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Division of State Parks
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1998 Mastodon State Historic Site Visitor Survey

Project Completion Report

Submitted to

**Missouri Department of Natural Resources
Division of State Parks**

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Executive Summary

The purpose of this study was to describe visitors' socio-demographic characteristics, patterns of use, and satisfaction with site facilities, programs and services at Mastodon State Historic Site (MSHS).

An on-site survey of adult visitors to MSHS was conducted from July 1, to August 31, 1998. Over three hundred (301) surveys were collected, with an overall response rate of 92%. Results of the survey have a margin of error of plus or minus 5.8%. The following information summarizes the results of the study.

Socio-demographic Characteristics

- MSHS visitors were comprised of nearly equal numbers of males and females, and the average age of the adult visitors to MSHS was 43.
- The highest percentage had completed a four-year college degree or a post-graduate degree and had an annual household income of \$25,000-\$50,000.
- The majority of visitors (95%) were Caucasian, 2% were Native American, 1% were Hispanic, 1% were Asian, and 0.3% were African American.
- Only 6% of the visitors reported having a disability.
- 82% of visitors were from Missouri, 7.3% from Illinois and 3.7% from Georgia.

Use-Patterns

- Over two-fifths of MSHS visitors had visited the site before.
- MSHS visitors had visited the site an average of 15 times in the past year.
- The majority of MSHS visitors visited the site with family and/or friends. Less than 5% visited the site alone, and 7% visited with a club or organized group.
- Average group size of visitors to MSHS was 4.2 people per group.
- The most frequent recreation activities in which visitors participated were visiting the museum, hiking, picnicking, viewing wildlife, and studying nature.

Satisfaction and Other Measures

- Ninety-nine percent (99%) of the visitors were either very or somewhat satisfied overall.
- Visitors were most satisfied with the museum exhibits and least satisfied with site signs.
- The majority of visitors gave high ratings on being free of litter and trash, care of natural resources, care of historical resources, and being safe.
- Upkeep of park facilities and having clean restrooms were the areas

identified as needing the most attention.

- Almost half (46%) of visitors with safety concerns felt that trail conditions were unsafe or traffic was dangerous where trails crossed a busy road.
- Only 17% of visitors to MSHS felt crowded during their visit. Thirty percent (30%) felt crowded on the

trails, and 30% felt crowded in the parking areas.

- Repeat visitors' perceptions of crowding were significantly higher than first time visitors'.
- Over one-fifth of the respondents provided additional comments or suggestions, half of which were positive comments.

Acknowledgements

Conducting and successfully completing a study of this magnitude and complexity could not have been accomplished without the cooperation of many individuals. About 3,900 visitors to Missouri State Parks participated in the 1998 Missouri State Parks Visitor Survey. Over 300 visitors to Mastodon State Historic Site voluntarily agreed to provide the information upon which this report is based. In many cases these individuals graciously extended their stay at particular recreation sites so that they could complete the questionnaire. It is clear from their input that these visitors care very much for the recreation resources in the Missouri State Park System. Their efforts will provide invaluable input into the planning process and providing for more effective and responsive management of these resources.

Many thanks also go to the numerous research assistants and students at the University of Missouri who collected the survey data and assisted in the coding and computer data entry of the questionnaires. They are: Li-chen Lin, Tucker Fredrickson, Carrie Robinett, Chris Thoele, and Casey Thornton.

Table of Contents

Executive Summary ii

Acknowledgements iv

Table of Contents v

List of Tables vii

List of Figures viii

Introduction 1

 Background 1

 Need for Recreation Research 1

 Study Purpose 2

 Study Area 2

 Scope of Study 2

Methodology 3

 Sampling Procedures 3

 Questionnaire 4

 Selection of Subjects 4

 Data Collection 4

 Data Analysis 4

Results 6

 Surveys Collected & Response Rates 6

 Sampling Error 6

 Socio-demographic Characteristics 7

 Age 7

 Gender 7

 Education 7

 Income 7

 Ethnic Origin 8

 Visitors with Disabilities 8

 Residence 8

 Use Patterns 8

 Visit Characteristics 8

 Group size 9

 Recreation Activity Participation 9

 Satisfaction Measures 9

 Overall Satisfaction 9

 Satisfaction with Site Features 10

 Performance Rating 10

 Importance-Performance Measures 11

 Crowding 12

 Crowding and satisfaction 13

 Safety Concerns of Visitors 14

 Additional Visitor Comments 14

Discussion 16

 Management Implications 16

 Research Recommendations 18

Methodology Recommendations and Considerations for Other Parks.....	18
Survey Signage	18
Survey Administration	18
References.....	20
Appendix A. Mastodon State Historic Site User Survey.....	22
Appendix B. Survey Protocol	25
Appendix C. Prize Entry Form	27
Appendix D. Observation Survey	29
Appendix E. Responses to Survey Questions	31
Appendix F. List of Responses for Safety Concerns (Q 6).....	36
Appendix G. List of Responses for Additional Comments (Q 18).....	40

List of Tables

Table 1. MSHS Survey Schedule.....3
Table 2. Surveys Collected by Day of Week.....6
Table 3. Surveys Collected by Time Slot6
Table 4. Surveys Collected by Date.....7
Table 5. Surveys Collected by Recreation Area7
Table 6. Mean Performance and Importance Scores for Site Attributes10
Table 7. Locations Where MSHS Visitors Felt Crowded During Their Visit.....13
Table 8. Frequency and Percentage of Comments and Suggestions from
MSHS Visitors15

List of Figures

Figure 1. Ethnic Origin of MSHS Visitors8
Figure 2. Residence of MSHS Visitors by Zip Code.....8
Figure 3. Participation in Recreational Activities.....9
Figure 4. Satisfaction with MSHS Features.....10
Figure 5. Importance-Performance Matrix of Site Attributes.....12
Figure 6. Comments from Visitors Not Rating MSHS Excellent on Safety14
Figure 7. Safety Ratings of MSHS16
Figure 8. Levels of Crowding and Satisfaction Ratings by Safety Concerns17
Figure 9. Overall Satisfaction is Lower for Those Who Felt More Crowded17

Introduction

BACKGROUND

In 1939, 15 years after Missouri obtained its first state park, 70,000 visitors were recorded visiting Missouri's state parks (Masek, 1974). Today, more than 16 million people visit the 80 state parks and historic sites Missouri offers (Holst & Simms, 1996). The increase in visits to Missouri state parks and historic sites may be due in part to the diversity of sites, resources, and recreational opportunities provided by the state park system. Visitors to state parks have different characteristics and preferences (Donnelly, Vaske, De Ruiter, & King, 1996), and may be attracted to Missouri's state parks and historic sites because of the diversity of resources and recreational opportunities (Holst, 1991).

The DSP recognizes the importance of this diversity, as is evidenced by the mission of the state park system: "To preserve and interpret the finest examples of Missouri's natural landscapes; to preserve and interpret Missouri's cultural landmarks; and to provide healthy and enjoyable outdoor recreation opportunities for all Missourians and visitors to the state" (Holst, 1990, p. 7).

In order to fulfill its mission, state park managers are challenged to determine what recreational opportunities are most sought after by visitors to state parks and to determine how satisfied those visitors are with state park facilities, services, and programs. In order to ensure continued citizen support for the Parks and Soils sales tax, a tax funding state

parks, managers are further challenged to determine whether all demographic populations are benefiting from the recreational opportunities provided at state parks and historic sites.

To aid in meeting these challenges and to aid in the planning and management processes at recreation sites, surveys of visitors to the various state parks and historic sites should be conducted (TRRU, 1983). Specific information provided by the surveys should include use patterns of visitors to state parks, socio-demographic characteristics of those visitors, and visitor satisfaction of facilities, services, and programs (Lucas, 1985).

NEED FOR RECREATION RESEARCH

Recreation research has been identified as an important component in planning for recreational needs of visitors, particularly research that examines preferences and behaviors of visitors (Manning, 1986; Yoesting, 1981). In the past, it has been assumed that administrators of recreation sites were omniscient, knowing intuitively what the public wanted and should have in the way of recreational opportunities (Manning, 1986; Reid, 1963; Yoesting, 1981). Managers regarded visitors to recreation sites as static, and did not take into consideration that visitor preferences and desires can change. Because site administrators are not omniscient and visitor preferences do change (Cordell & Hartmann, 1983; Ditton, Fedler, Holland, & Graefe, 1982; Donnelly et al., 1996), studies examining the use patterns, socio-demographic

characteristics, and satisfaction of visitors are necessary for planning, implementing, and improving recreational opportunities.

Little site-specific information is available for state parks and historic sites in Missouri. Much of the survey work done for state parks and historic sites has focused on the state park system as a whole. A need exists for site-specific data to compare visitor information between parks, or to measure changing trends in these parks. Also, a need exists for consistent methodology in visitor surveys, in order that such comparisons and measurements can be made. Manning (1986) reported that many surveys, even when conducted by the same agency, were methodologically inconsistent in recreational activity definitions, data collection techniques, sample sizes and response rates, age of respondents, and question wording and sequence. Any comparison of data would be difficult because of the inconsistent methodologies.

STUDY PURPOSE

The purpose of this study is to gain information about visitor use patterns, socio-demographic characteristics, and satisfaction with park programs, facilities, and services.

This report examines the results of the visitor survey conducted at Mastodon State Historic Site (MSHS), one of the eight parks and sites included in the

study. Objectives specific to this report include:

1. Describing the use patterns of visitors to MSHS during the period between July 1, and August 31, 1998.
2. Describing the socio-demographic characteristics of visitors to MSHS.
3. Determining if there are differences in select groups' ratings of site attributes, satisfaction with site features, overall satisfaction, and perceptions of crowding.
4. Determining any differences in select characteristics of visitors who rated highly site safety and those who did not.

STUDY AREA

On the National Register of Historic Places, MSHS contains the Kimmswick Bone Bed, a significant archaeological site. MSHS, located in Jefferson County south of St. Louis, is a day-use recreation area offering picnicking and hiking. A museum is also present at the site, with exhibits of ancient artifacts, fossils, and a mastodon skeleton replica. MSHS has two recreation areas, the museum area, and a picnic area with a separate entrance.

SCOPE OF STUDY

The population of the visitor study at MSHS consisted of all MSHS visitors who were 18 years of age or older (adults), and who visited MSHS from July 1, to August 31, 1998. These results only reflect summer visitors.

Methodology

SAMPLING PROCEDURES

A 95% confidence interval was chosen with a plus or minus 5.8% margin of error. Based upon 1997 visitation data for July and August at MSHS, it was estimated that a population size of

Table 1 shows the survey schedule along with the time slots used. Three time slots were chosen for surveying and only one time slot was surveyed per day. The three time slots were as follows: Time Slot 1 = 8:00 a.m. - 12:00 p.m., Time

Table 1. Mastodon State Historic Site Survey Schedule

Date	Day	Time Slot & Recreation Area	
July 9	Thursday	2. 12:00 - 4:00 p.m.	Museum
		3. 4:00 - 8:00 p.m.	Picnic Area
July 11	Saturday	1. 8:00 a.m. - 12:00 p.m.	Museum
		2. 12:00 - 4:00 p.m.	Picnic Area
July 25	Saturday	1. 8:00 a.m. - 12:00 p.m.	Picnic Area
		3. 4:00 - 8:00 p.m.	Museum
July 27	Monday	2. 12:00 - 4:00 p.m.	Museum
		3. 4:00 - 8:00 p.m.	Picnic Area
August 8	Saturday	1. 8:00 a.m. - 12:00 p.m.	Museum
		2. 12:00 - 4:00 p.m.	Picnic Area
August 10	Monday	1. 8:00 a.m. - 12:00 p.m.	Picnic Area
		3. 4:00 - 8:00 p.m.	Museum
August 15	Saturday	2. 12:00 - 4:00 p.m.	Museum
		3. 4:00 - 8:00 p.m.	Picnic Area
August 17	Monday	1. 8:00 a.m. - 12:00 p.m.	Picnic Area
		2. 12:00 - 4:00 p.m.	Museum
August 29	Saturday	1. 8:00 a.m. - 12:00 p.m.	Picnic Area
		3. 4:00 - 8:00 p.m.	Museum
August 30	Sunday	2. 12:00 - 4:00 p.m.	Museum
		3. 4:00 - 8:00 p.m.	Picnic Area

approximately 33,642 visitors would visit MSHS during the period between July 1 and August 31, 1998 (DNR, 1998). Therefore, with a 95% confidence interval and a plus or minus 5.8% margin of error, a sample size of 300 was required (Folz, 1996). A random sample of adult visitors (18 years of age and older) who visited MSHS during the study period were the respondents for this study.

Slot 2 = 12:00 p.m. - 4:00 p.m., and Time Slot 3 = 4:00 p.m. - 8 p.m. A time slot was randomly chosen (Time Slot 2) and assigned to the first of the scheduled survey dates. Thereafter, time slots were assigned in ranking order based on the first time slot. For example, the first survey date would be surveyed during time slots 2 and 3, the second date during slots 1 and 2, the third during slots 3 and 1, and so on. This method

was chosen to allow each of the three time slots to be surveyed at least once during the two-day block, and each time slot to be surveyed at least 6 times over the 10 days. This method was also chosen to allow visitors leaving the site at various times of the day an equal opportunity for being sampled.

QUESTIONNAIRE

The questionnaire used in this study was based on the questionnaire developed by Fink (1997) for the Meramec State Park Visitor Survey. A copy of the questionnaire for this study is provided in Appendix A.

SELECTION OF SUBJECTS

The survey of visitors at MSHS was administered on-site, to eliminate the non-response bias of a mail-back survey. Because MSHS has two recreation areas with separate entrances, it was determined that an exit survey would not be feasible. Therefore, a survey site was located in the parking lot of the museum to survey visitors leaving the museum, and a roving route survey of visitors at the picnic area was also conducted. All adults (18 years of age and older) in these areas were asked to participate in the survey.

DATA COLLECTION

The surveyor wore a state park T-shirt and was either stationed at the survey site at the museum or walked a roving route in the picnic area. During the selected time slot, the surveyor asked every visitor who was 18 years of age and older and in these areas to voluntarily complete the questionnaire, unless he or she had previously filled one out. To increase participation rates,

respondents were given the opportunity to enter their name and address into a drawing for a prize package and were assured that their responses to the survey questions were anonymous and would not be attached to their prize entry form. Willing participants were then given a pencil and a clipboard with the questionnaire and prize entry form attached. Once respondents were finished, the surveyor collected the completed forms, clipboards, and pencils. Survey protocol is given in Appendix B and a copy of the prize entry form is provided in Appendix C.

An observation survey was also conducted to obtain additional information about: date, day, time slot, and weather conditions of the survey day; the number of adults and children in each group of survey participants; and the number of individuals asked to fill out the questionnaire, whether they were respondents, non-respondents, or had already participated in the survey. This number was used to calculate response rate, by dividing the number of useable surveys collected by the number of adult visitors asked to complete a questionnaire. A copy of the observation survey form is provided in Appendix D.

DATA ANALYSIS

The data obtained for the MSHS study was analyzed with the Statistical Packages for the Social Sciences (SPSS) (SPSS, 1996).

Frequency distributions and percentages of responses to the survey questions and the observation data were determined. The responses to two open-ended questions, questions 6 and 18, were listed as well as grouped into categories

for frequency and percentage calculations. The number of surveys completed by month, by date, by day of week, by weekend versus weekday, by time slot, and by recreation area were also determined.

Comparisons using t-tests for each group were also made to determine any statistically significant differences ($p < .05$) in the following selected groups' satisfaction with site features (question 4), ratings of site attributes (question 5), overall satisfaction (question 8), and perceptions of crowding (question 9). The selected groups included:

1. First-time visitors versus repeat visitors (question 1).
2. Weekend visitors versus weekday visitors. Weekend visitors were surveyed on Saturday and Sunday, weekdays were Monday through Friday.
3. Visitors to the museum versus visitors to the picnic area.

Other comparisons were made using t-tests to determine any statistically significant differences in visitors who rated the site as excellent on being safe versus visitors who rated the site as good, fair, or poor on being safe, for the following categories:

1. First-time versus repeat visitors.
2. Weekend versus weekday visitors.
3. Museum visitors versus picnic area visitors.

Differences between visitors who rated the site as excellent on being safe versus those who did not were also compared on the following questions: differences in socio-demographic characteristics, perceptions of crowding, measures of satisfaction with site features, ratings of site attributes, and overall satisfaction.

An additional comparison includes overall satisfaction between visitors who felt some degree of crowding and those who were not at all crowded on their visit.

Results

This section describes the results of the Mastodon State Historic Site Visitor Survey. For the percentages of responses to each survey question, see Appendix E. The number of individuals responding to each question is represented as "n=."

SURVEYS COLLECTED & RESPONSE RATES

A total of 301 surveys were collected at MSHS during July and August, with 101 collected in July (33.6%) and 200 collected in August (66.4%). Tables 2, 3, 4, and 5 show surveys collected by day of week, by time slot, by date, and by recreation area respectively. Of the 301 surveys collected, 238 (76.4%) were collected on weekends (Saturday and

Sunday) and 67 (23.6%) were collected on weekdays (Monday through Friday). The overall response rate was 91.8%, with daily response rates ranging from 68.2% to 100%.

SAMPLING ERROR

With a sample size of 301, a confidence interval of 95%, and a margin of error of plus or minus 5.8%, there is a 95% certainty that the true results of this study are within plus or minus 5.8% of the study findings. For example, from the results that 45.2% of the visitors to MSHS during the study period were female, it can be stated that between 39.4% and 51% of the MSHS visitors were female.

Table 2. Surveys Collected by Day of Week

Day	Frequency	Percent
Sunday	53	17.6%
Monday	56	18.6%
Thursday	15	5.0%
Saturday	<u>177</u>	<u>58.8%</u>
Total	301	100.0%

Table 3. Surveys Collected by Time Slot

Time Slot	Frequency	Percent
1. 8 a.m. - 12 p.m.	97	32.2%
2. 12 p.m. -- 4 p.m.	141	46.8%
3. 4 p.m. - 8 p.m.	<u>63</u>	<u>20.9%</u>
Total	301	100.0%

Table 4. Surveys Collected by Date

Day and Date	Frequency	Percent
Thursday, July 9	15	5.0%
Saturday, July 11	18	6.0%
Saturday, July 25	46	15.3%
Monday, July 27	22	7.3%
Saturday, August 8	35	11.6%
Monday, August 10	10	3.3%
Saturday, August 15	48	15.9%
Monday, August 17	24	8.0%
Saturday, August 29	30	10.0%
Sunday, August 30	53	17.6%
Total	301	100.0%

Table 5. Surveys Collected by Recreation Area

Recreation Area	Frequency	Percent
Area 1. Picnic Area	125	41.5%
Area 2. Museum	176	58.5%
Total	301	100.0%

SOCIO-DEMOGRAPHIC CHARACTERISTICS

Age

The average age of adult visitors to MSHS was 42.7. When grouped into four age categories, 23.5 % of the adult visitors were between the ages of 18-34, 59.7% were between the ages of 35-54, 11.6% were between the ages of 55-64, and 4.8% were 65 years of age or older.

Gender

Visitors to MSHS were almost equally male and female. Male visitors comprised 54.8% of all visitors, and female visitors comprised 45.2% of all visitors.

Education

Over one-third (37.9%) of visitors to MSHS indicated they had a four-year college degree or a post-graduate degree. Those who indicated they had some college or vocational school were 37.6%, and 24.4% indicated they had a high school education or less.

Income

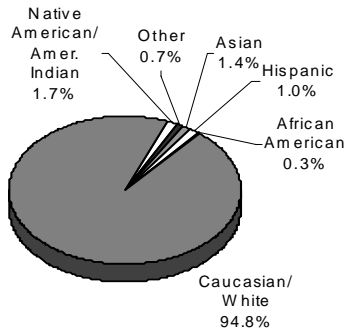
The largest percentage (43%) of visitors to MSHS reported they had an annual income of between \$25,000 and \$50,000. The second largest percentage (29%) of visitors had an income of between \$50,001 and \$75,000. Visitors falling into the "less than \$25,000" category and into the "more than

\$75,000" category were 10.7% and 17.3% respectively.

Ethnic Origin

Figure 1 indicates the ethnic origin of MSHS visitors. The vast majority (94.8%) of visitors was Caucasian. Only 1.4% were Asian, 1.0% were Hispanic,

Figure 1. Ethnic origin of MSHS visitors.



and 1.7% were Native American. Less than one percent African American (0.3%).

Visitors with Disabilities

Only 6.1% of the visitors to MSHS reported having some type of disability that substantially limited one or more life activities or that required special accommodations. All of the disabilities reported were mobility-impairing disabilities. For a list of responses to disabilities, see Appendix E, question 15.

Residence

The majority of visitors were from Missouri (81.7%) with 7.1% from Illinois. The Missouri visitors were mainly from the St. Louis area.

USE PATTERNS

Visit Characteristics

A little more than half (55.5%) of the visitors to MSHS were first time visitors, while 44.5% of visitors were repeat visitors. The average number of times all visitors reported visiting MSHS within the past year was 15 times.

Figure 2. Residence of MSHS Visitors by Zip Code.



More than half (61.2%) of the visitors to MSHS visited the site with family. Less than one-fifth (17.7%) visited with family and friends, while 6.8% visited with friends, and 4.8% visited the site alone. Less than ten percent (7.1%) indicated visiting the site with a club or organized group, and only 2.4% visited the site with "other" during their visit to MSHS.

Group size

Average group size of visitors to MSHS was 4.2 people per group. Approximately 783 adults and 584 children visited MSHS during the time slots of the study period.

RECREATION ACTIVITY PARTICIPATION

Respondents to the survey were asked what activities they participated in during their visit to MSHS. Figure 3 shows the percentage of visitor participation in the five highest activities. Visiting the museum was the highest reported (64.1%) and hiking was second (58.8%). Picnicking, viewing wildlife, and studying nature were next

at 31.9%, 23.9%, and 20.3% respectively.

MSHS visitors reported engaging in other activities, including attending participating in artifact or fossil identification (11.0%), attending an educational program (11.0%), and attending a special event (4.0%). Ten percent (10.6%) of visitors reported engaging in an "other" activity, and these included: visiting the playground, photography, attending a club picnic, jogging or walking, visiting the creek, and participating in the Passport Program.

SATISFACTION MEASURES

Overall Satisfaction

When asked about their overall satisfaction with their visit, there were no respondents who reported being very dissatisfied with their visit and less than one percent (0.7%) reported being somewhat dissatisfied, whereas 99.3% of visitors were either somewhat or very satisfied. Visitors' mean score for overall satisfaction was 3.84, based on a 4.0 scale with 4 being very satisfied and 1 being very dissatisfied.

Figure 3. Participation in recreation activities at MSHS.

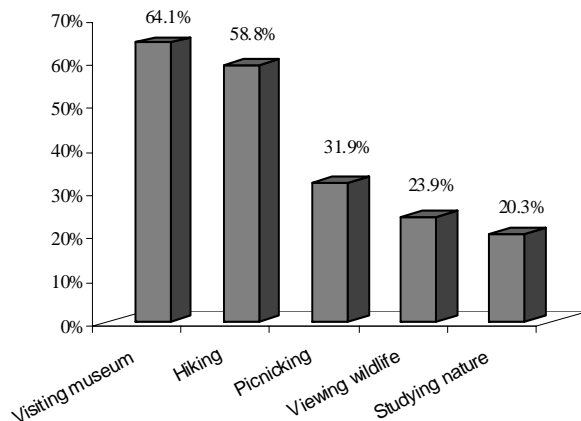
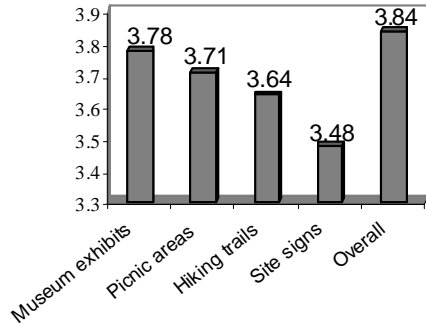


Figure 4. Satisfaction with MSHS features



No significant differences ($p < .05$) were found in overall satisfaction between first time visitors and repeat visitors, between weekend and weekday users, and between visitors to the two recreation areas.

Satisfaction with Site Features

Respondents were also asked to express how satisfied they were with four site features. Figure 4 shows the mean scores for the four features and also for visitors’ overall satisfaction. The satisfaction score for the museum

exhibits (3.78) was the highest, with the other scores ranging from 3.71 (picnic areas) to the lowest of 3.48 (site signs).

No significant differences ($p < .05$) were found in mean satisfaction ratings of the site attributes between first time visitors and repeat visitors. A significant difference ($p = .056$) was found between weekend visitors and weekday visitors regarding their satisfaction of museum exhibits. Weekday visitors had a higher mean satisfaction rating (3.87) than weekend visitors (3.75) regarding the museum exhibits. A significant difference ($p < .001$) was also found between museum visitors and picnic area visitors regarding their satisfaction with museum exhibits. Museum visitors had a higher mean satisfaction rating (3.85) than visitors to the picnic area (3.64) regarding the museum exhibits.

PERFORMANCE RATING

Visitors were asked to rate the site’s performance of eight select site attributes (question 5): being free of litter and trash, having clean restrooms, upkeep of park facilities, having a

Table 6. Mean Performance and Importance Scores for Site Attributes

Attribute	Mean Performance Score*	Mean Importance Score*
A. Being free of litter/trash	3.75	3.94
B. Having clean restrooms	3.28	3.85
C. Upkeep of park facilities	3.59	3.89
D. Having a helpful & friendly staff	3.69	3.78
E ₁ . Access for persons with disabilities	3.42	3.46
E ₂ . Access for persons with disabilities	3.40	3.67
F. Care of natural resources	3.63	3.91
G. Care of historical resources	3.67	3.88
H. Being safe	3.55	3.89

E₁ = All visitors

E₂ = Disabled visitors only

* 1 = Poor performance or low importance rating, 4 = excellent performance or importance rating

helpful and friendly staff, access for persons with disabilities, care of natural resources, care of historic resources, and being safe. Performance scores were based on a 4.0 scale, with 4 being excellent and 1 being poor.

There were significant differences ($p < .05$) between first time and repeat visitors' performance ratings of MSHS being free of litter and trash, having clean restrooms, upkeep of park facilities, having helpful and friendly staff, care of natural resources, and care of historical resources. First time visitors had significantly higher mean performance ratings than repeat visitors regarding being free of litter and trash (3.81 and 3.69 respectively), having clean restrooms (3.48 and 3.06 respectively), upkeep of park facilities (3.66 and 3.50 respectively), having helpful and friendly staff (3.78 and 3.58 respectively), care of natural resources (3.69 and 3.56), and care of historical resources (3.74 and 3.58).

There were significant differences ($p < .05$) between the performance ratings of weekend and weekday visitors regarding MSHS's having clean restrooms and its care of the natural resources. Weekday visitors had significantly higher mean performance ratings than weekend visitors regarding the restrooms (3.67 and 3.17 respectively) and care of natural resources (3.76 and 3.59 respectively).

Significant differences ($p < .01$) were found in the mean ratings of site performance regarding being free of litter and trash, having clean restrooms, upkeep of park facilities, having helpful and friendly staff, care of natural resources, care of historical resources, and being safe, between visitors to the picnic area and visitors to the museum. Museum visitors had significantly higher mean performance ratings than picnic area visitors for the site being free of litter and trash (3.84 and 3.64 respectively); for the site having clean restrooms (3.65 and 2.79 respectively); for upkeep of park facilities (3.69 and 3.45 respectively); for having helpful and friendly staff (3.78 and 3.54); for care of natural resources (3.72 and 3.50); for care of historical resources (3.75 and 3.55); and for being safe (3.64 and 3.43).

IMPORTANCE-PERFORMANCE MEASURES

The Importance-Performance (I-P) Analysis approach was used to analyze questions 5 and 7. Mean scores were calculated for the responses of the two questions regarding visitors' ratings of the performance and importance of seven select site attributes. Table 6 lists the scores of these attributes, which were based on a 4.0 scale of 4 being excellent and 1 being poor for the performance ratings, and 4 being very important and 1 being very unimportant for the importance ratings.

Figure 5. Importance-Performance Matrix of Site Attributes

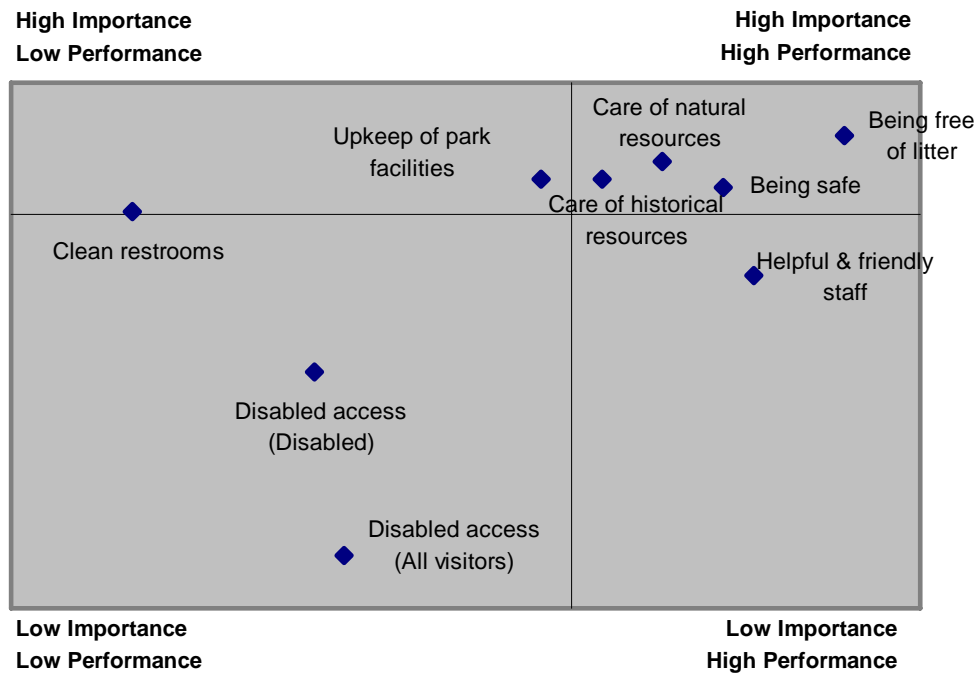


Figure 5 shows the Importance-Performance (I-P) Matrix. The mean scores were plotted on the I-P Matrix to illustrate the relative performance and importance rating of the attributes by site visitors.

The I-P Matrix is divided into four quadrants to provide a guide to aid in possible management decisions. For example, the upper right quadrant is labeled “higher importance, higher performance” and indicates the attributes in which visitors feel the site is doing a good job. The upper left quadrant indicates that management may need to focus on these attributes, because they are important to visitors but were given a lower performance rating. The lower left and right quadrants are less of a concern for management, because they exhibit attributes that are not as important to visitors.

MSHS is rated high on being free of litter and trash, care of the natural resources, care of historical resources, and being safe. Characteristics that visitors felt were important but rated MSHS low on performance were having clean restrooms and upkeep of park facilities.

There were no significant differences between the ratings of importance regarding having clean restrooms and upkeep of park facilities for first time visitors and repeat visitors, weekend and weekday visitors, or visitors to the two recreation areas.

CROWDING

Visitors to MSHS were asked how crowded they felt during their visit. The following nine-point scale was used to

determine visitors' perceptions of crowding:

1	2	3	4	5	6	7	8	9
Not at all		Slightly		Moderately		Extremely		
Crowded		Crowded		Crowded		Crowded		

Visitors' overall mean response to this question was 1.34. The majority (83.1%) of visitors to MSHS did not feel at all crowded (selected 1 on the scale) during their visit. The rest (16.9%) felt some degree of crowding (selected 2-9 on the scale) during their visit.

Visitors who indicated they felt crowded during their visit were also asked to specify where they felt crowded (question 10). Less than 20% (18.0%) of the visitors who indicated some degree of crowding answered this open-ended question. Table 7 lists the locations where visitors felt crowded at MSHS. Of those who reported feeling crowded, one-third (30.0%) felt crowded on the hiking trails, one-third (30.0%) felt crowded in the parking areas, 20.0%

felt crowded in the picnic areas and playground, and 20.0% felt crowded the museum

A significant difference ($p < .05$) was found in visitors' perceptions of crowding between first time and repeat visitors. Repeat visitors had a significantly higher mean crowded score (1.47) than had first time visitors (1.23). No significant differences were found in visitors' perceptions of crowding between weekend and weekday visitors and between visitors to the two recreation areas.

Crowding and satisfaction

A significant difference ($p < .05$) was found in visitors' mean overall satisfaction with their visit and whether they felt some degree of crowding or not. Visitors who did not feel crowded had a mean overall satisfaction score of 3.86, whereas visitors who felt some degree of crowding had a mean overall satisfaction score of 3.74.

Table 7. Locations Where MSHS Visitors Felt Crowded During Their Visit

Location	Frequency	Percent
Hiking trails	3	30.0%
Parking areas	3	30.0%
Picnic areas & playgrounds	2	20.0%
Museum	<u>2</u>	<u>20.0%</u>
Total	10	100.0%

SAFETY CONCERNS OF VISITORS

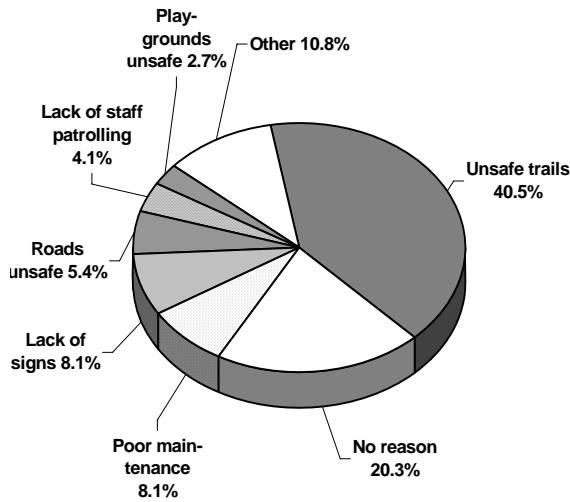
Over one-third (37.5%) of visitors did not rate the site as excellent for safety, 31.3% of whom rated the site good, 4.7% rated the site fair, and 1.5% rated the site poor on being safe. Of these, 71.8% noted what influenced their rating. Their comments were grouped into categories and are shown in Figure 6. Appendix F provides a list of the comments.

The majority (40.5%) of the responses commented on unsafe trail conditions. One-fifth (20.3%) of the responses were from visitors who either did not have a reason for not rating the site excellent or for those visitors who felt that no place could be perfect and there was always room for improvement. Other safety concerns included lack of or unclear signs (8.1%), poor maintenance (8.1%), traffic unsafe where trails cross road (5.4%), lack of park staff patrolling (4.1%), playground equipment unsafe (2.7%), and other concerns (10.8%).

There were no significant differences in the rating of safety by first-time visitors versus repeat visitors, by weekend versus weekday users, and by socio-demographic characteristics of visitors. However, there were significant differences ($p < .05$) in the ratings of safety between visitors to the two recreation areas. Visitors to the museum had a higher mean safety rating (3.64) than visitors to the picnic area (3.43).

To determine if there were differences in perceptions of crowding, satisfaction with site features, rating of site attributes, and overall satisfaction, responses were divided into two groups

Figure 6. Comments from Visitors Not Rating MSHS Excellent on Safety



based on how they rated MSHS on being safe. Group 1 included those who rated the site excellent, and Group 2 included those who rated the site as good, fair, or poor.

A significant difference ($p < .01$) was found between the two groups and their perceptions of crowding. The mean crowded score for Group 1 was 1.23, and the mean crowded score for Group 2 was 1.57, indicating that those who rated the site as excellent on being safe also felt less crowded. Group 1 also had a significantly ($p < .001$) higher satisfaction of all four site features, had a significantly higher ($p < .001$) rating of site attributes, and had a significantly ($p < .001$) higher overall satisfaction rating.

ADDITIONAL VISITOR COMMENTS

Respondents to the survey were also given the opportunity to write any additional comments or suggestions on how DNR could make their experience

at MSHS a better one (question 18). Over one-fifth (22.9%) of the total survey participants responded to this question, with 56 responses given by 69 respondents. The comments and suggestions were listed and grouped by similarities into 7 categories for frequency and percentage calculations. The list of comments and suggestions is found in Appendix G. Table 8 lists the frequencies and percentages of the comments and suggestions by category. Half (50.0%) of the comments were positive comments, including such

comments as: “Enjoyed myself,” “Great park,” and “Just keep it going.” The rest (50.0%) of the comments were categorized based on similar suggestions or complaints, such as suggestions and complaints about trail signs or information, complaints or suggestions about the restrooms, or an “other” category for suggestions and complaints not fitting into any other category.

Table 8. Frequency and Percentage of Comments and Suggestions from MSHS Visitors

Category	Frequency	Percent
1. General positive comments	43	50.0%
2. Improve trail signs/information	9	10.5%
3. Suggestions/complaints about restrooms	7	8.1%
4. Need additional/improved trails	6	7.0%
5. Suggestions/complaints regarding museum	5	5.8%
6. Expand/improve playground	5	5.8%
7. Other	11	12.8%
Total	86	100.0%

Discussion

MANAGEMENT IMPLICATIONS

The results of this study provide relevant information concerning MSHS visitors. However, the results should be interpreted with caution. The surveys were collected only during the summer months of July, and August; therefore, visitors who visit during other seasons of the year are not represented in the study's sample. The results, however, are still very useful to site managers and planners, because much of the annual visitation occurs during these two months.

Over 94% of MSHS visitors reported that they were very satisfied with their visit to the site. Williams (1989) states that visitor satisfaction with previous visits is a key component of repeat visitation. The high percentage of repeat visitation (45%) combined with their positive comments provide evidence that MSHS visitors are indeed satisfied with their site experience. Half (50%) of the visitors who gave comments or suggestions provided positive comments concerning MSHS and its staff.

Safety perceptions of MSHS are also an important management concern, as over 37% of visitors did not report an excellent rating of the site being safe. While visitors have a variety of reasons for not rating the site as excellent, a significant percentage (46%) of the visitors' responses were related to unsafe trail conditions and the danger of traffic were the trails crossed a busy road. To address the safety concerns of MSHS visitors, one solution would be posting signs cautioning visitors of trail

difficulty and placing more prominent trail markers. Another solution might be to post signs cautioning traffic to slow for pedestrians.

To put the issue of site safety into perspective, 94% rated the site as good or excellent, while less than 5% of visitors felt the site rated fair and less than 2% gave it a poor rating (Figure 7). Visitor comments indicate that safety is largely a perceptual issue. Those with safety concerns also felt more crowded and less satisfied than those who rated safety as excellent (Figure 8). Additional research could focus on the effectiveness of approaches that address visitor safety perceptions (e.g., increased signage).

Although crowding was not an issue identified by the majority of MSHS visitors, 19% of visitors expressed some degree of crowding. Crowding is a perceptual construct not always explained by the number or density of other visitors. Expectations of visitor numbers and the behavior of other visitors also play a significant role in crowding perceptions.

Figure 7. Safety ratings of MSHS.

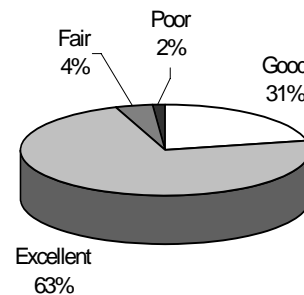
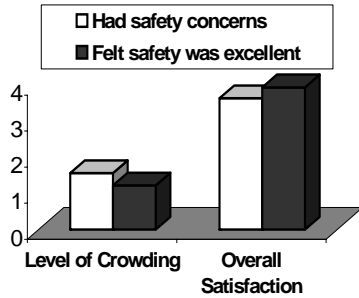


Figure 8. Levels of Crowding and Satisfaction Ratings by Safety Concerns



MSHS visitors who felt crowded had significantly lower satisfaction ratings than visitors who did not feel crowded (Figure 9). Repeat visitors also felt significantly more crowded than first-time visitors.

As perceptions of crowding are inversely correlated to overall satisfaction, site managers should address the issue of crowding. Armistead and Ramthun (1995) suggest that repeat visitors often develop a sense of ownership for a recreation area and may feel encroached upon even if density levels remain the same. One option is to review comments relating to crowding and consider options that would reduce crowding perceptions. For example, most comments listed the trails and parking areas as where visitors felt most crowded. Further study could determine if crowding perceptions here are due to the number of people or perhaps the behavior of those at these areas.

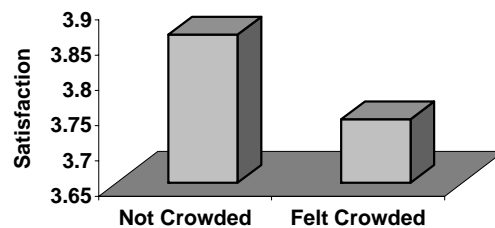
Visitors felt that upkeep of site facilities and having clean restrooms were very important but rated MSHS’s upkeep and

restrooms as needing attention. Repeat visitors rated MSHS lower on upkeep of park facilities (3.50) and clean restrooms (3.06) than first time visitors (3.66 and 3.48 respectively). Weekend visitors also rated the restrooms lower (3.17) than weekday visitors (3.67). And finally, visitors to the picnic area also rated the site lower (3.45) on upkeep of park facilities and clean restrooms (2.79) than visitors to the museum (3.69 and 3.65 respectively). These findings suggest that more time could be spent maintaining the pit toilet and other facilities in the picnic area, particularly on the weekends. Another suggestion is that flush toilets and running water be provided in the picnic area.

The results of the present study suggest some important management and planning considerations for MSHS. Even though MSHS visitors rated their visits and the site features relatively high, attention to crowding, safety, and facility maintenance can positively effect these ratings.

Just as important, on-going monitoring of the effects of management changes will provide immediate feedback into the

Figure 9. Overall Satisfaction is Lower For Those Who Felt More Crowded



effectiveness of these changes. On-site surveys provide a cost effective and timely vehicle with which to measure management effectiveness and uncover potential problems.

RESEARCH RECOMMENDATIONS

The results of the present study serve as baseline visitor information of MSHS. The frequency and percentage calculations of survey responses provide useful information concerning socio-demographic characteristics, use patterns, and satisfaction of MSHS visitors. In addition, the “sub-analysis” of data is important in identifying implications for management of MSHS. (The sub-analysis in the present study included comparisons using Chi-square and ANOVA between selected groups and the Importance-Performance analysis.) Additional relevant information may be determined from further sub-analysis of existing data. Therefore, it is recommended additional sub-analysis be conducted to provide even greater insight to management of the site.

Additional visitor surveys at MSHS should also be conducted on a regular basis (e.g., every three, four, or five years). Future MSHS studies can identify changes and trends in socio-demographic characteristics, use patterns, and visitors’ satisfaction at MSHS.

The methodology used in this study serves as a standard survey procedure that the DSP can use in the future. Other Missouri state parks should be surveyed similarly to provide valid results for comparisons of visitor information between parks, or to measure change over time in other parks.

The present study was conducted only during the summer season. Therefore, user studies in parks and historic sites might be conducted during other seasons for comparison between summer visitors and visitors during other seasons.

METHODOLOGY RECOMMENDATIONS AND CONSIDERATIONS FOR OTHER PARKS

The on-site questionnaire and the methodology of this study were designed to be applicable to other Missouri state parks.

Survey Signage

It is recommended that adequate signage be utilized when collecting surveys on-site. A “Visitor Survey” sign was used in the present study to inform visitors exiting the museum that a survey was being conducted. Having the sign for that purpose aided in the workability of the methodology, as many visitors stopped before being asked to do so. However, the “survey station” became an “information station” when visitors arriving at the museum saw the surveyor with clipboards and surveys. Having an assistant to help answer visitors’ questions and to pass out surveys would be helpful.

Survey Administration

The prize package drawing and the one-page questionnaire undoubtedly helped attain the response rate in the present study. Also, the fact that the surveyor approached visitors on foot while they were in the picnic area greatly contributed to the high response rate. Many visitors expressed appreciation that they were being asked their opinion, and would often take the opportunity to further comment to the surveyor their feelings about MSHS. For this reason,

and because the surveyor was required to walk a roving route in the picnic area, an assistant to help administer the surveys would be helpful.

Achieving the highest possible response rate (within the financial restraints) should be a goal of any study. To achieve higher response rates, the following comments are provided.

The most frequent reasons that visitors declined to participate in the survey were because of the heat and also because they were in a hurry. The majority of non-respondents were very cooperative and many provided positive comments about the park. Some non-respondents

even asked if they could take a survey and mail it back. One recommendation would be to have self-addressed stamped envelopes available in future surveys to offer to visitors only after they do not volunteer to fill out the survey on-site. This technique may provide higher response rates, with minimal additional expense.

One caution, however, is to always attempt to have visitors complete the survey on-site, and to only use the mail-back approach when it is certain visitors would otherwise be a non-respondent.

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Appendix A. Mastodon State Historic Site User Survey

MASTODON STATE HISTORIC SITE

The Missouri Department of Natural Resources is seeking your evaluation of Mastodon State Historic Site. This survey is voluntary and completely anonymous. Your cooperation is important in helping us make decisions about managing this park. Thank you for your time.

1. Is this your first visit to Mastodon State Historic Site? *(Check only one box.)*

yes

no **If no, how many times have you visited this park in the past year?** _____

2. With whom are you visiting the park? *(Check only one box.)*

alone family and friends club or organized group
 family friends other *(Please specify.)*

3. Which recreational activities have you engaged in during this park visit? *(Check all that apply.)*

picnicking visiting museum going on interpretive trail
 hiking viewing wildlife going on guided nature hike
 studying nature special event other *(Please specify.)*

4. How satisfied are you with each of the following in Mastodon State Historic Site? *(Check one box for each feature.)*

	Very Satisfied	Somewhat Satisfied	Somewhat Dissatisfied	Very Dissatisfied	Don't Know
a. museum exhibits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. park signs		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. picnic areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. interpretive trail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. How do you rate Mastodon State Historic Site on each of the following? *(Check one box for each feature.)*

	Excellent	Good	Fair	Poor	Don't Know
a. being free of litter/trash	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. having clean restrooms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. upkeep of park facilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. having a helpful & friendly staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. access for persons with disabilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. care of natural resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. being safe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. If you did not rate this park as excellent on being safe, what influenced your rating?

7. When visiting any state park, how important are each of these items to you? *(Check one box for each feature.)*

	Very Important	Somewhat Important	Somewhat Unimportant	Very Unimportant	Don't Know
a. being free of litter/trash	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. having clean restrooms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. upkeep of park facilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. having a helpful & friendly staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. access for persons with disabilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. care of natural resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. being safe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. Overall, how satisfied are you with this visit to Mastodon State Historic Site? *(Check only one box.)*

Very Satisfied	Somewhat Satisfied	Somewhat Dissatisfied	Very Dissatisfied
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PLEASE TURN SURVEY OVER.

MASTODON STATE HISTORIC SITE

9. During this visit, how crowded did you feel? *(Circle one number.)*

1	2	3	4	5	6	7	8	9
Not at all		Slightly			Moderately			Extremely
Crowded		Crowded			Crowded			Crowded

10. If you felt crowded on this visit, where did you feel crowded?

11. What is your age? _____

12. What is your gender? female male

13. What is the highest level of education you have completed? *(Check only one box.)*

grade school vocational school graduate of 4-year college
 high school some college post-graduate education

14. What is your ethnic origin? *(Check only one box.)*

Asian African American Native American/American Indian
 Hispanic Caucasian/White Other *(Please specify.)*

15. Do you have a disability that substantially limits one or more life activities or might require special accommodations?

yes **If yes, what disability or disabilities do you have?**
 no _____

16. What is your 5-digit zip code *(or country of residence, if you live outside the U.S.)?* _____

17. What is your annual household income?

less than \$25,000 \$50,001 - \$75,000
 \$25,000 - \$50,000 over \$75,000

18. Please write any additional comments about your park visit or suggestions on how the Missouri Department of Natural Resources can make your experience in Mastodon State Historic Site a better one.

**THANK YOU FOR YOUR HELP.
YOU ARE ALWAYS WELCOME IN MISSOURI STATE PARKS**

Appendix B. Survey Protocol

Protocol for Mastodon State Historic Site User Survey

Hi, my name is _____, and I am conducting a survey of park visitors for Missouri state parks. The information that I am collecting will be useful for future management of Mastodon State Historic Site.

The survey is one page, front and back side, and only takes about 3-5 minutes to complete. Anyone who is 18 or older may complete the survey, and by completing the survey, you have the opportunity to enter your name in a drawing for a prize package of \$100 worth of concession coupons. Your participation is voluntary, and your responses will be completely anonymous.

Your input is very important to the management of Mastodon State Historic Site. Would you be willing to help by participating in the survey?

[If no,] Thank you for your time. Have a nice day.

[If yes,]

Here is a pencil and clipboard with the survey attached (for each respondent). Please complete the survey on both sides. When finished, return the survey(s), clipboard(s), pencils, and prize entry form(s) to me.

Thank you for taking time to complete the survey. Your help is greatly appreciated. Have a nice day.

Appendix C. Prize Entry Form

**WIN A PRIZE PACKAGE OF CONCESSION COUPONS
WORTH \$100**

Enter a drawing to win \$100 worth of gift certificates! These certificates are good for any concessions at any state park or historic site. Concessions include cabin rentals, canoe rentals, boat rentals, restaurant dining, horseback riding, etc.

You may enter the drawing by simply filling out the back of this entry form and returning it to the surveyor. Your name, address, and telephone number will be used only for this drawing; thus, your survey responses will be anonymous. The drawing will be held November 1, 1998. Winners will be notified by telephone or mail. Redemption of gift certificates is based on dates of availability through August 31, 1999.

Name: _____

Address: _____

Phone #: () _____

Appendix D. Observation Survey

Date _____ Day of Week _____ Time Slot _____
 Weather _____ Temperature _____ Park/Site _____

	Survey #'s	# of Adults	# of Children	Area
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

Time Slot Codes:

Time Slot 1 = 8:00 - 12:00 p.m.
 Time Slot 2 = 12:00 - 4:00 p.m.
 Time Slot 3 = 4:00 - 8:00 p.m.

Weather Codes (examples):

Hot & Sunny Windy
 Cold & Rainy Sunny
 Cloudy Humid

Appendix E. Responses to Survey Questions

Mastodon State Historic Site Visitor Survey

1. Is this your first visit to Mastodon State Historic Site? (n=299)

yes 55.5%
no 44.5%

If no, how many times have you visited this park in the past year? (n=109)

The responses from this open-ended question were grouped into the following 11 categories:

0 18.3%
1 17.4%
2 12.8%
3-5 17.4%
6-10 7.4%
11-20 11.8%
21-30 4.6%
31-40 0.9%
50 2.8%
75 1.8%
100+ 4.5%

The average # of times repeat visitors visited the park in the past year was 15 times.

2. With whom are you visiting the park? (n=294)

alone 4.8% family & friends 17.7% club or organized group 7.1%
family 61.2% friends 6.8% other 2.4%

3. Which recreational activities have you engaged in during this park visit? (n=305)

picnicking 31.9% visiting museum 64.1% artifact or fossil identification 11.0%
hiking 58.8% viewing wildlife 23.9% attending educational program 11.0%
special event 4.0% studying nature 20.3% other 10.6%

In addition to percentages of responses, a mean score was calculated for each feature in questions 4, 5, 7, and 8. The score is based on a 4.0 scale with 4 = very satisfied, 3 = somewhat satisfied, 2 = somewhat dissatisfied, and 1 = very dissatisfied (Q. 4 & 8); 4 = excellent, 3 = good, 2 = fair, and 1 = poor (Q. 5); and 4 = very important, 3 = somewhat important, 2 = somewhat unimportant, and 1 = very unimportant (Q. 7). The mean score is listed in parenthesis following each feature.

4. How satisfied are you with each of the following in Mastodon State Historic Site?

	Very Satisfied	Somewhat Satisfied	Somewhat Dissatisfied	Very Dissatisfied	
a. museum exhibits (3.78)	79.0%	19.8%	1.2%	0.0%	n=243
b. site signs (3.48)	60.3%	28.7%	9.3%	1.7%	n=237
c. picnic areas (3.71)	72.1%	26.8%	1.1%	0.0%	n=241
d. hiking trails (3.64)	71.2%	22.8%	4.6%	1.4%	n=219

5. How do you rate Mastodon State Historic Site on each of the following?

	Excellent	Good	Fair	Poor	
a. being free of litter/trash (3.75)	78.5%	19.1%	1.7%	0.7%	n=293
b. having clean restrooms (3.28)	57.3%	24.2%	7.6%	10.9%	n=211
c. upkeep of park facilities (3.59)	63.6%	32.5%	3.2%	0.7%	n=280
d. having a helpful/friendly staff (3.69)	72.4%	24.5%	3.1%	0.8%	n=257
e. access for disabled persons (3.42)	55.3%	32.9%	10.0%	1.8%	n=170
f. care of natural resources (3.63)	67.5%	28.4%	3.7%	0.4%	n=268
g. care of historical resources (3.67)	69.4%	28.3%	2.3%	0.0%	n=258
h. being safe (3.55)	62.5%	31.3%	4.7%	1.5%	n=275

6. If you did not rate this park as excellent on being safe, what influenced your rating?

68 visitors (71.8% of those who did not rate the park as excellent on being safe) responded to this question with 74 responses. The 74 responses were divided into 8 categories. Frequencies and percentages of responses in each category are listed.

	Frequency	Percent
1. Trail conditions unsafe	30	40.5%
2. Don't know/no reason/no place is perfect	15	20.3%
3. Lack of or unclear signs	6	8.1%
4. Poor maintenance	6	8.1%
5. Traffic unsafe where trails cross road	4	5.4%
6. Lack of staff patrolling	3	4.1%
7. Unsafe playground equipment	2	2.7%
8. Other	8	10.8%
Total	74	100%

7. When visiting any state park, how important are each of these items to you?

	Very Important	Somewhat Important	Somewhat Unimportant	Very Unimportant	
a. being free of litter/trash (3.94)	94.3%	5.4%	0.3%	0.0%	n=298
b. having clean restrooms (3.85)	85.8%	13.5%	0.3%	0.3%	n=296
c. upkeep of park facilities (3.88)	88.9%	11.1%	0.0%	0.0%	n=297
d. having helpful/friendly staff (3.78)	79.2%	19.5%	1.4%	0.0%	n=293
e. access for disabled persons (3.46)	62.5%	24.1%	10.0%	3.4%	n=261
f. care of natural resources (3.91)	90.5%	9.5%	0.0%	0.0%	n=296
g. care of historical resources (3.88)	88.2%	11.8%	0.0%	0.0%	n=262
h. being safe (3.89)	89.2%	10.4%	0.3%	0.0%	n=297

8. Overall, how satisfied are you with this visit to Mastodon State Historic Site?

	Very Satisfied	Somewhat Satisfied	Somewhat Dissatisfied	Very Dissatisfied	
(Mean score = 3.84)	84.6%	14.7%	0.7%	0.0%	n=299

9. During this visit, how crowded did you feel? (n=294)

On a scale of 1-9, with 1 = Not at all crowded and 9 = Extremely crowded, the mean response was 1.34.

10. If you felt crowded on this visit, where did you feel crowded?

A total of 10 open-ended responses were given by 9 visitors. The 10 responses were divided into 4 categories. Frequencies and percentages of responses in each category are listed.

	<u>Frequency</u>	<u>Percent</u>
hiking trails	3	30%
parking areas	3	30%
picnic areas & playground	2	20%
museum	<u>2</u>	<u>20%</u>
Total	10	100%

11. What is your age? (n=293)

Responses were divided into the following 4 categories:

18-34	23.5%
35-54	59.7%
55-65	11.6%
65+	4.8%

(Average age = 42.7)

12. Gender? (n=294)

Female	45.2%
Male	54.8%

13. What is the highest level of education you have completed? (n=295)

grade school	1.7%	vocational school	6.1%	graduate of 4-year college	19.3%
high school	22.7%	some college	31.5%	post-graduate education	18.6%

14. What is your ethnic origin? (n=291)

Asian	1.4%	African American	0.3%	Native American/American Indian	1.7%
Hispanic	1.0%	Caucasian/White	94.8%	Other	0.7%

15. Do you have a disability that substantially limits one or more life activities or might require special accommodations? (n=294)

yes	3.1%
no	96.9%

If yes, what disability or disabilities do you have? (n=5)

The following is a list of all responses to this open-ended question.

Arthritis.	Breathing, and difficulty with walking.	Walking.
Knee problems.	Polio.	

16. What is your 5-digit zip code (or country of residence, if you live outside the U.S.)? (n=)

The states with the highest percentages of respondents were:

Missouri 81.7%

Illinois 7.3%

Georgia 3.7%

17. What is your annual household income? (n=272)

less than \$25,000 10.7% \$50,001 - \$75,000 29.0%

\$25,000 - \$50,000 43.0% over \$75,000 17.3%

18. Please write any additional comments about your park visit or suggestions on how the Missouri Department of Natural Resources can make your experience in Mastodon State Historic Site a better one.

69 of the 301 visitors (22.9%) responded to this question. A total of 86 responses were given, and were divided into 7 categories. Frequencies and percentages of responses in each category are listed.

	<u>Frequency</u>	<u>Percent</u>
1. General positive comments	43	50.0%
2. Improve trail information/signs	9	10.5%
3. Suggestions/complaints about restrooms	7	8.1%
4. Need additional/improved trails	6	7.0%
5. Suggestions/complaints regarding museum	5	5.8%
6. Expand/improve playground	5	5.8%
7. Other	<u>11</u>	<u>12.8%</u>
Total	86	100%

Appendix F. List of Responses for Safety Concerns (Q 6)

Responses to Question #6

If you did not rate this park as excellent on being safe (Question 5, letter h.), what influenced your rating?

Unsafe trail conditions

- Access for disabled people on trail.
- Boulder in path possibly would turn away senior citizens.
- Concern when on long trails.
- Dampness on rock surfaces slippery. Could be hazard to smaller children.
- Handicap access.
- Handrails scarce.
- I think they need to make it handicap accessible leading down to the dig site so that disabled people can see it.
- I was afraid a rock would fall off the bluff and hit someone on the trail.
- Lack of guardrails.
- Limestone hill trail needs work...loose gravel, steep sections with no steps.
- Loose rock on paths.
- Many people on trails.
- Not sufficient information about trails and surfaces are not stable.
- Paths a little slippery but not much to do about it.
- Slippery trails.
- Some of trails seemed to need attention.
- Steep trails, loose rocks.
- Steep, rocky hiking trails. I like them the way they are, but elderly and disabled need warning.
- Steps and rock walks...children could fall.
- Steps are steep.
- The 2 1/2 mile Coop trail could use some maintenance. Fill in gravel in mud areas on low side of trail.
- The boulder crossing and not having the proper shoes on.
- The trail somewhat slippery.
- The trails are really nice, but they were hard to walk in spots.
- The wood stairs are slippery. My fiancé slipped and bruised his arm.
- Trail slippery today. They were working on the trail while we were here.
- Trail to bone site is rocky -- could be a potential hazard.
- Trails are bumpy.
- When the stairs get wet they are very slick.

Don't know/no reason/no place is perfect/always room for improvement

- Being safe was not an issue for me of concern.
- Can't judge on one visit.
- Depends on your definition of safe.
- Did not take path.
- I don't know how safe it is as I saw no authorities.
- Just stopped to use the restroom.
- Natural occurrence of falling rock.

- No facility is 100% safe from accidents.
- No matter what you do to make it perfectly safe some butthead is going to get hurt.
- No place accident free.
- No specific item...there's always room for improvement.
- Not enough knowledge.
- Not here long enough or in extensive areas to give excellent rating.
- Nothing.
- Still working on it.

Lack of or unclear signs

- Dogs often not on leashes. Trails not adequately marked and distances of trails not marked.
- Need markers.
- Not sufficient information about trails and surfaces are not stable.
- Steep, rocky hiking trails. I like them the way they are, but elderly and disabled need warning.
- The trail signs were missing...poor trail maps.
- The trails crossing the roads need to be boldly painted and proliferated with street signs. Seckman road can get busy.

Poor maintenance

- Dirty restroom.
- Dog litter.
- Have not been cutting grass in knoll.
- Restrooms.
- Smell.
- The upkeep.

Traffic unsafe where trails cross road

- Road crossings very dangerous.
- Sight distance for turning into the park from Seckman road.
- The trails crossing the roads need to be boldly painted and proliferated with street signs. Seckman road can get busy.
- Traffic -- nothing you can do.

Lack of park staff patrolling

- I've never seen a park ranger here.
- No park staff.
- Park personnel in are infrequently.

Playground equipment unsafe

- Playground equipment not very safe for small children.
- Playground.

Other

- Dogs often not on leashes. Trails not adequately marked and distances of trails not marked.
- Isolation.
- Long delay in flood damage repair.
- Seeing someone arrested.
- Sometimes the character of the people in the park area.
- Stray dogs on 2 1/4 mile trail.
- Stung by swarm of bees.
- With a 3 year-old. She climbs on the stonewall and could fall, also could put her head through slats in museum exhibits.

Appendix G. List of Responses for Additional Comments (Q 18)

Responses to Question #18

Please write any additional comments about your park visit or suggestions on how the Missouri Department of Natural Resources can make your experience in Mastodon State Historic Site a better one.

General positive comments

- A very important Paleo American Site.
- Displays were well designed and informative.
- Enjoyable.
- Enjoyed it, keep up the good work.
- Enjoyed myself.
- Great park!
- Great place for young groups.
- Great place.
- Having a beautiful park such as this one so close to home makes coming here as often as I like extremely convenient. I thoroughly enjoy time spent here, and offer my sincere gratitude for the selfless rendering of public service involved in making Mastodon park the joy that it is. Keep up the good work and you can expect me to visit on a very regular basis.
- I am generally very happy with this park, and other Missouri State Parks I've visited. Thanks for asking. My 3 kids love the museum. Picnic area needs a bathroom with flush. Status of bike trail now on hold -- need to speed up the process -- eliminate the red tape with the federal money -- and start the project as soon as possible. Park located on a creek. They don't spray for bugs enough. Playground gets a lot of usage, could expand it. Signage of trails very poor. Would like to see more displays where the mastodon bones were uncovered. Make this a functioning excavation site.
- I consider this park as my own backyard. See that there are no other parks in the area besides Arnold Park. I come from south St. Louis where there are dozens of parks. This park is a treasure to me.
- I like this park. Staff was very helpful and gave excellent presentations.
- I rather enjoyed visit.
- I really enjoyed the natural settings of the area and how everything just sort of blended together. It was also very peaceful on the trail walk.
- I thought it was great! I just hadn't heard about it until recently.
- I thought it was very educational for kids and myself.
- It's a beautiful park.
- It's a great place.
- It's excellent. I have no suggestions.
- It's great! You need more publicity.
- I've been visiting Mastodon Park with my children for about 10 years, and am very happy with the location (it's near my house) and the varied settings (we like both the hilly hiking trails and the creek).
- Just keep it going. Thank you!
- Keep up the beautiful parks in Missouri.
- Missouri state parks are #1 of the top state parks I have visited of other states.
- More informative map needed. Nice slideshow.

- More interactive displays. Nice museum.
- Nancy is always pleasant and friendly and John and Ken are patient showing me the fossils and archaeological times. The children and I enjoy wading in the creek and quietly observing the wildlife.
- Natural, quiet, serene site.
- Nice survey person!!
- Our first visit. Convenient to St. Louis.
- Our thanks to the Mastodon Park committee for all their efforts.
- Picnic area restrooms had many gnats and flies. Museum restrooms were spotless.
- Really enjoyed slide show...enjoyable for preschoolers with continuing interest for preteens, teens, and adults. Superb.
- The park for the "most part" is very well maintained. Except the limestone hill trail needs some work. Also the weeds along the Seckman Road at the trail entrance need to be cut way back. It is difficult to see westbound traffic when exiting the trail. This is a definite safety hazard for hikers when crossing the road. Thanks! for keeping the bicycles and mountain bikes off the trail. I thoroughly enjoyed the park every time I visit!
- The survey guy was cool.
- This park has always gone out of the way to help with all Boy Scout activities.
- This was our first visit. We really enjoyed it and will be coming back. We loved looking at the different bones.
- This is a very nice park and we enjoyed it a lot.
- Very good overall.
- Very interesting natural setting...nice walk.
- Very much enjoyed the museum. Can make it a quick trip or an all day adventure. Love it!
- Very nice (including young man college student taking survey). Thanks.
- We enjoy being outdoors and are glad we have parks to visit.

Improve trail information/signs

- Better trail maps -- trail marked more clearly.
- Better/more play facilities for kids. Trails better marked, i.e. 1 mile, 1/2 mile, etc.
- Could use more trail signs other than "grids" to show where excavation was -- we could not determine where the mastodon was found.
- I am generally very happy with this park, and other Missouri State Parks I've visited. Thanks for asking. My 3 kids love the museum. Picnic area needs a bathroom with flush. Status of bike trail now on hold -- need to speed up the process -- eliminate the red tape with the federal money -- and start the project as soon as possible. Park located on a creek. They don't spray for bugs enough. Playground gets a lot of usage, could expand it. Signage of trails very poor. Would like to see more displays where the mastodon bones were uncovered. Make this a functioning excavation site.
- I'd like to have more info as to what a Mastodon is vs. Mammoth; and what natives did with them. We visited Cahokia Mounds last weekend and were greatly impressed with their features and slideshows.
- Improve toilets, flush toilets, wash sinks. More and updated playground equipment for the fast growing area. No maps on trails. More information on archaeology digs

and reopen cave sites for new findings. A paved bike trail would be well used by a fast growing community.

- More informative maps needed. Nice slideshow.
- More signs on trail to identify vegetation and rock formations.
- Trails are not marked. This makes them confusing.

Suggestions/complaints regarding restrooms

- I am generally very happy with this park, and other Missouri State Parks I've visited. Thanks for asking. My 3 kids love the museum. Picnic area needs a bathroom with flush. Status of bike trail now on hold -- need to speed up the process -- eliminate the red tape with the federal money -- and start the project as soon as possible. Park located on a creek. They don't spray for bugs enough. Playground gets a lot of usage, could expand it. Signage of trails very poor. Would like to see more displays where the mastodon bones were uncovered. Make this a functioning excavation site.
- Improve toilets, flush toilets, wash sinks. More and updated playground equipment for the fast growing area. No maps on trails. More information on archaeology digs and reopen cave sites for new findings. A paved bike trail would be well used by a fast growing community.
- Need a light in the restroom at Sandy Creek Covered Bridge.
- Picnic area restrooms had many gnats and flies. Museum restrooms were spotless.
- Restroom stall lock needs to be replaced in men's room.
- Restrooms need to be cleaned.
- Running water in bathroom. Flushable.

Need additional/improved trails

- Have trails on south side of creek to improve access to public to see other areas.
- I am generally very happy with this park, and other Missouri State Parks I've visited. Thanks for asking. My 3 kids love the museum. Picnic area needs a bathroom with flush. Status of bike trail now on hold -- need to speed up the process -- eliminate the red tape with the federal money -- and start the project as soon as possible. Park located on a creek. They don't spray for bugs enough. Playground gets a lot of usage, could expand it. Signage of trails very poor. Would like to see more displays where the mastodon bones were uncovered. Make this a functioning excavation site.
- Improve toilets, flush toilets, wash sinks. More and updated playground equipment for the fast growing area. No maps on trails. More information on archaeology digs and reopen cave sites for new findings. A paved bike trail would be well used by a fast growing community.
- The park for the "most part" is very well maintained. Except the limestone hill trail needs some work. Also, the weeds along the Seckman Road at the trail entrance need to be cut way back. It is difficult to see westbound traffic when exiting the trail. This is a definite safety hazard for hikers when crossing the road. Thanks! for keeping the bicycles and mountain bikes off the trail. I thoroughly enjoyed the park every time I visit!
- Would like longer hiking trails.
- Would like longer, more hiking trails.

Suggestions/complaints regarding museum

- Found the museum a little disappointing. Somewhat small for price. Playground could be improved, but the kids love the large swings.
- Hours museum is open need to be longer in the evening.
- I think that \$2.00 cover charge is probably in violation of MO State Constitution.
- More interactive displays. Nice museum.
- The placing of more stone artifacts on display if possible.

Expand playground

- Better/more play facilities for kids. Trails better marked, i.e. 1 mile, 1/2 mile, etc.
- Found the museum a little disappointing. Somewhat small for price. Playground could be improved, but the kids love the large swings.
- I am generally very happy with this park, and other Missouri State Parks I've visited. Thanks for asking. My 3 kids love the museum. Picnic area needs a bathroom with flush. Status of bike trail now on hold -- need to speed up the process -- eliminate the red tape with the federal money -- and start the project as soon as possible. Park located on a creek. They don't spray for bugs enough. Playground gets a lot of usage, could expand it. Signage of trails very poor. Would like to see more displays where the mastodon bones were uncovered. Make this a functioning excavation site.
- Improve toilets, flush toilets, wash sinks. More and updated playground equipment for the fast growing area. No maps on trails. More information on archaeology digs and reopen cave sites for new findings. A paved bike trail would be well used by a fast growing community.
- More things for the kids to play on at the picnic area.

Other

- A better disaster recovery from flash flooding. Flooding will continue to be a problem. More planning needs to be done to minimize damage and down time.
- Dogs were not leashed. Alcohol and beer around in the park.
- I am generally very happy with this park, and other Missouri State Parks I've visited. Thanks for asking. My 3 kids love the museum. Picnic area needs a bathroom with flush. Status of bike trail now on hold -- need to speed up the process -- eliminate the red tape with the federal money -- and start the project as soon as possible. Park located on a creek. They don't spray for bugs enough. Playground gets a lot of usage, could expand it. Signage of trails very poor. Would like to see more displays where the mastodon bones were uncovered. Make this a functioning excavation site.
- It would be nice to provide a family camping area.
- It's great! You need more publicity.
- My wife and I wanted to see the bone bed but she has asthma and couldn't make it.
- Open the lower picnic area an hour earlier so early morning walkers and hikers can beat the heat. The gates now open at 8:00. It would be nice to see them open at 7:00.
- Replace Neal Trubowitz with a kind, caring, thoughtful people person.
- The development west of the park is dumping fill in the stream. Stream biology is being affected. Aquatic life down since May '98.
- Vendors selling beverages.
- Would have liked books to buy about the site excavation.