

Importance-Satisfaction Ratings of Users of the Great Lakes Maritime Heritage Center and Alpena Shipwreck Tours in Thunder Bay National Marine Sanctuary: Volume 2 (2018)



U.S. Department of Commerce
Wilbur Ross, Secretary

National Oceanic and Atmospheric
Administration
Neil A. Jacobs, Ph.D.
Assistant Secretary of Commerce for
Environmental Observation and Prediction

National Ocean Service
Nicole LeBoeuf, Assistant Administrator
(Acting)

Office of National Marine Sanctuaries
John Armor, Director

Report Authors:
Danielle Schwarzmann¹, Lauren Knapp¹, Charlotte
Ondatje², Mary Tagliareni³

¹National Marine Sanctuary Foundation

²Severna Park High School

³NOAA Office of National Marine Sanctuaries

Suggested Citation:

Schwarzmann, D., Knapp, L., Ondatje, C., and Tagliareni, M.
2020. Importance/Satisfaction Ratings of Recreating Users of
the Great Lakes Maritime Heritage Center and Alpena
Shipwreck Tours in Thunder Bay National Marine
Sanctuaries: Volume 2 (2018). Marine Sanctuaries
Conservation Series ONMS-20-03. U.S. Department of
Commerce, National Oceanic and Atmospheric
Administration, Office of National Marine Sanctuaries, Silver
Spring, MD. 16 pp.

Cover:

The New Presque Isle Lighthouse is one of many lighthouses
along Thunder Bay National Marine Sanctuary. Photo:
NOAA and Brian Taggart/Oceans Unmanned





About the National Marine Sanctuaries Conservation Series

The Office of National Marine Sanctuaries, part of the National Oceanic and Atmospheric Administration, serves as the trustee for a system of underwater parks encompassing more than 620,000 square miles of ocean and Great Lakes waters. The 14 national marine sanctuaries and two marine national monuments within the National Marine Sanctuary System represent areas of America's ocean and Great Lakes environment that are of special national significance. Within their waters, giant humpback whales breed and calve their young, coral colonies flourish, and shipwrecks tell stories of our maritime history. Habitats include beautiful coral reefs, lush kelp forests, whale migration corridors, spectacular deep-sea canyons, and underwater archaeological sites. These special places also provide homes to thousands of unique or endangered species and are important to America's cultural heritage. Sites range in size from less than one square mile to more than 582,000 square miles and serve as natural classrooms, cherished recreational spots, and are home to valuable commercial industries.

Because of considerable differences in settings, resources, and threats, each marine sanctuary has a tailored management plan. Conservation, education, research, monitoring and enforcement programs vary accordingly. The integration of these programs is fundamental to marine protected area management. The Marine Sanctuaries Conservation Series reflects and supports this integration by providing a forum for publication and discussion of the complex issues currently facing the sanctuary system. Topics of published reports vary substantially and may include descriptions of educational programs, discussions on resource management issues, and results of scientific research and monitoring projects. The series facilitates integration of natural sciences, socioeconomic and cultural sciences, education, and policy development to accomplish the diverse needs of NOAA's resource protection mandate. All publications are available on the Office of National Marine Sanctuaries website (<http://www.sanctuaries.noaa.gov>).



Disclaimer

Report content does not necessarily reflect the views and policies of the Office of National Marine Sanctuaries or the National Oceanic and Atmospheric Administration, nor does the mention of trade names or commercial products constitute endorsement or recommendation for use.

Report Availability

Electronic copies of this report may be downloaded from the Office of National Marine Sanctuaries website at <http://sanctuaries.noaa.gov>.

Contact

Danielle Schwarzmann, Ph.D.
Senior Economist
National Marine Sanctuary Foundation
1305 East West Highway
SSMC4, 11th Floor
Silver Spring, MD 20910
Phone: 240-533-0705
Danielle.Schwarzmann@noaa.gov



Table of Contents

Abstract	iv
Key Words	iv
Key Findings.....	1
Chapter 1: Introduction.....	2
Background.....	2
Survey Methodology.....	2
Data Collected.....	3
Data Collection Sites.....	4
Chapter 2: Importance-Satisfaction Analysis	6
Chapter 3: Importance-Satisfaction For Tbnms.....	9
Importance-Satisfaction Mean Ratings.....	9
Residents: Four Quadrant Analysis	11
Visitors: Four Quadrant Analysis	13
Chapter 4: Conclusions And Future Research	15
Limitations	15
Future Research	15
Literature Cited.....	16

Abstract

This report (Volume 2) is part of a series of reports that focus on the use of two recreational venues associated with Thunder Bay National Marine Sanctuary (TBNMS). Data were collected from June 2018 to October 2018. Respondents were intercepted at the Great Lakes Maritime Heritage Center, the sanctuary's visitor center, and Alpena Shipwreck Tours, a glass-bottom boat that operates in the sanctuary. Users were both residents of the region (defined as Presque Isle, Alcona and Alpena counties) as well as visitors to the region. The users were intercepted at both locations and asked to participate in an on-site screener survey that recruited them into a longer survey. The longer survey focused on the importance and satisfaction of various characteristics related to their experience, their expenditures, and the activities they did while in the region. In total, 992 people were intercepted, and 90% of them agreed to take the survey in the on-site screener survey. The response rate for the longer survey of those who completed the screener was 34.8%. This report, Volume 2, gives an overview of users' importance-satisfaction ratings for natural resource attributes and facilities associated with TBNMS, the Great Lakes Maritime Heritage Center, and Alpena Shipwreck Tours. Volume 1 addresses the visitors' economic contribution to the region resulting from their expenditures. Volume 3 presents a socioeconomic profile of those recreating at TBNMS, including demographic profiles (e.g., age, gender, race-ethnicity, household size, household type), use, top recreation activities/points of interest, and person-days. Volume 4 is a technical appendix that explains the survey sampling methodology and the methods of estimation for volumes 1-3.

Key Words

Importance, environmental preferences, satisfaction, Thunder Bay National Marine Sanctuary, sanctuaries

Key Findings

Importance/Satisfaction

- Respondents were asked about the various attributes of their experience in the region, at the Great Lakes Maritime Heritage Center, and on Alpena Shipwreck Tours. They rated how important and satisfied they were with 26 different items.
- *Entire sample:*
 - The items with the highest level of importance were preservation of lighthouses and welcoming and friendly staff at Alpena Shipwreck Tours.
 - The items with the highest level of satisfaction included: welcoming and friendly staff at Alpena Shipwreck Tours, welcoming and friendly staff at the Great Lakes Maritime Heritage Center, and the Great Lakes Maritime Heritage Center was engaging to the children in my group.
- *Visitors' ratings:*
 - Preservation of lighthouses was most important.
 - Respondents were most satisfied with the level at which the Great Lakes Maritime Heritage Center was engaging to their children.
- *Residents' ratings:*
 - Welcoming and friendly staff at Alpena Shipwreck Tours was most important.
 - Respondents were most satisfied with the ability to see shipwrecks while paddling.

CHAPTER 1: INTRODUCTION

Background

In 2018, the National Marine Sanctuary Foundation conducted pilot surveys at two venues associated with Thunder Bay National Marine Sanctuary (TBNMS): the Great Lakes Maritime Heritage Center, the sanctuary's visitor center, and Alpena Shipwreck Tours, a glass-bottom boat that operates in the sanctuary. The survey took place from June 2018 to October 2018. Respondents were intercepted at both venues and asked to complete a short screener survey, then recruited to complete a longer survey about the importance and satisfaction of various aspects of their experience, their expenditures, and the activities they participated in while in the region. Although the survey does not sample all users of TBNMS, this report does provide a representative snapshot of the larger user population, both residents of the region (Alpena, Presque, and Alcona counties) and visitors to the area.

As discussed more below, when screener respondents indicated they were willing to complete a longer survey, they were either given a mail survey to mail back or a postcard with an online link to SurveyMonkey to complete the survey at a later time. Findings from the longer survey include information about demographics, number of days spent in the region, importance/satisfaction, attitudes and perceptions, and expenditures of respondents.

Survey Methodology

The survey methodology is presented in the technical appendix to this report (Schwarzmann et al., 2019) but is outlined again here. The survey was carried out in a two-tiered approach: an on-site screener survey followed by a longer mailback or online survey.

Respondents from both Alpena Shipwreck Tours and the Great Lakes Maritime Heritage Center were approached and asked to complete the on-site screener (a short survey based upon whether the respondent was a visitor to the region or a resident of the region). The screener survey can be found in Appendix A of the technical appendix to this report (Schwarzmann et al., 2019). If the respondent completed the screener survey, they were then asked to complete a longer version of the survey using either a paper version they would mail back or online via SurveyMonkey.

Findings from the longer survey include information about demographics, number of days spent in the region, attitudes and perceptions, and expenditures of respondents.

The response rate for the on-site short screener was roughly 90% (992 people intercepted). Roughly 35% of the 891 respondents who completed the screener and opted into the mail survey completed the longer survey. Of those who completed the longer survey, roughly 80% of respondents did so online.

Additionally, the data were tested for non-response bias, but that analysis revealed there was no non-response bias for the variables tested. For a more detailed explanation of the non-response bias tests and spatial weighting, see Schwarzmann et al. (2019).

Data Collected

Screener Survey

- User activities (e.g., whether first trip to the region)
- User satisfaction
 - Whether respondent would recommend the Great Lakes Maritime Heritage Center and Alpena Shipwreck Tours
 - Whether likely to visit Alpena Shipwreck Tours or the Great Lakes Maritime Heritage Center again
 - Whether likely to learn more about TBNMS
 - Whether likely to go diving/snorkeling/paddling
 - Level of overall satisfaction with Alpena Shipwreck Tours and the Great Lakes Maritime Heritage Center
- Characteristics of individual
 - Age
 - Gender
 - Group size
 - Transportation mode(s)
 - Sources of information used to learn about TBNMS prior to trip
- Importance of Alpena Shipwreck Tours and the Great Lakes Maritime Heritage Center
 - Influence that either Alpena Shipwreck Tours and/or the Great Lakes Maritime Heritage Center had on their travel plans
 - Agreement that the Great Lakes Maritime Heritage Center is an important cultural attraction
- Open-ended questions
 - How to improve Alpena Shipwreck Tours and the Great Lakes Maritime Heritage Center
 - The most memorable feature at Alpena Shipwreck Tours and the Great Lakes Maritime Heritage Center

Mailback/Online Survey

- Uses
 - Person-days in Michigan and Alpena
 - Person-days of activity

- Locations visited
- Expenditures by category of expenditure
 - Per household group per trip (last trip)
 - Per person-trip (last trip)
 - Per person-day (last trip and annual average)
 - Total annual expenditure
- Importance-satisfaction ratings for 26 natural resource attributes, facilities, and services
- Demographics

Data Collection Sites

For each of the measures above, data were collected for both the Great Lakes Maritime Heritage Center and Alpena Shipwreck Tours. Table 1.1 presents the total sample size for respondents intercepted at Alpena Shipwreck Tours and the Great Lakes Maritime Heritage Center by resident status. The local region, for the purposes of this report, is composed of Presque Isle, Alpena, and Alcona counties (Figure 1.1).

Table 1.1 Sample sizes for estimation

	Alpena Shipwreck Tours			Great Lakes Maritime Heritage Center		
	Residents	Visitors	Total	Residents	Visitors	Total
Total Screeners Issued	49	269	318	96	578	674
Completed Screeners	49	237	286	93	512	605
Completed Mail Surveys	6	18	24	6	30	36
Completed Online Surveys	21	49	70	20	129	149
Completed Surveys	27	67	94	26	159	185
Completion Rate: Issued Screeners	55.1%	24.9%	29.6%	27.1%	27.5%	27.4%
Completion Rate: Completed Screeners	55.1%	28.3%	32.9%	28.0%	31.1%	30.6%

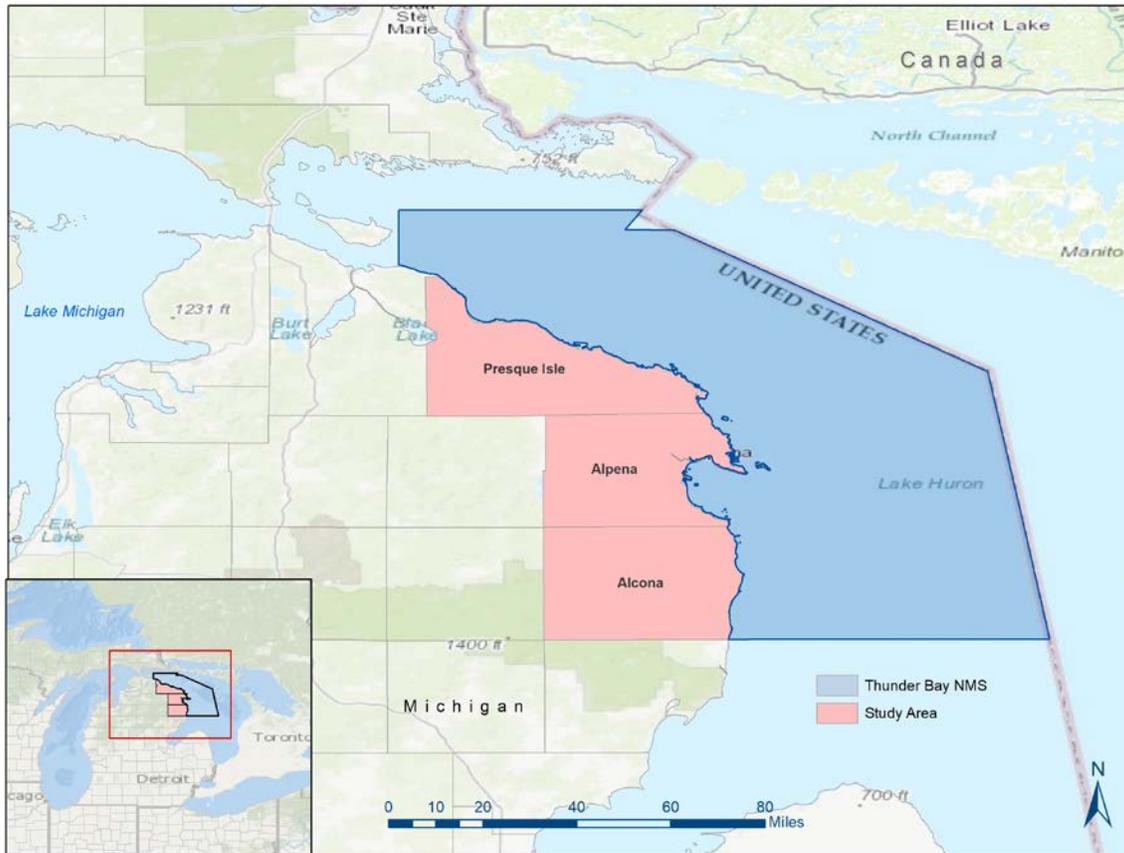


Figure 1.1 Alpena region
 Image: Developed by National Marine Sanctuary Foundation in ArcGIS

Chapter 2 discusses the approach to analyzing recreators' importance and satisfaction levels when visiting TBNMS. Chapter 3 presents the importance-satisfaction results for this study. For more details on respondents' expenditures and economic contributions as well as respondents' sociodemographic characteristics, activities and use profiles, please refer to volumes 1 and 3, respectively.

CHAPTER 2: IMPORTANCE-SATISFACTION ANALYSIS

For many years, the U.S. Forest Service and many other federal, state, and local agencies that manage parks and/or other natural resources have used the National Satisfaction Index (NSI) for measuring visitor satisfaction. Satisfaction is a complex feature of the recreation/tourist experience and it is now agreed upon by most researchers that “importance-performance” or “importance-satisfaction” is a much more complete measure and provides a much simpler interpretation than the NSI. First described in the marketing literature by Martilla and James (1977), NSI has been described and/or used in such studies as Guadagnolo (1985), Richardson (1987), Hollenhorst, Olson, and Fortney (1992), and Leeworthy and Wiley (1996). Since then the approach has been used in Florida Keys National Marine Sanctuary (Leeworthy et al., 2010) and Olympic Coast National Marine Sanctuary (Leeworthy et al., 2015).

The satisfaction questionnaire was divided into two sections to obtain the necessary information for the importance-satisfaction analysis. The first section asks the respondent to read each statement and to rate the importance of each of the 26 items as it contributes to visitor experiences at the Great Lakes Maritime Heritage Center and Alpena Shipwreck Tours. Each item is rated or scored on a one to five Likert scale (1-5) with one (1) meaning “Not Important” and five (5) meaning “Extremely Important.” The respondent was also given the choices of answering “Not Applicable” or “Don’t Know.” The second section asks the respondent to consider the same list of items they just rated for importance and to rate them for how satisfied they were with each of the items on their visit to the Alpena region. Again, a five-point scale was used with one (1) meaning “Not Satisfied” and a score of five (5) meaning “Extremely Satisfied.” Respondents were also given the choices of answering either “Not Applicable” or “Don’t Know.”

In this report, the collected data are presented in multiple ways. First, the means, or average scores, are reported along with the estimated standard errors of the mean, the sample sizes (number of responses), and the percent of respondents who gave a rating. This latter measure is important because many respondents provide importance ratings for selected items but may not have had a chance to use a resource, facility, or service and therefore do not provide a satisfaction rating. This might lead to biases in comparing importance and satisfaction. However, in previous applications, it was found that the analysis is robust with respect to this problem (i.e., it has no significant impact on the conclusions) (see for example Leeworthy and Wiley [1996]).

The second method of presentation is the bar charts showing the mean scores for each item for importance and satisfaction. It is important to note that, while both importance

and satisfaction are measured on a one to five scale, the scales are measuring different metrics and are not directly comparable. They do, however, communicate relative importance/satisfaction relationships across the different items.

The most useful analytical framework provided in importance-satisfaction analysis is the four-quadrant presentation. The four quadrants are formed by first placing the importance measurement on the vertical axis and the satisfaction measurement on the horizontal axis (see Figure 2.1). An additional vertical line is placed at the mean score for all 26 items on the satisfaction scale and an additional horizontal line is placed at the mean score for all 26 items on the importance scale. These two lines form a cross hair. The cross hair then separates the importance-satisfaction measurement area into four separate areas or quadrants. This allows for interpretation as to the “relative importance” and “relative satisfaction” of each item. That is, if everyone gave high scores to all items, researchers would still be able to judge the relative importance and satisfaction and establish priorities.

The use of the four quadrants provides a simple but easy-to-interpret summary of results. Scores falling in the upper left quadrant are relatively high on the importance scale and relatively low on the satisfaction scale. This quadrant is labeled “Concentrate Here.” Scores falling in the upper right quadrant are relatively high on the importance scale and relatively high on the satisfaction scale and are labeled “Keep up the Good Work.” Scores falling in the lower left quadrant are relatively low on both the importance and satisfaction scale and are labeled “Low Priority.” Finally, scores in the lower right quadrant are relatively low on the importance scale but relatively high on the satisfaction scale and are labeled “Possible Overkill.”

In general, the 26 items that visitors were asked to rate are organized into four categories. The items (post-survey) were divided into four categories for ease of interpretation. Four items were labeled “Shipwrecks and Lighthouses” and concern attributes of natural resources, such as clear water, that are associated with viewing and experiencing shipwrecks and lighthouses at or around TBNMS. The next eight items are labeled “Access and Parking” and are either facilities (i.e., marina) that provide access to natural resources or areas or features that provide public access to natural resources (i.e., parking). The next six items are labeled “Great Lakes Maritime Heritage Center” and are features associated with the Great Lakes Maritime Heritage Center to include items from cleanliness of the bathrooms to whether merchandise was available for purchase. The remaining eight items are labelled “Alpena Shipwreck Tours”; these items are similar to those in the previous category but they pertain to visitors’ experiences at Alpena Shipwreck Tours.

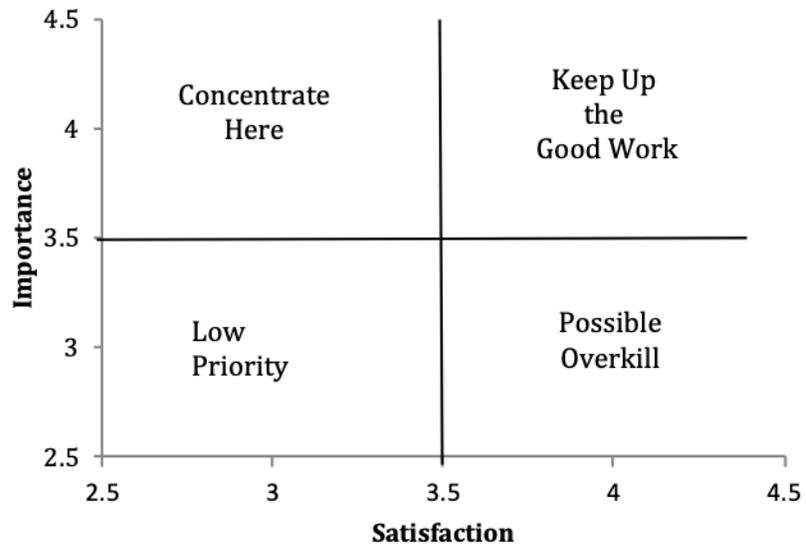


Figure 2.1 Importance/satisfaction matrix
Image: NOAA/ONMS

CHAPTER 3: IMPORTANCE-SATISFACTION FOR TBNMS

Importance-Satisfaction Mean Ratings

This section presents the mean level of importance and satisfaction for the sample as a whole, then residents and visitors separately. There were no statistically significant differences between the importance ratings of residents and visitors at the 5% level except the ticket price of Alpena Shipwreck Tours and the length of Alpena Shipwreck Tours. Residents had a statistically higher mean for these two items. There were statistical differences between the satisfaction ratings of residents and visitors, with residents having a statistically higher mean for ability to see shipwrecks while paddling and the Great Lakes Maritime Heritage Center merchandise available for purchase.

Table 3.1 shows the importance and satisfaction scores for the sample. The blue in the table represents the mean importance score, and the red is the mean satisfaction score. For the sample, the items with the highest level of importance were preservation of lighthouses and welcoming and friendly staff at Alpena Shipwreck Tours. The items with the highest level of satisfaction included welcoming and friendly staff at Alpena Shipwreck Tours, welcoming and friendly staff at the Great Lakes Maritime Heritage Center, and the Great Lakes Maritime Heritage Center was engaging to the children in my group.

Table 3.1 Importance/satisfaction matrix code description, graph of means, and descriptive statistics for sample

Shipwrecks and Lighthouses			Standard Error	N	% Rated
A	Ability to see shipwrecks while paddling	2.48	0.135	81	26.1%
		3.70	0.245	30	9.7%
B	Visibility of shipwrecks while diving or snorkeling	2.44	0.164	62	20.0%
		3.88	0.301	16	5.2%
C	Information and stories about shipwrecks and maritime history in museums	3.68	0.056	285	91.9%
		4.35	0.064	250	80.6%
H	Preservation of lighthouses	4.00	0.062	247	79.7%
		4.22	0.084	169	54.5%
Access and Parking			Standard Error	N	% Rated
D	Public access to Lake Huron (Trails, boardwalks, beaches, & boat launches)	3.87	0.068	223	71.9%
		4.17	0.081	172	55.5%
E	Public access to maritime heritage resources, including shipwreck moorings	3.63	0.072	209	67.4%
		4.09	0.089	158	51.0%
F	Public access to parks and other natural areas	3.82	0.063	251	81.0%
		4.26	0.074	193	62.3%
G	Access to lighthouses	3.72	0.066	247	79.7%
		4.12	0.090	172	55.5%
I	Marina facilities, boat ramps & launching facilities	2.90	0.113	155	50.0%
		4.04	0.130	78	25.2%
J	Shore side signage with information about maritime heritage and history	3.55	0.073	222	71.6%
		3.82	0.090	194	62.6%
K	Road side/wayfinding signage directing me to GLMHC/ Alpena Shipwreck Tours.	3.54	0.069	244	78.7%
		3.71	0.093	214	69.0%
L	Parking at/for GLMHC/ Alpena Shipwreck Tours	3.24	0.065	279	90.0%
		3.89	0.072	255	82.3%
Great Lakes Maritime Heritage Center			Standard Error	N	% Rated
M	GLMHC is free admission	3.21	0.071	286	92.3%
		4.50	0.055	263	84.8%
N	GLMHC merchandise available for purchase	2.58	0.071	258	83.2%
		3.80	0.080	220	71.0%
O	Welcoming and friendly staff at GLMHC	3.91	0.050	296	95.5%
		4.53	0.053	266	85.8%
P	GLMHC was engaging to the children in my group	3.79	0.115	101	32.6%
		4.53	0.090	90	29.0%
Q	Your self-guided experience at GLMHC	3.57	0.056	286	92.3%
		4.32	0.063	256	82.6%
R	Cleanliness of bathrooms at GLMHC	3.85	0.054	286	92.3%
		4.40	0.062	250	80.6%
Alpena Shipwreck Tours			Standard Error	N	% Rated
S	Welcoming and friendly staff at Alpena Shipwreck Tours	3.90	0.065	206	66.5%
		4.61	0.067	160	51.6%
T	Cleanliness of bathrooms at Alpena Shipwreck Tours	3.67	0.074	168	54.2%
		4.31	0.100	105	33.9%
U	The Alpena Shipwreck Tour was engaging to the children in my group	3.81	0.124	81	26.1%
		4.38	0.125	66	21.3%
V	Narration on Alpena Shipwreck Tours	3.84	0.074	171	55.2%
		4.39	0.087	140	45.2%
W	Ticket price of Alpena Shipwreck Tours	3.38	0.078	177	57.1%
		3.75	0.105	141	45.5%
X	Easy boarding process of Alpena Shipwreck Tours	3.57	0.081	176	56.8%
		4.24	0.095	143	46.1%
Y	Time spent viewing each shipwreck on Alpena Shipwreck Tours	3.60	0.085	174	56.1%
		4.11	0.105	141	45.5%
Z	Trip length of Alpena Shipwreck Tours	3.65	0.076	174	56.1%
		3.98	0.106	141	45.5%

When looking only at *residents*, the items with

The highest levels of importance were:

- welcoming and friendly staff at Alpena Shipwreck Tours,
- narration on Alpena Shipwreck Tours, and
- the Great Lakes Maritime Heritage Center was engaging to the children in group.

The highest levels of satisfaction were:

- Ability to see shipwrecks while paddling,
- welcoming and friendly staff at Alpena Shipwreck Tours, and
- visibility of shipwrecks while diving and snorkeling.

When looking only at *visitors*, the items with:

The highest levels of importance were:

- preservation of lighthouses,
- welcoming and friendly staff at the Great Lakes Maritime Heritage Center, and
- welcoming and friendly staff at Alpena Shipwreck Tours.

The highest levels of satisfaction were:

- the Great Lakes Maritime Heritage Center was engaging to the children in my group,
- welcoming and friendly staff at the Great Lakes Maritime Heritage Center, and
- welcoming and friendly staff at Alpena Shipwreck Tours.

Residents: Four Quadrant Analysis

Below shows the scatter plot for the four quadrant analysis for residents. The mean importance score was 3.7, and the mean satisfaction score was 4.2. The 26 items are separated into the quadrants in Figure 3.1. Some of the lowest priority items (high satisfaction and low importance) were parking and merchandise at the Great Lakes Maritime Heritage Center. The cleanliness of the bathrooms at the Great Lakes Maritime Heritage Center and Alpena Shipwreck Tours narration fell into the “keep up the good work” category (relatively more important and relatively more satisfied).

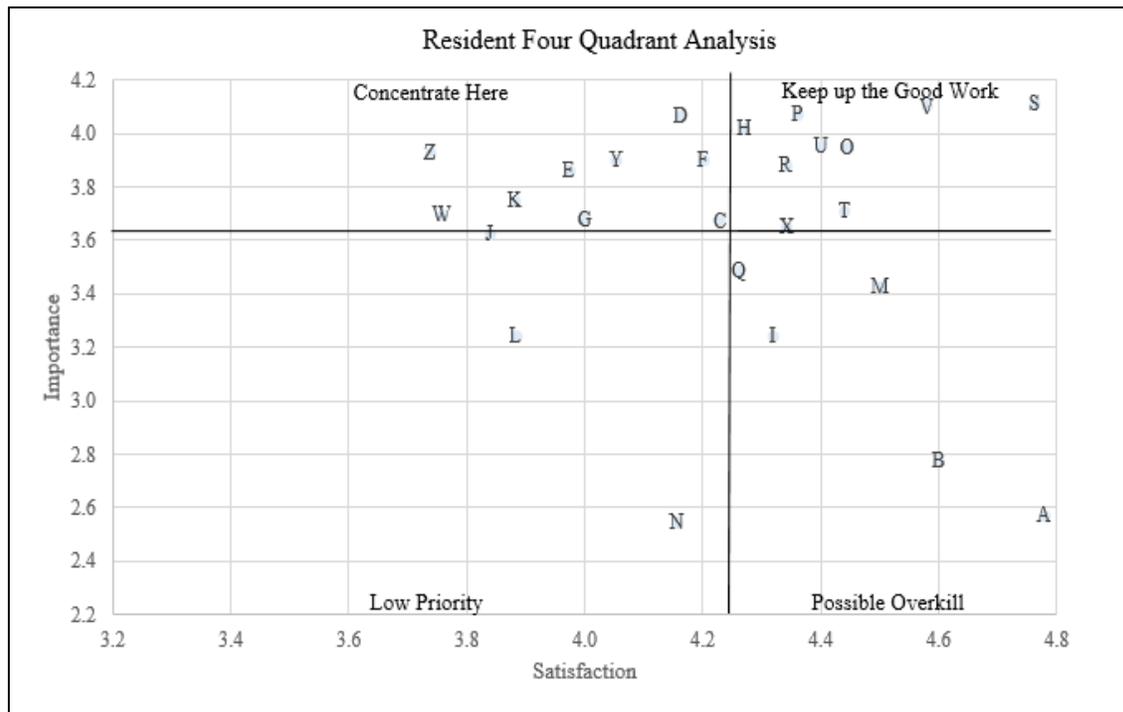


Figure 3.1 Resident four quadrant analysis

Concentrate Here—Relatively high importance and relatively low satisfaction:

- C. Information and stories about shipwrecks and maritime history in museums
- D. Public access Lake Huron (trails, boardwalks, beaches, & boat launches)
- E. Public access to maritime heritage resources, including shipwreck moorings
- F. Public access to parks and other natural areas
- G. Access to lighthouses
- K. Roadside/wayfinding signage with directions to the Great Lakes Maritime Heritage Center/Alpena Shipwreck Tours
- W. Ticket price of Alpena Shipwreck Tours
- Y. Time spent viewing each shipwreck on Alpena Shipwreck Tours
- Z. Trip length of Alpena Shipwreck Tours

Low Priority—Relatively low importance and relatively low satisfaction:

- J. Shore-side signage with information and maritime heritage and history
- L. Parking at/for the Great Lakes Maritime Heritage Center/Alpena Shipwreck Tours
- N. Great Lakes Maritime Heritage Center merchandise available for purchase

Possible Overkill—Relatively low importance and relatively high satisfaction

- A. Ability to see shipwrecks while paddling
- I. Marina facilities, boat ramps, & launching facilities

- M. The Great Lakes Maritime Heritage Center has free admission
- Q. Self-guided experience in the Great Lakes Maritime Heritage Center

Keep Up the Good Work—Relatively high importance and relatively high satisfaction

- B. Visibility of shipwrecks while diving and snorkeling
- H. Preservation of lighthouses
- O. Welcoming and friendly staff at the Great Lakes Maritime Heritage Center
- P. The Great Lakes Maritime Heritage Center was engaging to children in my group
- R. Cleanliness of bathrooms at the Great Lakes Maritime Heritage Center
- S. Welcoming and friendly staff at Alpena Shipwreck Tours
- T. Cleanliness of bathrooms at Alpena Shipwreck Tours
- U. The Alpena Shipwreck Tour was engaging to the children in my group
- V. Narration on Alpena Shipwreck Tours
- X. Easy boarding process of Alpena Shipwreck Tours

Visitors: Four Quadrant Analysis

The scatter plot for the four quadrant analysis for residents is below. The average importance rating was 3.5, and the average satisfaction rating was 4.1 for visitors. The 26 items are graphed in Figure 3.2. Visitors thought that resources could be “concentrated here” to improve public access to maritime heritage resources, including shipwrecks; shore-side signage with information about maritime heritage and history; and the trip length of Alpena Shipwreck Tours. An area of possible overkill included public access to Lake Huron (trails, boardwalks, beaches, and boat launches). However, public access to parks and other natural areas and information and stories about shipwrecks and maritime history in museums fell into the “keep up the good work” category.

Concentrate Here—Relatively high importance and relatively low satisfaction

- E. Public access to maritime heritage resources, including shipwrecks moorings
- J. Shore-side signage with information about maritime heritage and history
- Y. Time spent viewing each shipwreck on Alpena Shipwreck Tours
- Z. Trip length of Alpena Shipwreck Tours

Low Priority—Relatively low importance and relatively low satisfaction

- A. Ability to see shipwrecks
- B. Visibility of shipwrecks while diving or snorkeling
- I. Marina facilities, boat ramps, & launching facilities
- K. Roadside/wayfinding signage with directions to the Great Lakes Maritime Heritage Center/Alpena Shipwreck Tours
- L. Parking at/for the Great Lakes Maritime Heritage Center/Alpena Shipwreck Tours
- N. Great Lakes Maritime Heritage Center merchandise available for purchase

- W. Ticket price of Alpena Shipwreck Tours

Possible Overkill—Relatively low importance and relatively high satisfaction

- M. The Great Lakes Maritime Heritage Center has free admission

Keep Up the Good Work—Relatively high importance and relatively high satisfaction

- C. Information and stories about shipwrecks and maritime history in museums
- D. Public access to Lake Huron (trails, boardwalks, beaches, & boat launches)
- F. Public access to parks and other natural areas
- G. Access to lighthouses
- H. Preservation of lighthouses
- O. Welcoming and friendly staff at the Great Lakes Maritime Heritage Center
- P. The Great Lakes Maritime Heritage Center was engaging to the children in my group
- Q. Self-guided experience at the Great Lakes Maritime Heritage Center
- R. Cleanliness of bathrooms at the Great Lakes Maritime Heritage Center
- S. Welcoming and friendly staff at Alpena Shipwreck Tours
- T. Cleanliness of bathrooms at Alpena Shipwreck Tours
- U. The Alpena Shipwreck Tour was engaging to the children in my group
- V. Narration on Alpena Shipwreck Tours
- X. Easy boarding process of Alpena Shipwreck Tours

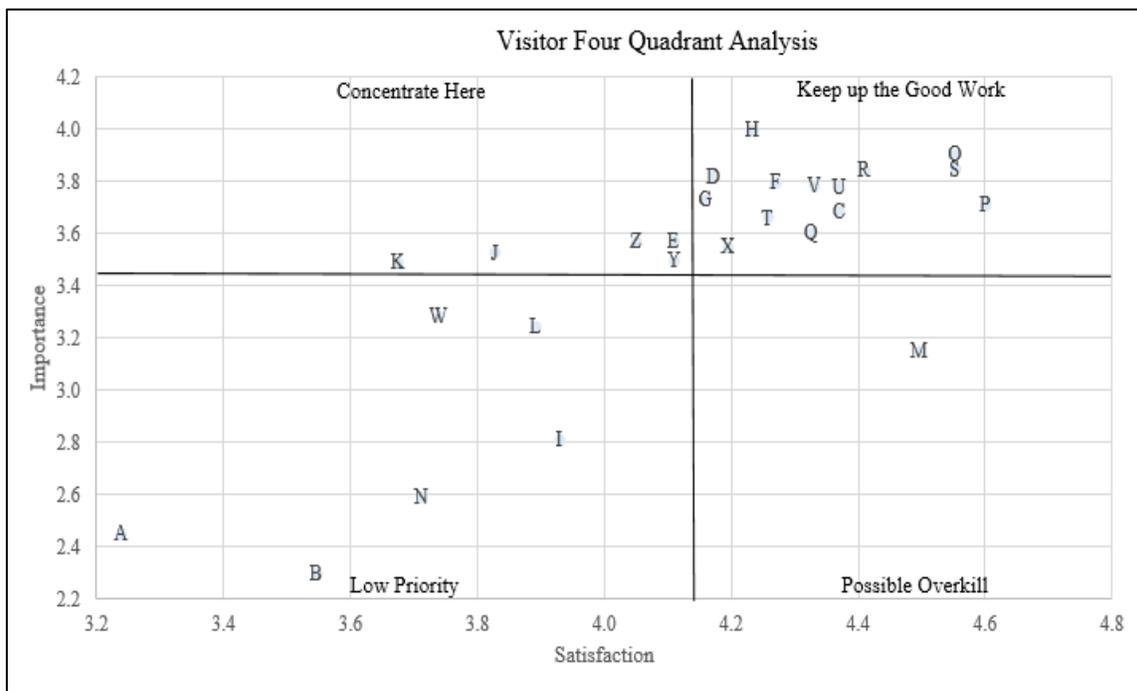


Figure 3.2 Visitor four quadrant analysis

CHAPTER 4: CONCLUSIONS AND FUTURE RESEARCH

Importance and satisfaction ratings reflect peoples' perceptions of resources and resource attributes. Having an understanding of this metric allows researchers and managers to improve resource condition and user experience. If recreators are not satisfied with their experiences, they could substitute other sites for their recreation and reduce their level of use, shifting their spending away from local economics.

Peoples' perceptions can sometimes be misinformed or influenced by other outside forces. When the ecological state of a resource does not correspond to peoples' perceptions, this is an education/outreach opportunity. This means it is possible that the resource condition is poor, but people may perceive it as good. Education and outreach can be used to close the gap between science and perception. If peoples' perceptions and ecological monitoring are in agreement, then this suggests people are aware of the actual state of the resources.

Limitations

Developing an understanding of visitation, visitors' expenditures, and users' various activities in and around the sanctuary helps both management and the local community. While this study developed a significant body of socioeconomic information, it was limited to only those who use Alpena Shipwreck Tours or the Great Lakes Maritime Heritage Center. In other words, this study did not capture the entire population of users, including those who visit the sanctuary but do not visit the Great Lakes Maritime Heritage Center or Alpena Shipwreck Tours. It is possible that the users who visit the sanctuary but do not visit these two sites could have different results than what is presented herein.

Future Research

Future work will seek to survey the entire population of users, including those who visit the sanctuary but do not visit the Great Lakes Maritime Heritage Center or Alpena Shipwreck Tours. Additionally, ensuring a large enough sample to discern expenditure estimates by resident status (visitor vs. resident) will be a focus in future studies. More generally, NOAA's Office of National Marine Sanctuaries and TBNMS staff can use this information as groundwork to inform future studies and understand who the users are, what they are doing, how they perceive the condition of natural resources they use during their activities, and how they value those resources.

LITERATURE CITED

- Guadagnolo, F. 1985. "The Importance-Performance Analysis: An Evaluation and Marketing Tool." *Journal of Park and Recreation Administration* 3 (2):13-22.
- Hollenhorst, S., Olson, D., and Fortney, R. 1992. "Use of Importance-Performance Analysis to Evaluate State Park Cabins: The Case of the West Virginia Park System." *Journal of Park and Recreation Administration* 10 (1):1-11.
- Leeworthy, V. R. and Wiley, P.C. 1996. *Importance and Satisfaction Ratings by Recreating Visitors to the Florida Keys/Key West*. Silver Spring, MD: Strategic Environmental Assessments Division, Office of Ocean Resources Conservation and Assessment, National Ocean Service, National Oceanic and Atmospheric Administration.
- Leeworthy, V. R. and Ehler, R. 2010. *Importance and Satisfaction Ratings by Recreating Visitors to the Florida Keys/Key West 2007/08*. Silver Spring, MD: Office of National Marine Sanctuaries, National Ocean Service, National Oceanic and Atmospheric Administration.
- Leeworthy, V., Schwarzmann, D., Reyes Saade, D., Goedeke, T. L., Gonyo, S. and Bauer, L. 2015. *Importance-Satisfaction Ratings for Natural Resource Attributes Facilities and Services in the Outer Coast of Washington and the Olympic Coast National Marine Sanctuary: Volume 3, 2014*. Marine Sanctuaries Conservation Series ONMS-16-04. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Office of National Marine Sanctuaries, Silver Spring, MD. 25 pp.
- Martilla, J. A. and James, J. C. 1977. "Importance-Performance Analysis." *Journal of Marketing* 41 (1):77-79.
- Richardson, S. L. 1987. "An Importance-Performance Approach to Evaluating Communication Effectiveness." *Journal of Park and Recreation Administration* 5 (4):71-83.
- Schwarzmann, D., Ondatje, C., and Tagliareni, M. 2020. *Thunder Bay National Marine Sanctuary: An analysis of visitors and residents of the Great Lakes Maritime Heritage Center and Alpena Shipwreck Tours*. Marine Sanctuaries Conservation Series ONMS-20-01. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Office of National Marine Sanctuaries, Silver Spring, MD. 89 pp.
- University of Michigan. (2013). "Economic Impact Analysis for the National Oceanic and Atmospheric Administration Thunder Bay National Marine Sanctuary." https://economicgrowth.umich.edu/wp-content/uploads/2016/05/ThunderBayNMS_FinalReport.pdf



AMERICA'S UNDERWATER TREASURES