.

5: Conclusion

Our study was motivated by the changing landscape MITA is witnessing: new leadership at the statehouse and Department of Conservation, fiscal tightening and a priority on job creation, and the expiration of the management plan between the Bureau of Parks and Lands (BPL) and MITA. In this context, an understanding of MITA's economic impact is vital for its stakeholders to evaluate the benefits received and for the organization to understand and improve its value delivery.

This study was thus structured around three central questions. First, what is the value of the Maine Island Trail as a recreational asset? Second, how does MITA actualize the value of the site to its stakeholders? Third, how can MITA utilize our findings to improve its strategy and better achieve its mission?

We found that the Maine Island Trail generates a significant spending impact from its users. The presence of the Maine Island Trail generates at least $674,000 annually in visitor spending impact in the State of Maine, up to potentially $2.1 million in impact and 27 jobs. It also generates a minimum of $54,000 in annual state and local tax revenue, more than compensating the $50,000 annual investment in MITA by the BPL. This economic impact is significant in a state looking towards nature-based tourism for future job growth, and we recommend that MITA leverage this fact for future grants and donations.

However, this spending impact is still secondary to the economic benefit the Maine Island Trail confers to its users. The $3.2 million in annual consumer surplus for users with the sole purpose of visiting the Trail demonstrates that MITA's mission of promoting recreational use of the Maine Island Trail is appropriate. While MITA can have economic development benefits for the State of Maine, particularly along the northern coast, MITA should not divert significant resources away from its recreational mission given the value it currently provides.

We must emphasize that our estimates of stakeholder value are lower-bound measurements, ignoring value derived for multi-purpose visitors and employing a rigorous counterfactual test for local economic impact. Furthermore, we do not quantify non-use option and existence value.

We also found that the partnership that MITA has arranged between disparate island owners and their balance between recreation and conservation significantly enables this value of the Maine Island Trail. It is unlikely that the Trail would deliver as much value without the information, access, and quality activities provided by MITA, especially considering the scarcity of state resources.

We feel, however, that MITA could improve their value delivery by adopting a balanced scorecard framework and activity-based costing. By setting sub-goals toward their mission, linking measurement metrics to these objectives, and aligning their budget with their strategy, MITA will have a clearer sense of the value generated by each dollar of contribution spent on an activity. The survey data collected for this study should also help MITA better align their activities with use patterns.

We also recognize that in measuring the economic impact of recreation on the Maine Island Trail, we did not consider the impact of MITA's ecological and conservation activities, and thus we only considered the impact of half of their mission. MITA would benefit from a thorough study of the ecological impact of use of the Maine Island Trail.

Converting recreational experiences and natural beauty into dollars and cents can seem both daunting and antithetical to recreational ideals.

However, we hope this study will provide MITA and its stakeholders the basis to evaluate its benefits and impact in measureable terms. Its methodology should be applicable to recreational sites and organizations at large as well.

WORKS CITED

AAA. (2010). *Your Driving Costs: 2010 Edition*. Heathrow, FL: AAA Association Communication.

Alward, A. (2009, June 9). *What is IMPLAN?* Retrieved January 30, 2011, from MIG Inc.: https://implan.com/V4/index.php?option=com_content&view=article&id=282:what-is-implan&catid=152:implan-appliance-&Itemid=2

Amoako-Tuffour, J. a.-E. (2008). Leisure and the Opportunity Cost of Travel Time in Recreation Demand Analysis: A Re-examination. *MRPA Paper 8573* .

Baker, B. (2011, March 7). Owner, Old Quarry Ocean Adventures. (V. R. Jonathan Glassman, Interviewer)

Bateman, I. J. (1996). Measurement Issues in the Travel Cost Method: A Geographical Information Systems Approach. *Journal of Agricultural Economics , 47* (2), 191-205.

Bilmes, L. (2011, March 21). Daniel Patrick Moynahan Senior Lecturer in Public Policy, Harvard Kennedy School. (V. R. Jonathan Glassman, Interviewer)

Bowker, J. E. (1996). Toward a Value for Guided Rafting on Southern Rivers. *Journal of Agricultural and Applied Economics , 28* (2), 423-432.

Brown, W. G. (1973). Impact of Aggregation on the Estimation of Outdoor Recreation Demand Functions. *American Journal of Agricultural Economics , 55* (2), 246-249.

Burt, O. R. (1971). Estimation of Net Social Benefits from Outdoor Recreation. *Econometrica , 39* (5), 813-827.

Clawson, M. a. (1966). *The Economics of Outdoor Recreation*. Baltimore: Johns Hopkins University for Resources for the Future.

Clawson, M. (1959). *Methods of measuring the demand for and value of outdoor recreation*. Washington, D.C.: Resources for the Future.

Couper, M. P. (2000). Web Surveys: A Review of Issues and Approaches. *Public Opinion Quarterly , 64*, 464-494.

Dobbs, I. M. (1993). Individual Travel Cost Method: Estimation and Benefit Assessment With a Discrete and Possibly Grouped Dependent Variable. *American Journal of Agricultural Economics , 75* (1), 84-94.

Ednie, A. J. (2007). *Maine Coastal Islands Visitor Survey 2006 - Deer Isle/Stonington Region*. Orono, ME: Maine Agricultural & Forest Experiment Station.

Fish, T. E. (2010, November 3). *Assessing Economic Impacts of National Parks*. Retrieved January 30, 2011, from PARKScience Integrating Research and Resource Management in the National Parks: http://www.nature.nps.gov/parkscience/index.cfm?ArticleID=322&ArticleTypeID=28

Freeman, A. M. (1993). *The Measurement of Environmental and Resource Values*. Washington, D.C.: Resources for the Future.

Freeman, A. M. (1984). The Sign and Size of Option Value. *Land Economics , 60* (1), 1-13.

Gabe, T. a. (2004). *Economic Contributions of the Maine Sea Kayak Guide and Instruction Industry*. Orono, ME: University of Maine Department of Resource Economics and Policy.

Kaplan, R. S. (2001). Strategic Performance Measurement and Management in Nonprofit Organizations. *Nonprofit Management and Leadership , 11* (3), 353-370.

Kaplan, R. S. (2005, July 1). The Balanced Scorecard: Measures That Drive Performance. *Harvard Business Review* .

Loomis, J. B. (1990). Theoretical and Empirical Advantages of Truncated Count Data Estimators for Analysis of Deer Hunting in California. *American Journal of Agricultural Economics , 72* (2), 434-441.

Loomis, J. (2005). *Updated Outdoor Recreation Use Values on National Forests and Other Public Lands*. Pacific Northwest Research Station: United States Department of Agriculture, Forest Service.

Lynch, T. (2000). *Analyzing the Economic Impact of Transportation Projects Using RIMS II, IMPLAN, and REMI*. Tallahassee, FL: Florida State University Institute for Science and Public Affairs.

Mason, M. (2011, March 7). MITA Volunteer. (V. Rao, Interviewer)

McConnell, K. E. (1985). The Economics of Outdoor Recreation. In A. V. Kneese, *Handbook of Natural Resource and Energy Economics, Volume II* (pp. 677-722). Amsterdam: Elsevier Science Publishers B.V.

Nixon, R. (2003). *The Recreation Management Plan for the Public Islands on the Maine Island Trail, 2004 - 2014*. Augusta, ME: Maine Department of Conservation, Bureau of Parks and Lands.

NOAA. (n.d.). *Beach Nourishment: A Guide for Local Government Officials*. Retrieved January 30, 2011, from NOAA Coastal Services Center: http://www.csc.noaa.gov/beachnourishment/html/human/socio/recvalue.htm

Pollock, N. (2007). *The Northern Forest Canoe Trail: Economic Impacts and Implications for Sustainable Community Development*. Burlington, VT: Vermont Tourism Data Center, University of Vermont.

Power, T. M. (1996). *Lost Landscapes and Failed Economies*. Washington, D.C.: Island Press.

Regional Multipliers from the Regional Input-Output Modeling System (RIMS II): A Brief Description. (n.d.). Retrieved January 30, 2011, from Bureau of Economic Analysis, Regional Economic Accounts: http://www.bea.gov/regional/rims/brfdesc.cfm

Scribner, J. (2011, March 7). Owner, Sunrise Canoe and Kayak. (V. R. Jonathan Glassman, Interviewer)

Smith, V. K. (1983). The Opportunity Cost of Travel Time in Recreation Demand Models. *Land Economics , 59* (3), 259-278.

Springuel, N. (2006). *Island Monitoring Task Force Three Year Pilot Project 2004-2006*. Bar Harbor, ME: Maine Sea Grant College Program, College of the Atlantic.

Springuel, N. (2011, March 9). Marine Extension Associate, Maine Sea Grant, College of the Atlantic. (V. Rao, Interviewer)

Stavins, R. (1984). *The Tuolumne River: Preservation or Development?* Berkeley, CA: Environmental Defense Fund.

Stearns, A. (2011, February 25). Deputy Director, Bureau of Parks and Lands, Maine Department of Conservation. (V. R. Jonathan Glassman, Interviewer)

Weisbrod, B. A. (1964). Collective Consumption Services of Individual Consumption Goods. *Quarterly Journal of Economics , 78* (3), 71-77.

Welch, D. (2011, January 31). Executive Director, Maine Island Trail Association. (J. Glassman, Interviewer)

Willauer-Tobey, P. (2011, February 24). Former MITA staff. (V. Rao, Interviewer)

Williams, K. (2011, March 8). Executive Director, Northern Forest Canoe Trail. (V. Rao, Interviewer)

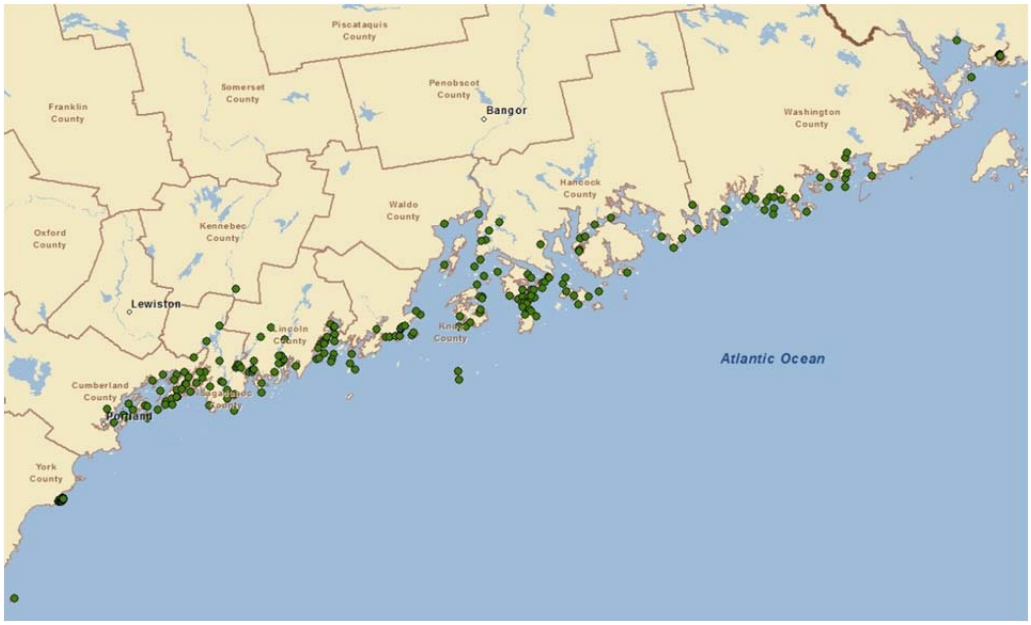
Willig, R. D. (1976). Consumer's Surplus without Apology. *American Economic Review , 66* (4), 589-597.

Willis, K. a. (1991). An Individual Travel-Cost Method of Evaluating Forest Recreation. *Journal of Agricultural Economics , 42* (1), 33-42.

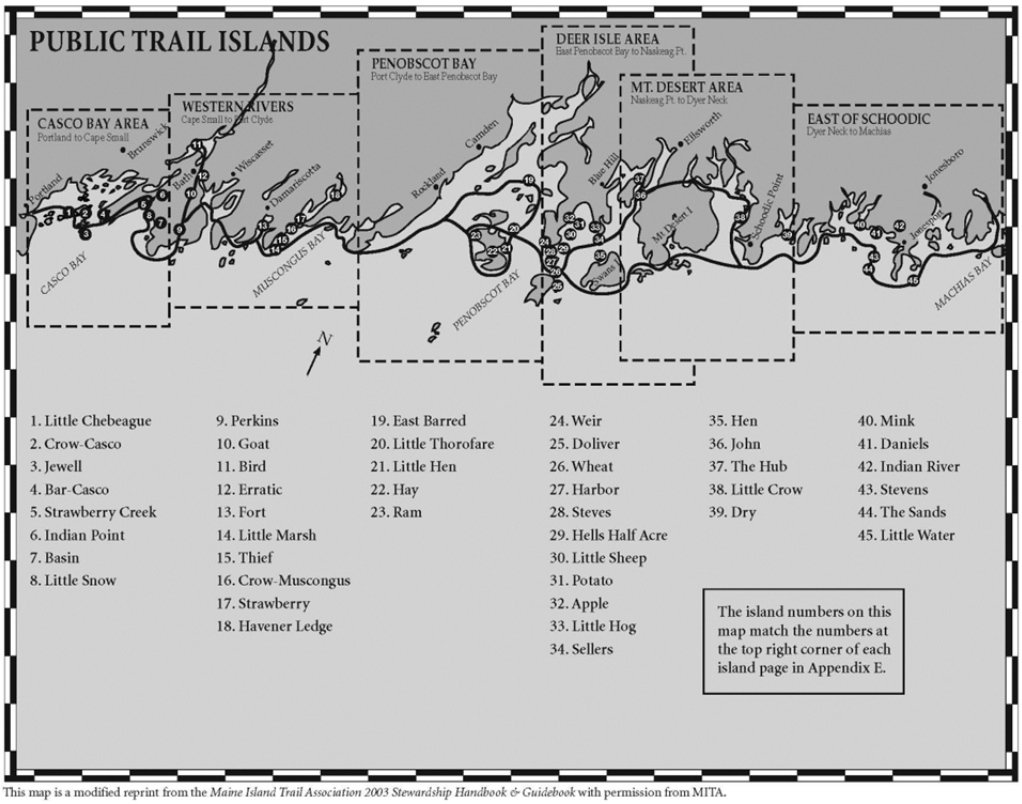
Ziemer, R. F. (1980). Recreation Demand Equations: Functional Form and Consumer Surplus. *American Journal of Agricultural Economics , 62* (1), 136-141.

Appendix 1: Islands of the Maine Island Trail

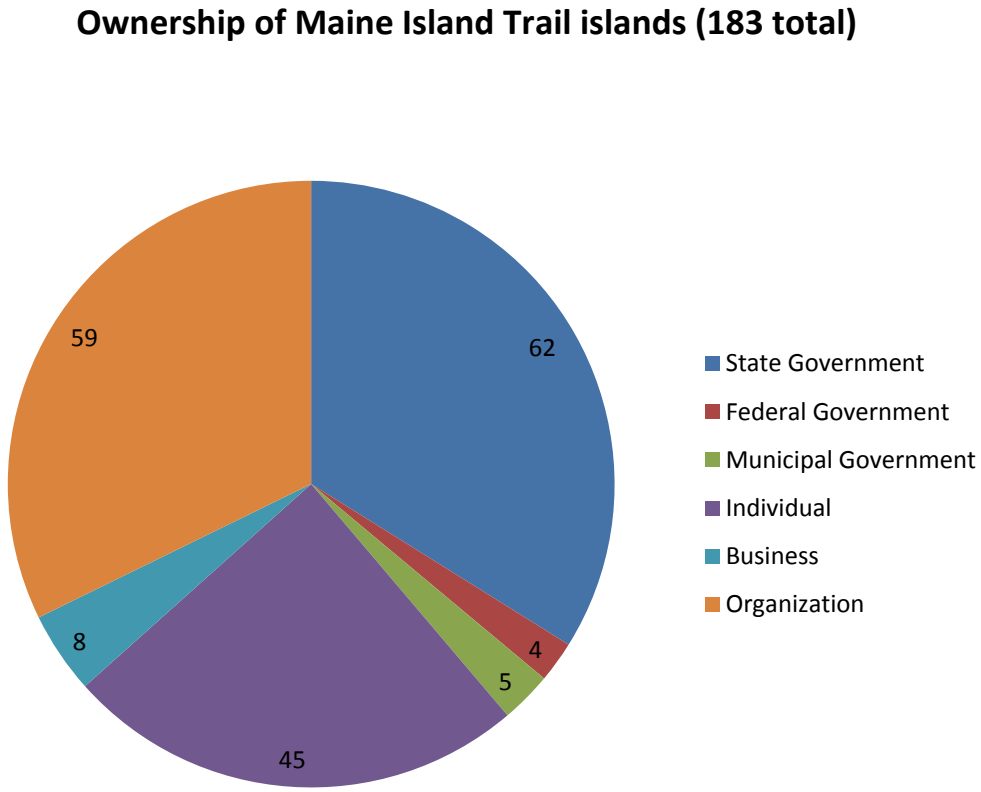
ArcGIS™ Map of all Maine Island Trail islands



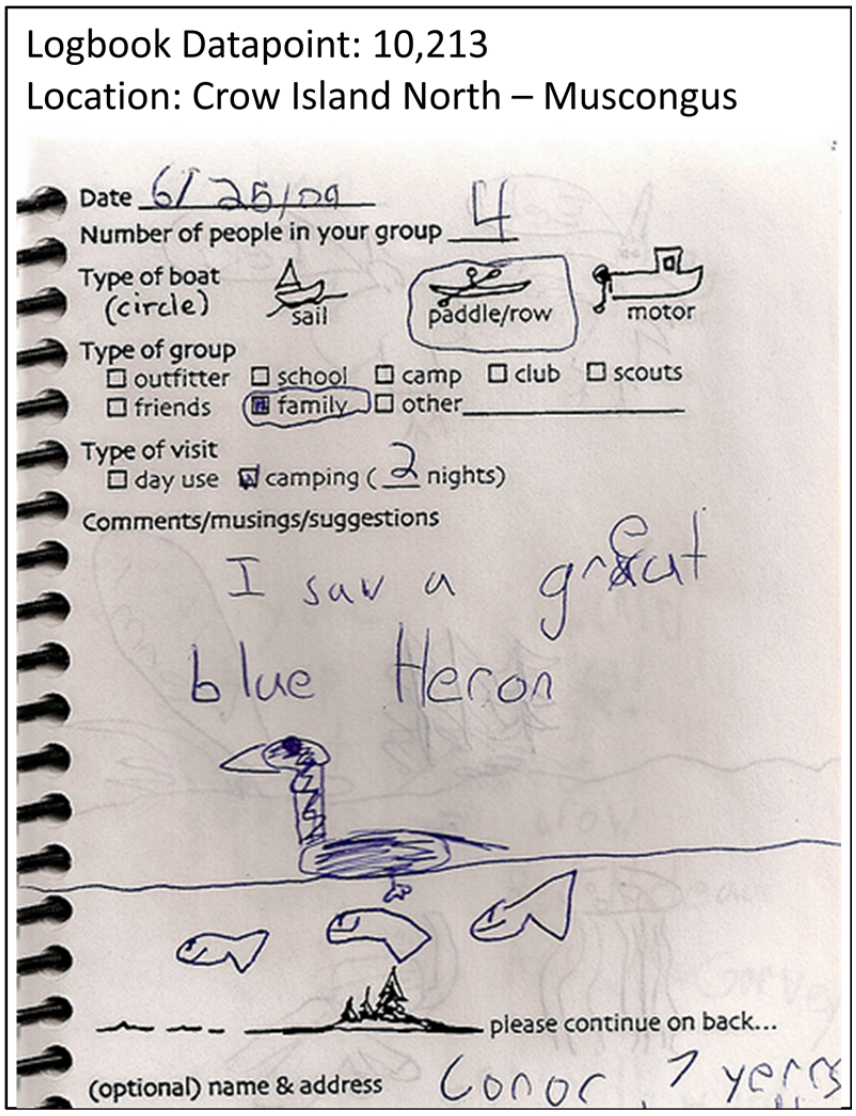
MITA Map of public access islands (Nixon 2003)



This map is a modified reprint from the *Maine Island Trail Association 2003 Stewardship Handbook & Guidebook* with permission from MITA.


Ownership of Maine Island Trail islands (183 total)
62
4
5
45
8
59
State Government
Federal Government
Municipal Government
Individual
Business
Organization

Appendix 2: Log Book Sample



Appendix 3: Survey Questions

Maine Island Trail Survey - 2010

Thank you for taking the Maine Island Trail Association (MITA) Survey!

MITA is working with a graduate research project to understand spending and usage patterns on the Trail.

Your responses will help us learn about our constituency and are ANONYMOUS AND CONFIDENTIAL.

There are four pages of brief questions.

In all questions, if you don't have precise information it is OK to approximate your answers. Approximations are much better than no information. We look forward to hearing from you!

*** 1. On your most recent visit to the Maine Island Trail, did you travel from out of town? (more than about twenty miles)**

- ◯ Yes, I traveled from out of town
- ◯ No, I did not have to travel far
- ◯ I have never visited the Maine Island Trail

Maine Island Trail Survey - 2010

The following questions refer to your most recent trip to the Maine Island Trail. On the previous page, you indicated that you did not travel from out of town.

In all questions, if you don't have precise information it is OK to approximate your answers. Approximations are much better than no information.

1. When was your most recent trip to the Maine Island Trail?

	Month	Year
Last trip		

2. On your most recent visit, how many days did you spend on the Maine Island Trail?

3. Where did you stay overnight on your last trip to the Maine Island Trail? (select all that apply)

- ☐ N/A
- ☐ Private Home
- ☐ Hotel
- ☐ Motel
- ☐ Camping
- ☐ On Boat

Other (please specify)

4. What city and zip/postal code did you embark from? (For most respondents, this is your home city and postal code)

City

Zip Code

5. What types of activities did you engage in while on the Maine Island Trail? (select all that apply)

- ☐ Kayaking / Paddling
- ☐ Sailing
- ☐ Motorboating
- ☐ Camping
- ☐ Hiking

Maine Island Trail Survey - 2010

6. Did you rent any of the following specifically for your most recent trip to the Maine Island Trail? (select all that apply)

	Rented
Kayak / Paddle Boat	☐
Sailboat	☐
Motorboat	☐
Camping Equipment	☐

7. Who did you travel with on your most recent trip to the Maine Island Trail? (select all that apply)

- ☐ Spouse
- ☐ Children
- ☐ Parents
- ☐ Other family
- ☐ Friends
- ☐ Co-workers

other (please specify)

8. How many people were in your party on your most recent trip to the Maine Island Trail, including yourself?

9. On your most recent visit to the Maine Island Trail, which section(s) of the trail did you visit? (If you toured through multiple sections, select all that apply)

If you're uncertain which area you visited, please visit the MITA Online Guide.

- ☐ Canadian Maritimes
- ☐ Downeast
- ☐ Mount Desert
- ☐ Deer Isle
- ☐ Penobscot Bay
- ☐ Muscongus Bay
- ☐ Western Rivers
- ☐ Casco Bay
- ☐ Southern Coast

Maine Island Trail Survey - 2010

10. Did you use a professional guide on your most recent trip to the Maine Island Trail?

- ◯ Yes
- ◯ No

11. Did you fill out a logbook on your most recent trip to the Maine Island Trail?

- ◯ Yes
- ◯ No

12. What alternatives to the Maine Island Trail did you consider on your most recent trip? (select your top alternative)

- ◯ Recreation destination in Maine
- ◯ Recreation destination outside Maine
- ◯ Non-recreation destination in Maine
- ◯ Non-recreation destination outside Maine
- ◯ I did not consider any other alternatives

13. On your most recent trip, how much did you spend <u>total</u> in the following categories? (Please estimate to the nearest $10 or so. If you traveled with family, include total for your household.)

Admissions and Access Fees	
Boat/Equipment Purchases	
Boat/Equipment Rentals	
Camping Fees	
Clothing	
Groceries	
Local Transportation or Ferries	
Lodging (motels/hotels)	
Mooring/Dockage Fees	
Professional Guide	
Restaurants/Bars	

Maine Island Trail Survey - 2010

The following questions refer to your most recent trip to the Maine Island Trail. On the previous page, you indicated that you traveled from out of town.

In all questions, if you don't have precise information it is OK to approximate your answers. Approximations are much better than no information.

1. When was your most recent trip to the Maine Island Trail?

	Month	Year
Last trip		

2. What mode(s) of transportation did you use to travel to the Maine Island Trail? (select all that apply)

- ☐ Rented Car
- ☐ Owned Car
- ☐ Plane
- ☐ Bus/Train
- ☐ Long Distance Boating

3. On your most recent trip to the Maine Island Trail, how many hours did it take you to travel there?

# of Hours

4. Was visiting the Maine Island Trail the principal reason for your trip?

- ◯ Yes
- ◯ No

5. On your most recent visit, how many days did you spend on the Maine Island Trail?

6. Where did you stay overnight on your last trip to the Maine Island Trail? (select all that apply)

- ☐ N/A
- ☐ Private Home
- ☐ Hotel
- ☐ Motel
- ☐ Camping
- ☐ On Boat

Other (please specify)

Maine Island Trail Survey - 2010

7. On your last trip to the Maine Island Trail, what state, province, or region did you travel from? (For most respondents, this is your home state)

	Select State
Home State	

8. What city and zip/postal code did you travel from? (For most respondents, this is your home city and postal code)

City

Zip / Postal Code (US & Canada only)

9. What types of activities did you engage in while on the coast? (select all that apply)

- ☐ Kayaking / Paddling
- ☐ Sailing
- ☐ Motorboating
- ☐ Camping
- ☐ Hiking

10. For any items that you RENTED SPECIFICALLY FOR YOUR MOST RECENT TRIP to the Maine Island Trail, were they rented in Maine or elsewhere?

	Rented in Maine	Rented outside Maine	Did not Rent
Kayak / Paddle Boat	○	○	○
Sailboat	○	○	○
Motorboat	○	○	○
Camping Equipment	○	○	○
Car	○	○	○

11. Who did you travel with on your last trip to the Maine Island Trail? (select all that apply)

- ☐ Spouse
- ☐ Children
- ☐ Parents
- ☐ Other family
- ☐ Friends
- ☐ Co-workers

Other (please specify)

Maine Island Trail Survey - 2010

12. How many people were in your party on your most recent trip to the Maine Island Trail, including yourself?

13. On your most recent visit to the Maine Island Trail, which section(s) of the trail did you visit? (If you toured through multiple sections, select all that apply)

If you're uncertain which area you visited, please visit the MITA Online Guide.

- ☐ Canadian Maritimes
- ☐ Downeast
- ☐ Mount Desert
- ☐ Deer Isle
- ☐ Penobscot Bay
- ☐ Muscongus Bay
- ☐ Western Rivers
- ☐ Casco Bay
- ☐ Southern Coast

14. Did you use a professional guide on your last trip to the Maine Island Trail?

- ○ Yes
- ○ No

15. What alternatives to the Maine Island Trail did you consider on your most recent trip? (select your top alternative)

- ○ Recreation destination in Maine
- ○ Recreation destination outside Maine
- ○ Non-recreation destination in Maine
- ○ Non-recreation destination outside Maine
- ○ I did not consider any other alternatives

16. Did you fill out a logbook on your most recent trip to the Maine Island Trail?

- ○ Yes
- ○ No

Maine Island Trail Survey - 2010

17. On your most recent trip, how much did you spend <u>total</u> in the following categories? (Please estimate to the nearest $10 or so. If you traveled with family, include total for your household.)

Admissions and Access Fees	
Boat/Equipment Purchases	
Boat/Equipment Rentals	
Camping Fees	
Clothing	
Groceries	
Local Transportation or Ferries	
Lodging (motels/hotels)	
Mooring/Dockage Fees	
Professional Guide	
Restaurants/Bars	

Maine Island Trail Survey - 2010

General questions about your use of the Maine Island Trail.

In all questions, if you don't have precise information it is OK to approximate your answers. Approximations are much better than no information.

1. How many different MITA islands did you visit in 2010, and in how many separate trips?

Number of islands visited

Number of separate trips

Number of overnight stays

2. How many times did you visit the Maine Island Trail during the last five years (2006-2010)?

- ◯ 0
- ◯ 1-5
- ◯ 6-10
- ◯ 11-15
- ◯ 16+

3. How do you usually access Maine Island Trail islands (select one)?

◯ Sailboat ◯ Powerboat ◯ Kayak ◯ Canoe / Rowboat

4. Which of the following MITA services would you use in coming years? (select all that apply)

- ☐ Adding more islands to the Trail
- ☐ More group outings
- ☐ More island stewardship group activities
- ☐ More social events
- ☐ Other (please specify)

5. What is your favorite outdoor recreational destination (excluding the Maine Island Trail)?

Maine Island Trail Survey - 2010

6. For any items that you own, where did you purchase them? Did you purchase them specifically for use on the Maine Island Trail?

	Where purchased?	Specifically for use on the Maine Island Trail?
Kayak / Paddle Boat		
Sailboat		
Motorboat		
Camping Equipment		

7. Do you own a home in Maine?

- ◯ Yes
- ◯ No

8. If you own a home in Maine, was access to the Maine Island Trail a factor in your decision to purchase a home in this location?

- ◯ N/A
- ◯ Yes, access to the Maine Island Trail was the most important factor
- ◯ Yes, access to the Maine Island Trail was an important factor
- ◯ Yes, access to the Maine Island Trail was a minor factor
- ◯ No, access to the Maine Island Trail was not a factor

Maine Island Trail Survey - 2010

In all questions, if you don't have precise information it is OK to approximate your answers. Approximations are much better than no information.

1. What is your primary interest in MITA (please choose one)?

- ◯ Visiting MITA islands myself for overnight camping
- ◯ Visiting MITA islands myself for day use
- ◯ Maintaining island access for others
- ◯ Supporting island stewardship
- ◯ Supporting coastal conservation

2. In what year were you born?

Year (e.g., 1975): ____

3. Professional Status:

- ☐ Student
- ☐ Employed Part-Time
- ☐ Employed Full-Time
- ☐ Unemployed
- ☐ Retired

4. If you are employed, how many hours do you work per week?

Hours per week ____

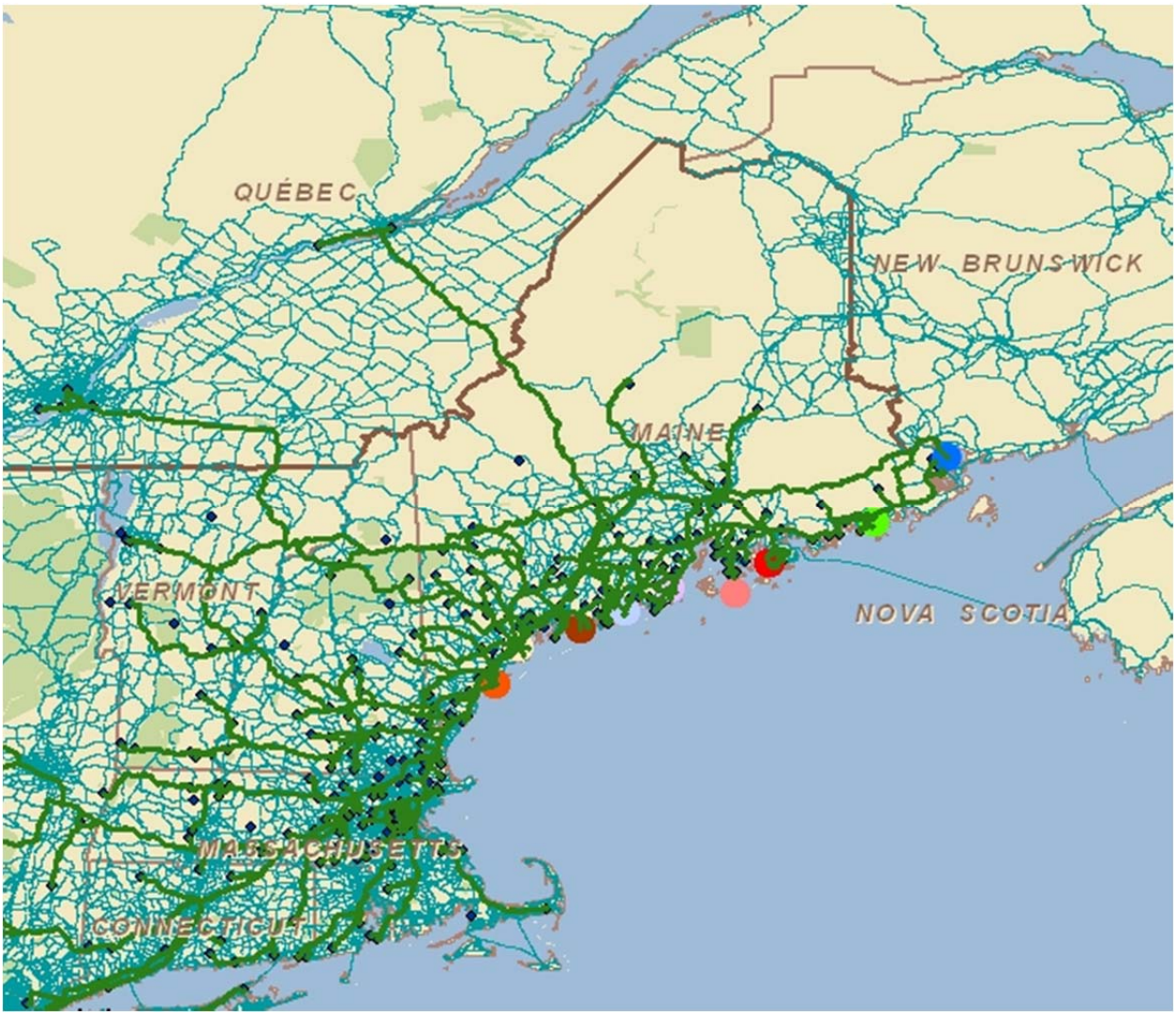
5. What is your annual household income?

	Select
Household income	

6. (Optional) Is there anything else you would like the MITA Staff to know, including a story, things we do well, or things we could do better?
(If you would like us to follow up with you, please indicate so and provide contact info.)

7. IMPORTANT: To be entered in a drawing for one of 5 MITA Family Memberships for 2011, please provide an email address below. This will be used for winner announcement purposes only.

Appendix 4: ArcGIS™ Map of New England Driving Routes



Small circles: Visitor origins

Large circles: Destination launch ramps

Green lines: Least-cost routes

Appendix 5: IMPLAN Categorization

Spending Category	IMPLAN Industry Name	IMPLAN Industry Code
Admissions and Access Fees	Other amusement and recreation	410
Boat / Equipment Purchases	Retail Stores - Sporting goods, etc.	328
Boat / Equipment Rentals	Retail Stores - Sporting goods, etc.	328
Camping Fees	Other accommodations	412
Clothing	Retail Stores - Clothing	327
Transportation Fuel	Retail Stores - Gasoline stations	326
Groceries	Retail Stores - Food and beverage	324
Local Transportation or Ferries	Transit and ground passenger transportation	336
Lodging (motels / hotels)	Hotels and motels	411
Mooring / Dockage Fees	Other amusement and recreation	410
Professional Guide	Other amusement and recreation	410
Restaurants / Bars	Food services and drinking places	413

Region	County
Downeast	Washington
Mount Desert	Hancock
Deer Isle	Knox
Penobscot Bay	Knox
Muscongus Bay	Lincoln
Western Rivers	Sagadahoc
Casco Bay	Cumberland
Southern Coast	York

Appendix 6: Average Visitor Expenditures

Expenditures by Type for Each Stratum

	In-State Daytrip	In-State Overnight	Out-of-state Daytrip	Out-of-state Overnight	Overall Average
Professional Guide	$0.00	$8.26	$2.94	$64.06	$26.99
Lodging (motels/hotels)	$19.33	$25.32	$162.65	$259.29	$127.04
Camping Fees	$0.00	$17.06	$17.19	$56.26	$27.76
Restaurants/Bars	$15.92	$115.71	$189.82	$221.43	$138.38
Groceries	$33.26	$122.20	$125.96	$263.08	$154.02
Local Transportation or Ferries	$2.73	$6.85	$12.74	$17.63	$10.53
Admissions and Access Fees	$1.57	$9.44	$8.31	$15.99	$9.85
Clothing	$2.58	$16.41	$49.89	$48.38	$28.50
Boat/Equipment Rentals	$2.35	$11.88	$52.68	$29.24	$20.19
Boat/Equipment Purchases	$29.12	$32.50	$23.35	$123.83	$65.67
Mooring/Dockage Fees	$3.70	$36.07	$8.28	$44.34	$28.29
Gasoline	$3.88	$6.16	$30.22	$33.00	$18.26
Total Spending per Group	**$114.45**	**$407.86**	**$684.04**	**$1,176.52**	**$655.47**

Expenditures by Boater Type

	Kayak	Sail	Motor	Multiple
Spending per Group	$668.30	$973.13	$471.53	$810.10
Avg Person Days	11.5	22.2	5.2	15.1
Avg Party Size	3.6	4.5	3.5	4.4
Spending per Person Day*	$83.61	$95.30	$96.19	$88.61

* Spending per Person Day does not equal "Spending per Group" / "Avg Person Days" because visits with fewer person days tend to have higher spending per person day

Expenditures by Destination Region

	Southern Coast	Casco Bay	Western Rivers	Muscongus Bay	Penobscot Bay	Deer Isle	Mount Desert	Downeast	Canadian Maritimes*
Spending per Group	$927.82	$498.37	$602.30	$561.58	$773.16	$805.07	$1,051.87	$869.67	-
Avg Person Days	17.9	10.0	10.3	9.5	17.1	12.4	7.5	12.5	-
Avg Party Size	2.9	3.7	5.0	3.9	4.4	3.6	3.3	4.2	-

*Only One Respondent Visited the Canadian Maritimes, spending $471 dollars

Appendix 7: Annual Visitation Rates by Region and Visitor Type

Visiting Groups Per Year	In-State Daytrip	In-State Overnight	Out-of-state Daytrip	Out-of-state Overnight	Total
Casco Bay	368	185	335	173	**1062**
Deer Isle	279	188	298	276	**1041**
Downeast	9	17	9	24	**60**
Mount Desert	65	25	54	29	**173**
Muscongus Bay	87	97	91	126	**401**
Penobscot Bay	59	28	45	36	**168**
Southern Coast	5	4	4	2	**15**
Western Rivers	49	35	38	24	**145**
Total	**921**	**579**	**873**	**691**	**3064**

Appendix 8: Annual Group Spending by Category and Region

Total Spending by All Groups

Total Spending	Southern Coast	Casco Bay	Western Rivers	Muscongus Bay	Penobscot Bay	Deer Isle	Mount Desert	Downeast	Total
Professional Guide	$178	$13,622	$1,927	$9,147	$2,670	$20,104	$2,226	$1,727	**$51,602**
Lodging (motels/hotels)	$1,432	$111,294	$14,131	$51,595	$18,431	$130,128	$18,221	$8,413	**$353,644**
Camping Fees	$257	$18,679	$2,582	$10,309	$3,273	$23,853	$2,996	$1,820	**$63,769**
Restaurants/Bars	$1,795	$129,325	$17,222	$57,734	$20,630	$143,824	$20,672	$9,267	**$400,469**
Groceries	$1,710	$122,728	$16,894	$59,337	$20,491	$142,362	$19,702	$9,965	**$393,189**
Local Transportation or Ferries	$130	$9,603	$1,272	$4,281	$1,557	$10,709	$1,552	$689	**$29,793**
Admissions and Access Fees	$112	$7,885	$1,099	$3,821	$1,305	$9,099	$1,255	$642	**$25,218**
Clothing	$391	$29,104	$3,727	$12,440	$4,579	$32,010	$4,689	$1,941	**$88,880**
Boat/Equipment Rentals	$345	$25,796	$3,206	$9,820	$3,872	$26,643	$4,156	$1,421	**$75,258**
Boat/Equipment Purchases	$617	$46,044	$6,393	$23,421	$8,132	$55,358	$7,559	$4,054	**$151,578**
Mooring/Dockage Fees	$282	$18,507	$2,805	$10,158	$3,201	$22,517	$2,889	$1,810	**$62,168**
Gasoline	$241	$18,422	$2,328	$7,837	$2,936	$20,344	$3,001	$1,222	**$56,332**
Total	**$7,491**	**$551,008**	**$73,586**	**$259,901**	**$91,076**	**$636,952**	**$88,918**	**$42,969**	**$1,751,900**

Total Spending by Out-of-State Groups

Total Out-of-State Spending	Southern Coast	Casco Bay	Western Rivers	Muscongus Bay	Penobscot Bay	Deer Isle	Mount Desert	Downeast	Total
Professional Guide	$147	$12,093	$1,640	$8,348	$2,437	$18,551	$2,017	$1,585	**$46,818**
Lodging (motels/hotels)	$1,248	$99,485	$12,302	$47,461	$16,576	$119,973	$16,332	$7,799	**$321,176**
Camping Fees	$192	$15,519	$1,989	$8,657	$2,791	$20,643	$2,563	$1,526	**$53,881**
Restaurants/Bars	$1,286	$102,031	$12,419	$45,149	$16,423	$117,617	$16,707	$7,127	**$318,760**
Groceries	$1,097	$87,845	$11,015	$44,613	$15,079	$110,097	$14,454	$7,555	**$291,755**
Local Transportation or Ferries	$92	$7,328	$900	$3,380	$1,202	$8,658	$1,202	$546	**$23,307**
Admissions and Access Fees	$70	$5,558	$694	$2,771	$946	$6,886	$914	$465	**$18,303**
Clothing	$318	$25,115	$3,030	$10,628	$3,963	$28,204	$4,106	$1,634	**$76,998**
Boat/Equipment Rentals	$290	$22,729	$2,677	$8,465	$3,398	$23,752	$3,702	$1,194	**$66,208**
Boat/Equipment Purchases	$361	$29,300	$3,834	$17,740	$5,497	$41,121	$4,856	$3,227	**$105,936**
Mooring/Dockage Fees	$129	$10,465	$1,370	$6,345	$1,965	$14,701	$1,734	$1,155	**$37,863**
Gasoline	$200	$15,852	$1,923	$6,904	$2,534	$18,103	$2,594	$1,080	**$49,190**
Total	**$5,429**	**$433,319**	**$53,794**	**$210,461**	**$72,810**	**$528,307**	**$71,181**	**$34,894**	**$1,410,196**

Total Spending by Baseline Groups

Total Baseline Spending	Southern Coast	Casco Bay	Western Rivers	Muscongus Bay	Penobscot Bay	Deer Isle	Mount Desert	Downeast	Total
Professional Guide	$73	$5,982	$822	$4,247	$1,223	$9,340	$997	$813	**$23,498**
Lodging (motels/hotels)	$431	$34,715	$4,501	$20,009	$6,348	$47,106	$5,737	$3,575	**$122,422**
Camping Fees	$79	$6,341	$849	$4,043	$1,220	$9,178	$1,050	$749	**$23,510**
Restaurants/Bars	$428	$33,895	$4,375	$18,421	$6,000	$44,096	$5,568	$3,217	**$116,000**
Groceries	$418	$33,365	$4,418	$19,985	$6,211	$46,228	$5,504	$3,625	**$119,754**
Local Transportation or Ferries	$32	$2,527	$328	$1,415	$455	$3,355	$416	$250	**$8,777**
Admissions and Access Fees	$26	$2,086	$276	$1,234	$385	$2,863	$343	$223	**$7,437**
Clothing	$100	$7,913	$1,007	$4,145	$1,377	$10,077	$1,300	$712	**$26,630**
Boat/Equipment Rentals	$81	$6,361	$787	$2,936	$1,042	$7,493	$1,041	$475	**$20,215**
Boat/Equipment Purchases	$162	$13,118	$1,777	$8,655	$2,579	$19,425	$2,178	$1,623	**$49,516**
Mooring/Dockage Fees	$61	$4,835	$665	$3,186	$944	$7,108	$797	$597	**$18,193**
Gasoline	$64	$5,109	$652	$2,739	$900	$6,611	$841	$475	**$17,392**
Total	**$1,954**	**$156,245**	**$20,458**	**$91,015**	**$28,685**	**$212,880**	**$25,774**	**$16,335**	**$553,345**

Appendix 9: Annual Local Economic Impact

Total Statewide Impact

	Annual Impact From $1,751,900 Total Visitor Spending				
	Employment	**Labor Income**	**Total Output**	**State & Local Taxes**	**Federal Taxes**
Direct	19.8	$469,988	$1,244,353		
Indirect	3.1	$125,434	$377,674		
Induced	4.4	$163,439	$480,524		
Total	**27.3**	**$758,861**	**$2,102,551**	**$168,594**	**$145,660**

	Annual Impact From $1,410,196 Out-of-State Visitor Spending				
	Employment	**Labor Income**	**Total Output**	**State & Local Taxes**	**Federal Taxes**
Direct	16	$379,523	$1,019,347		
Indirect	2.6	$104,986	$315,210		
Induced	3.5	$132,998	$391,025		
Total	**22.1**	**$617,506**	**$1,725,582**	**$137,122**	**$118,599**

	Annual Impact From $553,345 Baseline Visitor Spending				
	Employment	**Labor Income**	**Total Output**	**State & Local Taxes**	**Federal Taxes**
Direct	6.2	$149,175	$398,406		
Indirect	1	$40,811	$122,434		
Induced	1.4	$52,143	$153,305		
Total	**8.7**	**$242,129**	**$674,145**	**$53,731**	**$46,513**

Top 20 Most Impacted Industries

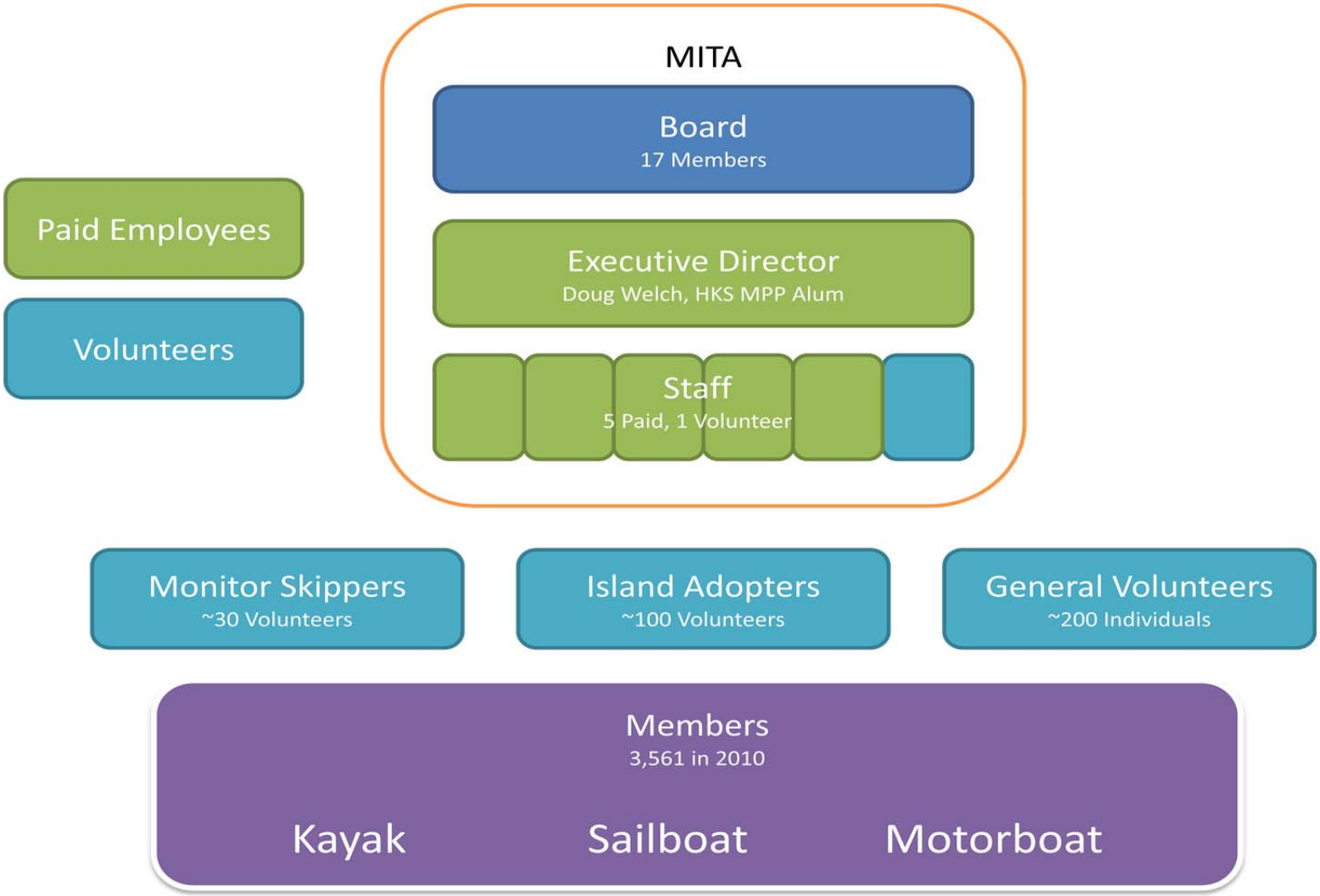
	Top 20 Most Impacted Industries	Direct	Indirect	Induced	Total
1	Food services and drinking places	$ 400,469	$ 16,056	$ 27,613	**$ 444,138**
2	Hotels and motels	$ 353,644	$ 458	$ 342	**$ 354,444**
3	Other amusement and recreation industries	$ 138,988	$ 379	$ 1,436	**$ 140,803**
4	Retail Stores - Food and beverage	$ 115,598	$ 546	$ 8,242	**$ 124,386**
5	Retail Stores - Sporting goods, etc.	$ 90,281	$ 276	$ 1,539	**$ 92,096**
6	Other accommodations	$ 63,769	$ 26	$ 38	**$ 63,832**
7	Imputed rental activity for owner-occupied dwellings	-	-	$ 59,684	**$ 59,684**
8	Real estate establishments	-	$ 31,099	$ 22,489	**$ 53,588**
9	Retail Stores - Clothing	$ 42,574	$ 193	$ 3,392	**$ 46,159**
10	Insurance carriers	-	$ 21,474	$ 22,112	**$ 43,586**
11	Wholesale trade businesses	-	$ 16,789	$ 17,479	**$ 34,269**
12	Private hospitals	-	-	$ 34,183	**$ 34,183**
13	Offices of physicians, dentists, etc.	-	-	$ 32,563	**$ 32,563**
14	Transit and ground passenger transportation	$ 29,793	$ 422	$ 837	**$ 31,051**
15	Monetary authorities and depository credit intermediation activities	-	$ 8,867	$ 19,778	**$ 28,645**
16	Management of companies and enterprises	-	$ 20,620	$ 3,730	**$ 24,350**
17	Electric power	-	$ 17,527	$ 5,696	**$ 23,223**
18	Other state and local government enterprises	-	$ 8,960	$ 9,917	**$ 18,878**
19	Services to buildings and dwellings	-	$ 14,166	$ 3,625	**$ 17,791**
20	Nondepository credit intermediation and related	-	$ 6,532	$ 10,330	**$ 16,862**
	Total, Top 20 Industries	**$ 1,235,116**	**$ 164,390**	**$ 285,025**	**$ 1,684,531**
	Total, All Industries	**$ 1,244,353**	**$ 377,674**	**$ 480,524**	**$ 2,102,551**

Local Economic Impact by County

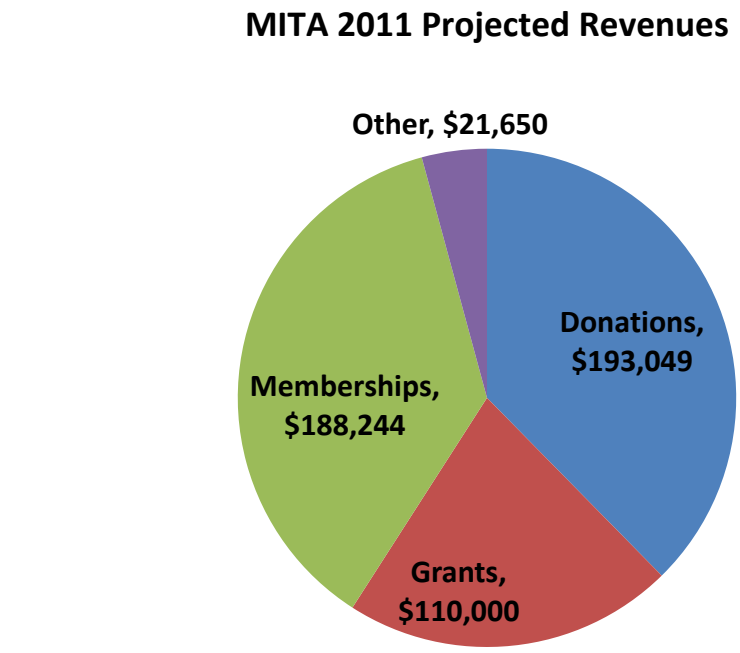
Economic Impact by County	York	Cumberland	Sagadahoc	Lincoln	Knox	Hancock	Washington
Population*	201,876	278,559	36,391	34,576	40,801	53,447	32,107
All Visitor Spending							
Spending	$7,491	$551,008	$73,586	$259,901	$728,027	$88,918	$42,969
Employment	<1	8.4	1.0	3.4	10.7	1.2	<1
Labor Income	$2,845	$254,057	$24,913	$98,687	$273,603	$33,125	$13,979
Output	$7,653	$696,624	$66,291	$262,474	$763,340	$88,377	$40,886
Baseline Visitor Spending							
Spending	$1,954	$156,245	$20,458	$91,015	$241,565	$25,774	$16,335
Employment	<1	2.4	<1	1.2	3.5	<1	<1
Labor Income	$751	$73,029	$6,999	$34,793	$91,519	$9,712	$5,331
Output	$2,037	$201,290	$18,799	$93,048	$256,661	$26,074	$15,701

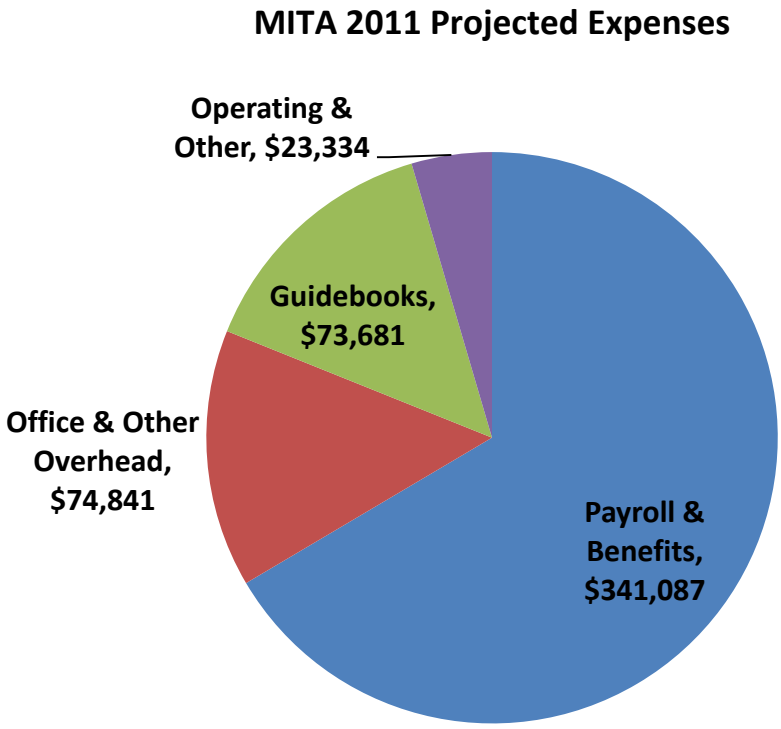
* Census.gov, 2009 estimate

Appendix 10: MITA Organizational Structure

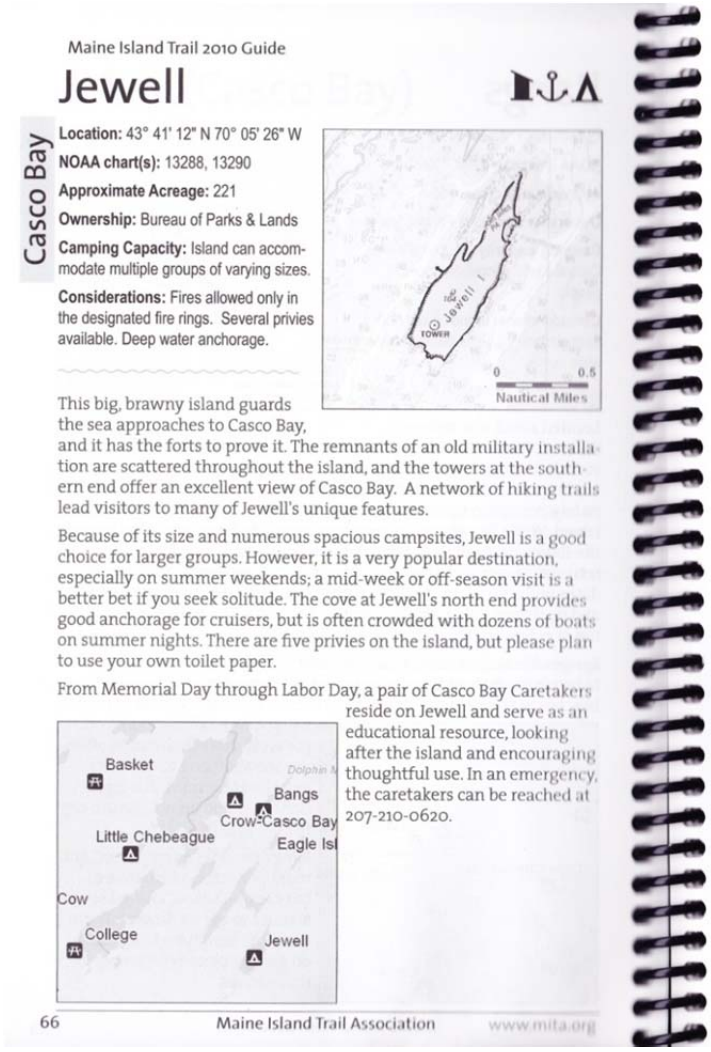


Appendix 11: MITA Budget Overview





Appendix 12: Sample Guidebook Island Listing (Jewell Island, Casco Bay)



Maine Island Trail 2010 Guide

Jewell

Casco Bay

Location: 43° 41' 12" N 70° 05' 26" W

NOAA chart(s): 13288, 13290

Approximate Acreage: 221

Ownership: Bureau of Parks & Lands

Camping Capacity: Island can accommodate multiple groups of varying sizes.

Considerations: Fires allowed only in the designated fire rings. Several privies available. Deep water anchorage.

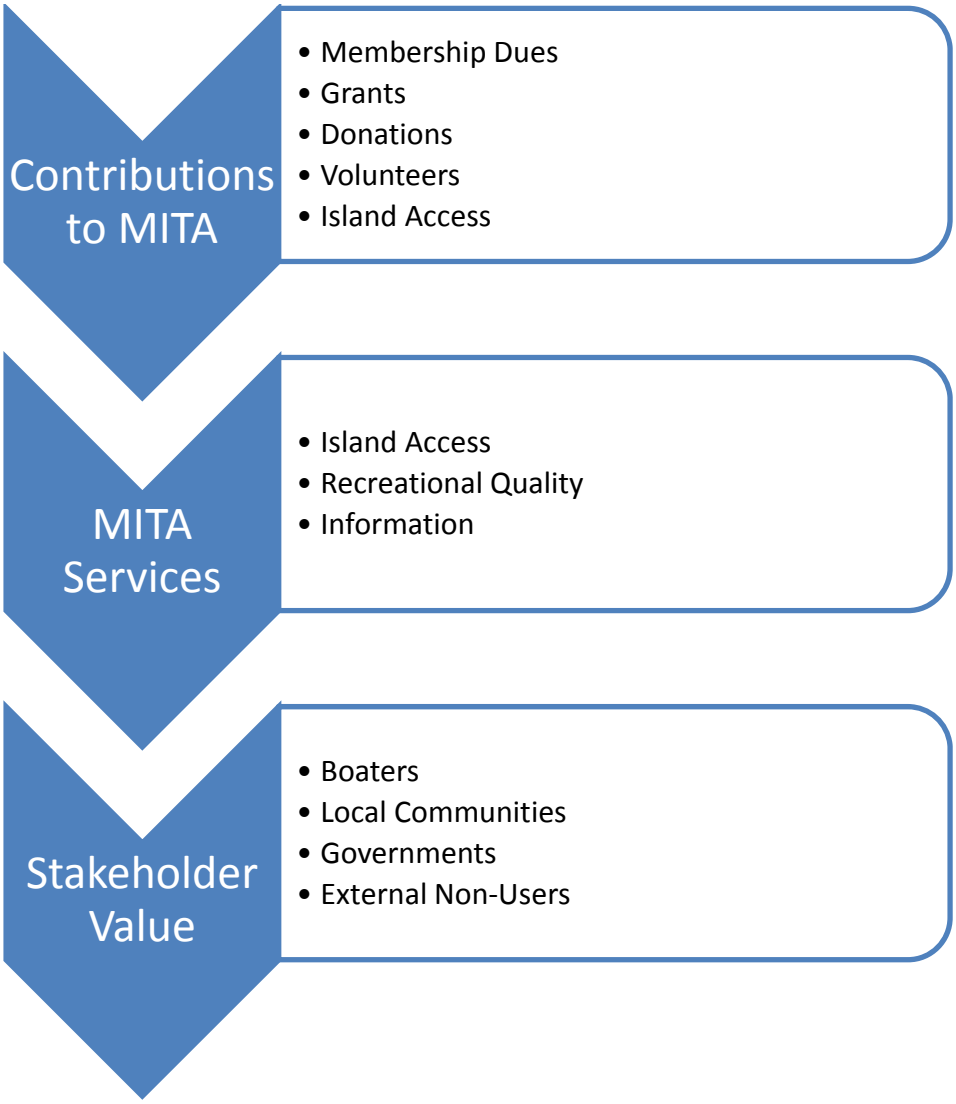
This big, brawny island guards the sea approaches to Casco Bay, and it has the forts to prove it. The remnants of an old military installation are scattered throughout the island, and the towers at the southern end offer an excellent view of Casco Bay. A network of hiking trails lead visitors to many of Jewell's unique features.

Because of its size and numerous spacious campsites, Jewell is a good choice for larger groups. However, it is a very popular destination, especially on summer weekends; a mid-week or off-season visit is a better bet if you seek solitude. The cove at Jewell's north end provides good anchorage for cruisers, but is often crowded with dozens of boats on summer nights. There are five privies on the island, but please plan to use your own toilet paper.

From Memorial Day through Labor Day, a pair of Casco Bay Caretakers reside on Jewell and serve as an educational resource, looking after the island and encouraging thoughtful use. In an emergency, the caretakers can be reached at 207-210-0620.

Casco Bay

Appendix 13: MITA Value Chain



Appendix 14: MITA Balanced Scorecard

Mission

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.

Stakeholder Perspective

Stakeholder	Objective	Measure
Users	Visitors have a unique and enjoyable experience	# Visitors traveling > 100 miles
		% Users satisfied
Members	Promote member stewardship	% members who volunteer
Island Owners	Satisfied with island usage	% Owners satisfied
Volunteers	Satisfied with volunteer operations	Volunteer repeat rate
All	Promote "Leave No Trace" Practices	# Complaints received about dirty islands

Financial Perspective

Objective	Measure
Support many volunteers with limited staff	Overhead Cost per volunteer
Maintain members	Membership renewal rate
Attract new members	# New members
Ensure Sustainability of Membership Base	# New members younger than 45 years old
Increase Donations and Grants	Donation and Grant revenue

Internal Processes

Objective	Measure
Expand trail	# Islands added or lost for controllable reasons
Enable greater access	Average #visitors hours allowed per island per day
Perform stewardship activities	# Volunteer cleanups
Productive Marketing Outreach	# Website hits
High quality publications	% of members who update contact information when they move

Learning and Growth

Objective	Measure
Learn from stakeholders	# Attendees at stakeholder meetings
Collect appropriate data	% Uncertainty in Visitation Rate