Museum Visitor Studies, Evaluation & Audience Research

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Summative Evaluation

Amazon Voyage: Vicious Fishes and Other Riches

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EXECUTIVE SUMMARY

INTRODUCTION

This report presents the findings of the summative evaluation conducted by Randi Korn & Associates, Inc. (RK&A), of the traveling exhibition, *Amazon Voyage: Vicious Fishes and Other Riches.* Funded in part by the National Science Foundation, *Amazon Voyage* was developed by the Miami Museum of Science & Planetarium (MMS) in partnership with the Science Museum of Minnesota.

Data collection took place from January to February 2006 at MMS in Miami, Florida and from June to July 2006 at the Ripley Center, Smithsonian Institution, Washington, D.C. The evaluation documents the scope of the traveling exhibition's impact and effectiveness at both sites through timing and tracking observations and exit interviews.

Selected highlights of the study are included in this summary. Please consult the body of the report for a detailed account of the findings.

PRINCIPAL FINDINGS: TIMING AND TRACKING OBSERVATIONS

Data collectors observed a total of 197 visitors, 8 years old and older, while they visited *Amazon Voyage* (either at MMS or at the Ripley Center.)

Visitor Demographics

- 51% of observed visitors were female and 49% were male.
- 83% were adults (18 years of age and older) and 17% were children.
- 59% were visiting in multigenerational groups, 30% in adult-only groups, and 11% alone. More multigenerational groups were observed at MMS than at the Ripley Center.
- 62% spoke English, 13% spoke Spanish, and 12% spoke a language other than the two. More Spanish-speaking visitors were observed at MMS than at the Ripley Center; while more visitors at the Ripley Center spoke a language other than English or Spanish.

Overall Visitation Patterns

- Visitors spent a median time of nearly 15 minutes in *Amazon Voyage*. Visitors spent more time in the exhibition at the Ripley Center (median of 18 minutes) than those at MMS (median time of 12 minutes).
- Visiting groups with children spent more time (mean time of 20 minutes) than those without children (mean time of 15 minutes).
- Children spent more time in the exhibition (mean time of 24 minutes) than did adults (mean time of 16 minutes).

- Using Serrell's Sweep Rate Index (Serrell, 1998), RK&A found that visitors in *Amazon Voyage* moved slower than visitors in other large exhibitions (>3,900 sq. ft.).
- Visitors stopped at a median of 11 exhibits (14% of available exhibits).[1] On average, visitors at the Ripley Center stopped at more exhibits (mean of 16 exhibits) than those at MMS (mean of 10 exhibits).

Visitation to Each Exhibition Section

- Visitors stopped in a mean of 5 (of a possible 8) sections. Visitors at the Ripley Center stopped in more sections (mean of 6 sections) than those at MMS (mean of 4 sections).
- The Anaconda section was most visited (44%), followed by the Caiman (39%), and the Catfish/Candiru sections (29%).
- Visitors made the most stops in the Catfish/Candiru section (median of 4 stops), followed by the Anaconda and the Electric Eel sections (medians of 3 stops).
- Visitors to the Ripley Center made significantly more stops in each section—except the Anaconda section—than visitors to MMS.
- The Anaconda section experienced the longest median dwell time (2 minutes). The section with the shortest median dwell time (not including the Introduction) was the Stingray section (59 seconds).

Visitation to Individual Exhibits

- The three exhibits with the longest median dwell times were incorporated video components: Mo's Welcome video (2 minutes), Paulo and the Mysterious Muckfish video (2 minutes), and the Candiru Karaoke video interactive (2 minutes).
- The two exhibits with the shortest median dwell times were panels: the Piranha Attack panel (5 seconds) and the Acknowledgement panel (4 seconds).
- The most visited exhibits were interactive: the Encante Dance Stage (63%), the Riverhouse (58%), and What's in the Muck? (52%). Other exhibits at which more than one-half of observed visitors stopped had live specimens: the Stingray tank and the Tetra Tank interactive.
- The least visited exhibits were panels: the Remembering Godwana panel (0.5%), the Marine Invaders panel and the There Are More Than 2,000 Species of Fish panel (each 1%).

[1] *Amazon Voyage* included 81 exhibits at which visitors could stop. For this evaluation, a "stop" was defined as a visitor standing for three seconds or longer in front of a component.

Visitation of Each Exhibit Type

- Visitors spent the most time at computer interactives (median of 3 minutes) and video components (median of 3 minutes). Other exhibit types that experienced median dwell times longer than 2 minutes were interactive—both general interactives and tool interactives.
- Visitors spent the least time at panels with specimens and/or models (median of 20 seconds) and cases (median of 38 seconds).
- Visitors with children spent more time at interactives (mean of 4 minutes) and tool interactives (mean of 5 minutes) than did visitors without children (means of 2 minutes each).
- Children spent more time at interactives (mean of nearly 5 minutes) and tool interactives (6 minutes) than did adults (means of 3 minutes each).
- Almost all observed visitors stopped at interactives (89%) and tool interactives (87%). Almost three-quarters stopped at panels with images/artwork (72%), cases (72%), and videos (71%).
- Flip panels and flip books were the least popular exhibit type (45%), along with panels featuring specimens or models (42%). Flags and models were only noticed by 18% of visitors.
- Visitors stopped most often at interactives, tool interactives, and panels featuring artwork or images (median of 3 stops each). Visitors stopped at cases, flip panels or flip books, and panels featuring specimens or models a median of 1 time.
- Children and visitors with children stopped at more interactive exhibits (mean of 3.4) than adult-only groups (mean of 2.6). Conversely, adult-only groups stopped more often at panels (mean of 4.8) than groups with children (mean of 3.3).

Visitor Behaviors

- Most common behaviors: 82% did activities, 81% watched videos, 64% read aloud or discussed exhibit content, and 64% used flip panels or flip books.
- Least common behaviors: 18% noticed flags or models and 17% used tools.
- Visitors at the Ripley Center watched more videos (mean of 4) compared with those at MMS (mean of 2). Ripley Center visitors also read aloud or discussed more exhibit content (mean of 4), used more computer interactives (mean of 2), and looked at more images or artwork (mean of 2) than did visitors at MMS (means of 1 for all behaviors).
- Visitors with children were more likely to do activities, use tool interactives, and engage in coaching than were those without children.
- Children were more likely to do activities than were adult visitors. They also used computers, tool interactives, and audio components more than did adults.
- The What's in the Muck? tool interactive experienced the highest frequency of misuse (7 visitors were observed misusing the exhibit).

PRINCIPAL FINDINGS: EXIT INTERVIEWS

RK&A conducted interviews with 74 visitor groups—42 groups at MMS and 32 groups at the Ripley Center—after they exited *Amazon Voyage*. The three sets of interviews (MMS, Ripley Center, and Spanish speakers) were analyzed separately, and there were no significant differences among the groups. Nevertheless, some minor differences are noted. Interviewees' demographic composition was:

- 41 were families and 33 were adult only groups,
- In all, the groups were comprised of 102 visitors, including 87 adults and 15 children (less than 18 years),
- Slightly more than one-quarter of interviewee groups—all at MMS—were Spanish speakers (n = 21),
- One-half were female and one-half were male, and;
- Interviewees' ages ranged from 7 to 69 with the adults' median age being 43 years and the children's median age being 12 years.

Overall Opinion

Visitors praised the exhibition for its interactive components and experiential opportunities, as well as for its interesting and educational content. Families, in particular, enjoyed the exhibition because it appealed to and engaged children and adults alike. Parents—especially those at MMS—said the exhibition was a learning opportunity for their children. Visitors who responded less positively to the exhibition cited disinterest in the subject or discomfort with some of its images. Some visitors expressed frustration when using certain components (e.g., What is in the Muck? and What Does a Fish Sound Like?) because they could not understand how to use them, or felt they did not achieve a successful outcome.

Accessing Content

The majority of Spanish speaking interviewees responded positively to the Spanish texts. Overall, there was no consensus among visitors (both English- and Spanish-speakers) as to whether the amount of information was too little or too much, or if the level of information was too difficult or too easy. For some families, the amount and level of information in the exhibition allowed them to have successful family interactions. Based on their personal needs and interests, they could "pick and choose" not only which content to share with their families, but also which interpretive strategies would be most engaging. Interestingly, several adult-only visitors suggested that the amount and level of information was just right for adults but too difficult for children. A similar number of interviewees suggested that the amount and level of information was just right for children, but not advanced or interesting enough for adults.

Understanding Content

Biodiversity

Although they may not have used the term, "biodiversity," maintaining the biological diversity of the Amazon emerged as one of the central themes in interviewees' content discussions. In fact, more than one-third of interviewees suggested that the exhibition's main focus was biodiversity. However, when the evaluator asked visitors what they learned about the topic specifically, their answers were superficial, and, in some cases, suggested that they were confused about it. When asked to explain why a discussion about biodiversity belonged in an exhibition about the Amazon, almost one-half of interviewees discussed the importance of educating the public in general, and children specifically, about the Amazon.

The Amazon People

Another important central theme that arose among interviewees was the "culture" of the Amazon People—the relationship they have with the Amazon River and the cultural symbols, celebrations, and lifestyles that they have developed as a result of living near the river. Roughly one-third of interviewees identified "culture" as a main exhibition theme. Related to this topic are the Amazon People's socioeconomic conditions. Several interviewees described the intricate symbiotic relationships that exist between the Amazonian communities and the river. These interviewees maintained that any negative environmental effects the Amazonian people have caused by to the river have been because of their economic needs rather than by a disregard for conservation efforts. They loosely suggested that communities outside the Amazon need to change their consumption habits so that Amazonian communities can change their economic dependency on the environment.

The Amazon Scientists

The majority of the interviewees who talked about the scientists were struck by the scientists' dedication to their work. Some discussed the difficult lives these scientists appeared to have and a few others conveyed surprise and interest to learn that scientists live and work in the Amazon. Many interviewees remembered stories about scientists who work in the Amazon and cited specific exhibit components linked to the scientists. However, visitors' remarks about scientists' field research were limited and were often couched within the larger theme of conservation, stressing the relationship between awareness of the Amazon and conservation of the Amazon.

Conservation

Several interviewees explained that the exhibition reinforced their interest in and understanding of conservation, while others explained that the exhibition actually influenced their attitude about conservation. A few interviewees' discussions moved from an understanding of biodiversity and conservation to talking about appreciating and protecting the Amazon.

Perceptions of and Attitudes Toward Exhibition Themes

When asked to discuss the exhibition in terms of their lives, many interviewees responded by comparing their lives to those of the Amazonian community, either showing appreciation for what they perceived to be a simpler life; or lamenting about the difficult lives of the Amazon Peoples. Also, many interviewees talked about how *Amazon Voyage* affected their attitudes toward biodiversity and suggested that they are now more aware of Amazonian biodiversity. Few interviewees talked about the exhibition's impact on their attitudes about science. The majority of interviewees who mentioned science clarified that the exhibition was interesting because of their pre-visit interest in science.

DISCUSSION

The incredible collaborative efforts of the Miami Museum of Science & Planetarium (MMS) and the Science Museum of Minnesota (SMM), have created rich and vibrant visitor experiences for adults, children and families through *Amazon Voyage: Vicious Fishes and Other*. Findings show that visitors' experiences in *Amazon Voyage* were engaging and educational, especially for family groups. Because of the exhibition's multilayered interpretative strategy, visitors not only spent a longer amount of time in the exhibition than exhibitions of similar size, they left with a heightened awareness of the Amazon, the people who live on it, and the scientists who study it.

Overall, visitors' opinions of the exhibition were positive; they enjoyed the many interactive exhibits and were sensitive to the importance of its message. The use of multimedia—video, computers, and other interactive components—can engage visitors in multilayered activities and encourage and support interaction (McLean, 1993). It is no surprise then, that family groups enjoyed *Amazon Voyage* for its interactive components. In particular, they appreciated how *Amazon Voyage* engaged adults and children. Moreover, they believed the amount and level of information used in the exhibition encouraged them to have successful family interactions by providing opportunities for children to learn. Findings from the timing and tracking portion of the study confirm this: family groups spent more time and made more stops at interactive exhibits than did adult-only groups. Multimedia did not exclusively appeal to family groups; across the board, visitors stopped most often at interactive exhibits and spent more time at exhibits with video components than they spent at exhibits without a multimedia element.

Other successful interpretative strategies featured in *Amazon Voyage* were its use of bilingual Spanish/English labels and its extensive use of images and artwork. Keen on using a "universal" Spanish that would be accessible to the diverse Spanish-speaking population of Miami, MMS succeeded in developing Spanish language labels that did just that. The majority of Spanish-speaking visitors RK&A talked with—all representing a variety of South and Central American countries—responded positively to the Spanish labels.

Visitors' tendency to stop at panels featuring artwork or images as opposed to panels featuring specimens or models suggests that MMS's decision to use colorful artwork and numerous images of people to complement the exhibition script was highly effective. By collaborating with noted ichthyological artist Ray Troll, MMS created an immersive and visually affective atmosphere tied together by flags, models, large-format murals, and vibrant artwork throughout.

As mentioned earlier, visitors were, overall, interested in and sensitive to *Amazon Voyage's* overarching themes of biodiversity, the lifestyles of the Amazon Peoples, and the work of scientists studying the Amazon. Of the three topics, visitors retained the most information about the scientists studying the Amazon, in part because the exhibition integrated several presentation types to convey scientists' stories. What's in the Muck? emerged as one of visitors' favorites because of its interactive nature, while Paulo and the Mysterious Muckfish video was among the exhibits with the longest dwell times. In past studies (RK&A, 2006; RK&A, 2004b) videos featuring scientists were proven to be largely unappealing to visitors, so the success of *Amazon Voyage*'s videos is notable. Most likely, the charismatic people featured in the videos, coupled with available seating helped attract visitors to the video components. In fact, studies have shown that visitors prefer museums that offer seating at video components (RK&A 2005b).

While most visitors talked about biodiversity in general, they experienced difficulty specifically citing "biodiversity" as a general theme. This is not really surprising as the word does not appear more than once or twice in the exhibition script. Despite the vocabulary, visitors still recognized the value of biodiversity and discussed the importance of educating the public in general, and children specifically, about the Amazon. It was in this context that issues concerning conservation arose: visitors acknowledged the inherent relationship between awareness of the Amazon and conservation of the Amazon. In fact, several visitors credited the exhibition for influencing their attitudes toward conservation or, at least, reinforcing their interest in and understanding of conservation.

The third topic to arise during conversation with visitors was the lifestyle, or "culture" of the people who live on the Amazon. Specifically, visitors discussed the people's connection to the river, the cultural symbols and celebrations that symbolize that relationship, and the ways in which their economic dependency on the river threatens the ecosystem that nurtures them. They were quick, however, to blame the negative environmental impact on economic need as opposed to a disregard for nature. In fact, some visitors expressed appreciation for the more nature-oriented, "simpler" way of life they saw depicted in the exhibition, while others made comparisons between the hardships the Amazon people face and their own.

Visitors' responses to the exhibition were similar at both MMS and the Ripley Center. However, several differences emerged between the two venues in terms of visitor behaviors. Visitors at the Ripley Center spent more time in the exhibition, stopped at more exhibits, visited more sections of the exhibition, and used each section (except one) more thoroughly than did visitors at MMS. In addition, Ripley Center visitors watched more videos, read aloud or discussed more exhibit content, used more computer interactives, and looked at more images or artwork than did MMS visitors. The most palpable explanation for this difference is how the exhibition was installed at each venue.

At MMS, a major thoroughfare bisected the exhibition into two separate areas, which detracted from the exhibition experience on two fronts. First, it disturbed the exhibition's overall cohesiveness; after visiting one side of exhibition, visitors could easily be drawn to exhibits farther down the thoroughfare instead of exploring the rest of *Amazon Voyage*. Second, it decreased visitors' chances of being properly introduced to the exhibition's main ideas. Mo's Boat, which serves as an orientation device for the entire exhibition, was on one side of the exhibition. Therefore, visitors who visited the other side first did so without the benefit of the introduction.

At the Ripley Center, *Amazon Voyage* was installed in an ideal layout that led visitors first to Mo's Boat, then allowed them to explore the rest of the exhibition without distraction. While it is often difficult to mandate a traveling exhibition's location and installation within a museum's available space, it is recommended that wherever possible, *Amazon Voyage* be installed similar to how it was at the Ripley Center.

That visitors' responses to the exhibition at both venues were similar is evidence that MMS and SMM have developed a successful science exhibition. Their application of a multilayered interpretive approach, coupled with extensive front-end (RK&A, 2003) and formative

evaluations (RK&A, 2004a and 2005), shows a commendable commitment to the visitor and the visitor experience. As a result, visitors at both sites, whether a science museum (MMS) or a non-specific museum (Ripley Center), enjoyed positive science-related experiences. It would be difficult to argue that *Amazon Voyage* will not delight and engage visitors as well as enhance their understanding of the Amazon as it continues to travel to museums across the country.

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INTRODUCTION

This report presents the findings of a summative evaluation of *Amazon Voyage: Vicious Fishes and Other Riches* conducted by Randi Korn & Associates, Inc. (RK&A), for the Miami Museum of Science & Planetarium (MMS) in Miami, Florida. Funded by the National Science Foundation, *Amazon Voyage* is a collaborative project between MMMS and the exhibit development team at the Science Museum of Minnesota (SMM).

Data collection took place at two sites: from January to February 2006 at MMS and from June to July 2006 at the International Gallery at the Ripley Center, Smithsonian Institution, Washington, D.C. The evaluation documents the scope of the traveling exhibition's impact and effectiveness at both sites. The evaluation's specific objectives were to determine:

- How much time visitors spent at each exhibit, at each exhibition section, and in the exhibition as a whole;
- Which types of exhibition components (panels, graphics, video, interactives, etc.) attracted visitors most often and held visitors attention longest;
- The types of interactive behaviors in which visitors engaged with their family/friends during their visit;
- How bilingual text affected the visitor experience (i.e., did it promote intergenerational learning among visitor groups?);
- The exhibition's ability to both engage visitors and interest them in the Amazon;
- Any meaning visitors constructed from their exhibition experience, including its affect, if any, on their attitudes toward or perceptions of biodiversity;
- The degree to which visitors grasped intended messages, including the importance of protecting biodiversity, the role of scientists in studying biodiversity, and the symbiotic relationship between the river and the people who live along its shores;
- The connections visitors made both with the personal stories the exhibition featured and between the Amazon River and the surrounding areas,
- The connections visitors made between their exhibition experiences and their lives;
- Visitors' opinions regarding the appropriateness of the exhibition's vocabulary and amount of information it provided (e.g., did visitors clearly understand the content of the Real Seven Perils exhibit?); and
- How the exhibition's use of graphics affected visitors' understanding of the content.

METHODOLOGY

RK&A used two data collection strategies to assess visitors' experiences in *Amazon Voyage*: timing and tracking observations and uncued exit interviews.

Timing and Tracking Observations

Visitor observations provide an objective and quantitative account of how visitors behave and react to exhibition components. Observational data indicate how much time visitors spend within an exhibition and suggest the range of visitor behaviors.

All visitors eight years of age and older were eligible to be unobtrusively observed in the exhibition. The evaluator selected visitors to observe using a continuous random sampling method. In accordance with this method, the observer stationed herself at the exhibition's entrance and observed the first eligible visitor to enter. The observer followed the selected visitor through the exhibition, recording the exhibits used, select behaviors, and total time spent in the exhibition (see Appendices A and B for the observation forms). When the visitor completed his or her visit, the observer returned to the entrance to await the next eligible visitor to enter the exhibition.

Exit Interviews

Open-ended interviews encourage and motivate interviewees to describe their experiences, express their opinions and feelings, and share with the interviewer the meaning they construct from an experience. Open-ended interviews produce data rich in information because interviewees talk about personal experiences.

Upon exiting the exhibition, visitors eight years old and older were eligible to be selected (following a continuous random sampling method, as described above) to answer several questions about their exhibition experiences (see Appendices C and D for the exit interview guide). The interview guide was intentionally open-ended to allow interviewees the freedom to discuss what they felt was meaningful. All interviews were audio-recorded with participants' permission and transcribed to facilitate analysis.

DATA ANALYSIS

Quantitative Analysis

The quantitative observational data were entered into a computer and analyzed statistically using SPSS 12.0 for Windows, a statistical package for personal computers. Frequency distributions were calculated for all categorical variables (e.g., gender, age group). To examine the relationship between two categorical variables (e.g., use of an exhibit and age group), cross-tabulation tables were computed to show the joint frequency distribution of the two variables, and the chi-square statistic (X^2) was used to test the significance of the relationship.

Summary statistics, including the mean (average), median (data point at which half the responses fall above and half fall below), and standard deviation (spread of scores: "±" in tables), were calculated for the time data.[2] To compare the means of two or more groups, either an analysis of variation (ANOVA) or a t-test was performed. The level of significance was set at 0.05 because of the moderate sample size. When the level of significance is set to $p = 0.05$, any relationship that exists at a probability (p-value) of ≤ 0.05 is termed "significant." When a relationship has a p-value of 0.05, there is a 95 percent probability that the relationship being explored truly exists; that is, in 95 out of 100 cases, there would be a relationship between the two variables (e.g., gender and preferences for visiting). Conversely, there is a 5 percent probability that the relationship does not really exist; in other words, in 5 out of 100 cases, a relationship would appear by chance. Within the body of the report, only statistically significant results are discussed. Appendix G lists all of the statistical procedures run on the data and all data recodes.

Qualitative Analysis

The interview data are qualitative, meaning that results are descriptive, following from the interviews' conversational nature. In analyzing the data, the evaluator studied responses for meaningful patterns, and, as patterns and trends emerged, grouped similar responses. To illustrate interviewees' thoughts and ideas as fully as possible, this report includes verbatim quotations (edited for clarity).

Interviews conducted with Spanish-speaking visitors were administered, translated, and transcribed by a bilingual data collector. All quotations in this report illustrate interviewees' thoughts and ideas as fully as possible.

REPORTING METHOD

The data in this report are both quantitative and qualitative. For the quantitative data, tables and graphs display the information. Percentages within tables may not always equal 100 owing to rounding. The findings within each topic are presented in descending order, starting with the most frequently occurring.

Interview data are presented in narrative. The interviewer's remarks appear in parentheses, and, for visitors, an asterisk (*) signifies the start of a different speaker's comments. Trends and themes in the interview data are also presented from most- to least-frequently occurring.

Findings in each report are presented in three main sections:

I. Timing and Tracking Observations
II. Exit Interviews

[2] For the most part, medians rather than means are reported in this document because, as is typical, the number of components used and the time spent by visitors were distributed unevenly across the range. For example, whereas most visitors spent a relatively brief time with exhibition components, a few spent an unusually long time. When the distribution of scores is extremely asymmetrical (i.e., "lopsided"), the mean is strongly affected by the extreme scores and, consequently, falls further away from the distribution's central area. In such cases, the median is the preferred measurement because it is not sensitive to the values of scores above and below it—only to the number of such scores.

I. PRINCIPAL FINDINGS: TIMING AND TRACKING OBSERVATIONS

Data were collected at the Miami Museum of Science & Planetarium (MMS) in Miami, Florida and the Ripley Center at the Smithsonian Institution in Washington DC. The evaluators observed a total of 197 drop-in visitors, ages 8 years and older (92 at MMS and 105 at the Ripley Center).

This section reports data for all 197 visitors. Data for each venue—MMS and Ripley Center—are reported only when the relationship is statistically significant.

DATA COLLECTION CONDITIONS

At MMS, observers timed and tracked visitors for 19 days during January and February 2006. At the Ripley Center, observations were collected for 16 days during June and July 2006. There was a statistically significant relationship between data collection day and the venue. Observers conducted more observations on weekdays at the Ripley Center than they did in Miami because of the large number of visitors to the Smithsonian during the summer (see Table 1).

Table 1
Data Collection Day
(MMS *n* = 92, Ripley *n* = 105)

Day	MMS %	Ripley %	Total %
Weekday	46.7	65.7	43.1
Weekend day	53.3	35.3	56.9

*x^2=7.197; *df*=1; *p*= 0.01

Over one-half of observations in the total sample were conducted during low visitation conditions (52 percent) (see Table 2). Visitation patterns were similar at the two venues.

Table 2
Level of Crowding During the Observations
(*n* = 197)

Crowding Level	Total %
Low	52.3
Moderate	31.5
High	16.2

VISITOR DEMOGRAPHICS

As shown in Table 3, the total sample of visitors observed included slightly more females than males (51 percent and 49 percent, respectively). Over four-fifths of visitors (83 percent) were adults (18 years of age and older) and almost one-fifth were children (17 percent).

Table 3
Visitor Demographics
(*n* = 197)

Characteristic	Total %
Gender	
Female	51.0
Male	49.0
Age Group (in years)	
8 to 11	7.6
12 to 14	4.6
15 to 17	4.6
18 to 24	9.1
25 to 34	20.8
35 to 44	25.4
45 to 54	18.3
55 to 64	6.6
65 years or older	3.0

As presented in Table 4, the majority of visitors in the sample were in groups of both adults and children (59 percent).

Table 4
Group Composition
(*n* = 197)

Group Composition	Total %
Adults and children	58.9
Adults only	30.5
Alone	10.7

More multigenerational groups were observed at MMS than at the Ripley Center (see Table 5).

Table 5
Differences in Visiting with Children at the Two Venues
(MMS *n* = 92, Ripley *n* = 105)

Group Composition	MMS %	Ripley %	Total %
Adults with children	68.5	51.4	59.4
Adults without children	31.5	48.6	40.6

*x^2=5.910; *df*=1; *p*=0.02

While more Spanish-speaking visitors were observed at MMS than at the Ripley Center, there were more groups speaking languages other than English or Spanish observed at the Ripley Center (see Table 6).

Table 6
Differences in Language Spoken at the Two Venues
(MMS *n* = 92, Ripley *n* = 105)

Language Spoken	MMS %	Ripley %	Total %
English	64.0	60.0	61.9
Spanish	23.9	2.9	12.7
Both	0.0	1.9	1.0
Other	12.0	35.2	24.4

*x^2=29.927; *df*=3; *p*=0.00

OVERALL VISITATION PATTERNS

Total Time Spent in the Exhibition

Visitors spent a median of 14 minutes and 32 seconds in *Amazon Voyage* (see Table 7). The shortest time a visitor spent in the exhibition was one minute and eight seconds and the longest time was one hour, 16 minutes and three seconds. When the total time spent in the exhibition was compared by venue and demographic characteristics, statistically significant relationships emerged. Visitors to the Ripley Center spent more time in the exhibition than visitors to MMS. In addition, visitors with children in their groups and children themselves spent more time in *Amazon Voyage* than visitors without children (see Table 8).

Table 7
Total Time Spent in *Amazon Voyage*
(MMS *n* = 92, Ripley *n* = 105)

	Median	Minimum	Maximum	Mean	±
MMS	12 min., 1 sec.	1 min., 24 sec.	44 min., 57 sec.	13 min., 58 sec.	9 min., 53 sec.
Ripley Center	18 min., 18 sec.	1 min., 8 sec.	1 hr., 16 min., 3 sec.	20 min., 39 sec.	14 min., 35 sec.
Total	14 min., 32 sec.	1 min., 8 sec.	1 hr., 16 min., 3 sec.	17 min., 32 sec.	13 min., 6 sec.

*t=-3.692; df=195; p=0.00

Table 8
Differences in Total Time Spent at *Amazon Voyage* by Demographic Characteristics

Significant Variable	Mean Time	±
Visiting with child:[1]		
Yes	20 min., 0 sec.	10 min., 52 sec.
No	14 min., 56 sec.	13 min., 49 sec.
Age:[2]		
Child	24 min., 4 sec.	17 min., 16 sec.
Adult	16 min., 13 sec	11 min., 37 sec

[1] t = -3.435; df = 191; p = 0.00

[2] t =2.498 ; df = 38; p = 0.01

To further compare the total time spent in *Amazon Voyage*, RK&A used Serrell's "Sweep Rate Index" (SRI).[3] The SRI is one measure to compare exhibitions at various museums. It is calculated by dividing the exhibition's square footage[4] by the average total time spent in the exhibition.[5] The lower the SRI, the more time visitors spent per square foot of space. The SRI for *Amazon Voyage* at MMS is 358 square feet per minute and at the Ripley Center is 315 square feet per minute.

The SRI of *Amazon Voyage* at both sites is lower than Serrell's average SRI for large nondiorama exhibitions[6]. This means visitors in *Amazon Voyage* are moving more slowly than visitors in exhibitions of similar size.

Total Number of Exhibits at Which Visitors Stopped

Amazon Voyage included 81 exhibits at which visitors could stop and 12 where visitors could notice a panel, flag, or object. **For this evaluation, a "stop" was defined as a visitor standing for three seconds or longer in front of a component. If a visitor returned to a component at which s/he had previously stopped, this return was not counted as an additional stop, but the amount of time spent was included in the total time spent at the component.**

Visitors stopped at between 1 and 44 exhibits in *Amazon Voyage* (see Table 9). Visitors stopped at a median of 11 exhibits.

Table 9
Total Number of Exhibits Stopped at in *Amazon Voyage*
(*n* = 197)

Median	Minimum	Maximum	Mean	±
11.0	1.0	44.0	13.3	8.7

Visitors made an average of 17 stops at *Amazon Voyage* at the Ripley Center and 10 stops at the MMS (see Table 10). Demographic characteristics, visiting with children, and venue were analyzed to determine whether and to what extent they were related to the total number of exhibits stopped at in the exhibition. No variable other than site could explain the difference in visitors' number of stops. In other words, visitors at the Ripley Center were more likely to stop at more exhibits in *Amazon Voyage* than were those at MMS.

[3] Serrell, B., "Paying Attention: Visitors and Museum Exhibitions," Washington, DC, American Association of Museums, 1998.
[4] The Amazon Voyage installation at MMS measured 5,000 sq. ft.; at the Ripley Center, it measured 6,500 sq. ft. (measurements provided by MMS exhibition development team).
[5] Mean total times were used in the SRI calculation in accordance with Serrell's methods. Throughout the rest of the report, median times are reported, as the median is standard for time data unevenly distributed across its range.
[6] Serrell reports an average SRI of 400.5 (±191.5) for large (>3,900 sq. ft.) nondiorama exhibitions.

Table 10
Total Number of Stops in the Ripley Center and MMS Venues
(Ripley Center *n* = 105, MMS *n* = 92)

Venue*	Mean Number of Stops	±
Ripley Center	16.5	9.3
MMS	9.7	6.2

*t = -5.881; df = 195; p = 0.00

To compare the number of stops made in *Amazon Voyage* with those of exhibitions of similar size, RK&A used Serrell's "Percentage Diligent Visitor Index" (%DV).[7] The %DV is obtained by calculating the percentage of visitors who stopped at more than one-half of the exhibits. The higher the %DV, the more thoroughly the exhibition was used.

The %DV for *Amazon Voyage* at both MMS and the Ripley Center is 1.5 percent—that is, a total of three visitors (each to the Ripley Center) stopped at more than one-half of the exhibits.[8] The %DV for *Amazon Voyage* is much lower than Serrell's average %DV for large nondiorama exhibitions.[9] This means visitors stopped at fewer exhibits in *Amazon Voyage* compared to exhibitions of similar size.

Some developers object to Serrell's %DV model, which bases the success of an exhibition on the quantity of exhibits stopped at versus the quality of an individual experience. That is, other developers, such as the Science Museum of Minnesota who are partners in the *Amazon Voyage* exhibition development team, are more interested in promoting high dwell times at individual components than a large percentage of components used. Visitors to *Amazon Voyage* tended to use a few components for an extended time, matching the behavioral objectives of the development team but resulting in a low %DV.

[7] Serrell, B., "Paying Attention: Visitors and Museum Exhibitions," Washington, D.C., American Association of Museums, 1998.
[8] The total number of exhibits (81) was determined by RK&A.
[9] Serrell reports an average %DV of 23.4 percent (±20.4) for large (>3,900 square feet) nondiorama exhibitions.

VISITATION TO EACH EXHIBITION SECTION

Amazon Voyage included eight main sections, including the introduction area (the introductory panels and the activities in Mo's Boat), the Amazon River Mural, and each of the perils of the Amazon: Anaconda, Caiman, Piranha, Stingray, Electric Eel, and Catfish/Candiru.

Total Number of Sections Visited

Visitors stopped in a median of five sections while in *Amazon Voyage* (see Table 11). Nearly two-thirds of visitors stopped at more than one-half of the exhibition sections (61 percent; not shown in table).

Table 11
Total Number of Sections Visited in *Amazon Voyage*
(*n* = 197)

Median	Minimum	Maximum	Mean	±
5.0	1.0	9.0	5.0	0.5

When the number of sections visitors stopped in was compared by site and demographic characteristics, one statistically significant relationship emerged (see Table 12). Visitors to *Amazon Voyage* at the Ripley Center stopped at more sections than did those at MMS.

Table 12
Differences in Total Number of Sections Visited
By Venue

Site*	Mean Number of Sections Visited	±
Ripley Center	6.1	1.9
MMS	3.8	2.0

*t = -8.367; df = 195; p=0.00

Time Spent in Each Section

Visitors spent the most time in the Anaconda section (median time of 2 minutes, 22 seconds), followed by the Catfish/Candiru section (median time of 2 minutes, 14 seconds), and Mo's Boat (2 minutes, 12 seconds). Conversely, the median time visitors spent in the Stingray and Introduction sections was less than 1 minute (see Table 13).

Table 13
Time Spent in Each Section

Section	Number of Visitors who Stopped	Median Time
Anaconda	86	2 min., 22 sec.
Catfish/Candiru	58	2 min., 14 sec.
Mo's Boat	39	2 min., 12 sec.
Electric Eel	51	1 min., 55 sec.
Caiman	76	1 min., 46 sec.
Piranha	46	1 min., 27 sec.
Amazon River Mural	31	1 min., 27 sec.
Stingray	55	59 sec.
Introduction	14	7 sec.

Stops Made in Each Section

As presented in Table 14, nearly one-half of visitors stopped in the Anaconda section (44 percent). Nearly two-fifths of visitors stopped in the Caiman section, and nearly one-third stopped in the Catfish/Candiru section (39 percent and 29 percent, respectively). Visitors made a median of three stops in the Anaconda section, two stops in the Caiman section, and four stops in the Catfish/Candiru section.

Table 14
Stops Made in Each Section
(*n* = 197)

Section	Percent of Visitors who Stopped	Median Number of Stops
Anaconda	43.7	3.0
Caiman	38.6	2.0
Catfish/Candiru	29.4	4.0
Stingray	27.9	2.0
Electric Eel	25.9	3.0
Piranha	23.4	20.
Mo's Boat	19.8	1.0
Amazon River Mural	15.7	1.0
Introduction	7.0	1.0

When the number of stops made in each section was examined among venues and demographic characteristics, one statistically significant relationship emerged. Visitors to the Ripley Center made considerably more stops in every section except the Anaconda section (see Table 15). In other words, the venue was the only examined variable significantly related to the number of stops visitors made in each section.

Table 15
Differences in Number of Stops Made in Each Exhibit Section by Venue

Exhibit Section	Significant Variable	Mean Number of Stops	±
Amazon River Mural	Venue:[1]		
	Ripley Center	0.7	0.8
	MMS	0.2	0.4
Caiman section	Venue:[2]		
	Ripley Center	2.8	1.9
	MMS	1.5	1.5
Catfish section	Venue:[3]		
	Ripley Center	3.3	2.7
	MMS	1.7	2.1
Stingray section	Venue:[4]		
	Ripley Center	1.6	1.6
	MMS	0.9	1.2
Electric eel section	Venue:[5]		
	Ripley Center	2.3	1.8
	MMS	1.1	1.5
Piranha section	Venue:[6]		
	Ripley Center	1.6	1.9
	MMS	0.9	1.5
Mo's Boat	Venue:[7]		
	Ripley Center	1.4	1.1
	MMS	0.4	0.7
Introduction	Venue:[8]		
	Ripley Center	0.3	0.5
	MMS	0.1	0.3

[1] t =-5.155; df = 195; p = 0.00
[2] t = -5.138; df = 193; p = 0.00
[3] t =-4.673; df = 195; p = 0.00
[4] t = -3.430; df = 195; p = 0.00
[5] t =- 5.133; df = 195; p = 0.00
[6] t =- 2.561; df = 195; p = 0.01
[7] t = -7.113; df = 195; p = 0.00
[8] t =- 2.805; df = 195; p = 0.01

VISITATION TO INDIVIDUAL EXHIBITS

Time Spent at Each Exhibit

As shown in Table 16, visitors spent the most time at Mo's Welcome video (median time of 2 minutes, 28 seconds). Visitors also spent considerable time at Paulo and the Mysterious Muckfish video (median time of 2 minutes, 19 seconds).

Table 16
Exhibits at which Visitors Spent Longer than 30 Seconds

Exhibit Name	Number of Visitors who Stopped	Median Time
Mo's Welcome video	87	2 min., 28 sec.
Paulo and the Mysterious Muckfish video	50	2 min., 19 sec.
Candiru Karaoke video interactive	55	2 min., 3 sec.
Annual Flood Cycle interactive	56	1 min., 55 sec.
Amazon Mural computer interactive	63	1 min., 50 sec.
Bloody Suckers video	57	1 min., 41 sec.
Anaconda video	50	1 min., 34 sec.
Red-bellied Piranha computer interactive w/specimen	29	1 min., 9 sec.
Can You Sort These Catfish? Interactive	41	1 min., 8 sec.
River House tool interactive	115	1 min., 3 sec.
Tetra Tank low-tech interactive w/specimen	99	55 sec.
Marine Invaders computer interactive	40	53 sec.
What's in the Muck? tool interactive	103	48 sec.
A Perilous Journey video	16	46 sec.
Catfish Table low-tech interactive	55	45 sec.
Encante Dance Stage interactive w/artwork	124	44 sec.
What Does a Fish Should Like? tool interactive	74	41 sec.
Black Piranha computer interactive w/specimen	29	40 sec.
Stingray live specimen tank	101	38 sec.
The Real Seven Perils flip panels w/artwork	49	37 sec.
Fula-preta Piranha computer interactive w/specimen	28	36 sec.
Shock of the Electric Eel interactive	54	35 sec.
A Tetra's Journey interactive	32	34 sec.
Stomach Search low-tech interactive	87	33 sec.

There were 17 exhibits at which visitors spent a median time of between 30 and 15 seconds (see Table 17).

Table 17
Exhibits at which Visitors Spent between 30 and 15 Seconds

Exhibit Name	Number of Visitors who Stopped	Median Time
Anaconda low-tech interactive model	90	29 sec.
River People (Living Room) flipbook	24	28 sec.
In the Dry Season… panel w/images	17	27 sec.
Elongate Piranha computer interactive w/specimen	25	26 sec.
Mega-Piranha tool interactive w/specimen	52	23 sec.
The Real Seven Perils panel w/images	8	21 sec.
River Homes flipbook	34	21 sec.
Top Ten Reasons Why… panel	11	21 sec.
Fish Festival artifact case w/labels and images and w/audio	41	20 sec.
Stingray Pattern Matching low-tech interactive	33	20 sec.
Catfish Diversity tool interactive	52	18 sec.
Moment of Realization panel w/specimen	9	17 sec.
What Does a Fish Sound Like? panel w/image	22	16 sec.
A Perilous Journey panel w/image	10	16 sec.
Why So Many Colors? panel w/models	26	16 sec.
The Amazon River Is a Great Place to Live	26	16 sec.
River Highways flipbook	11	15 sec.

As shown in Table 18 (see the next page), the three exhibits at which visitors spent the least time were panels: Marine Invaders panel, Piranha Attack panel, and the Acknowledgements panel (median times of 6, 5.5, and 4 seconds, respectively).

Table 18
Exhibits at which Visitors Spent Fewer than 15 Seconds

Exhibit Name	No. of Visitors who Stopped	Median Time
The Amazon River Has the Greatest Aquatic Biodiversity panel	4	14 sec.
It's Raining Again panel w/lenticular artwork	27	14 sec.
Do You Think This Is a Big Fish? panel w/model	31	14 sec.
Can You Sort These Catfish? panel w/image	20	14 sec.
Amazon Mural artwork (on divider)	4	13 sec.
Why So Many Fish? Panel	21	13 sec.
The Tales Teeth Tell panel w/image	14	12 sec.
Field Research panel w/image	10	12 sec.
Freshwater Stingrays panel w/image	14	12 sec.
Candiru panel w/specimen	33	12 sec.
Encante Dance Costume artifact case w/labels and images	30	11 sec.
A Tetra's Journey panel w/image	15	11 sec.
Amazon Mural artwork (on wall)	26	11 sec.
Catfish Diversity specimen case	43	11 sec.
Why Is It Important to Preserve the Amazon? panel	4	10 sec.
Human Activities Can Change the Environment Forever panel	3	10 sec.
River Family panel w/image	37	10 sec.
The Flooded Forest panel w/lenticular artwork	32	10 sec.
Tree Trunk artwork	5	9 sec.
Fishes of the Amazonia panel w/image	12	9 sec.
Sharp Defense panel w/specimen and w/image	22	9 sec.
Shock of the Electric Eel panel w/image	12	9 sec.
Electric Fish panel	7	9 sec.
How Many Species of Catfish Are There? panel	7	9 sec.
Stomach Search panel	24	9 sec.
Where Are We Going? panel w/map	53	9 sec.
Contributors panel	7	8 sec.
Remembering Godwana artwork	1	8 sec.
Fishermen Used to Catch… panel w/images and w/artifact	7	8 sec.
Candiru model in case	3	8 sec.
How Would You Know If One Species Was Missing? panel	9	8 sec.
Mega-Piranha artwork	7	7 sec.
This Fish Is So New to Science panel w/artwork	5	7 sec.
There Are More Than 2,000 Species of Fish panel	2	6 sec.
Introduction panel	30	6 sec.
Child and Turtle panel w/image	27	6 sec.
Camouflage photos	4	6 sec.
Marine Invaders panel	2	6 sec.
Piranha Attack panel	4	5 sec.
Acknowledgement panel	11	4 sec.

Stops Made at Each Exhibit

Visitors could stop at 81[10] exhibits. As presented in Table 19, the greatest number of visitors stopped at three exhibits: the Encante Dance Stage interactive with artwork, the River House tool interactive, and What's in the Muck? Tool interactive (63 percent, 58 percent, and 52 percent, respectively).

Table 19
Exhibits at which More than 20 Percent of Visitors Stopped
(*n* = 197)

Exhibit	Percent who Stopped
Encante Dance Stage interactive w/artwork	62.9
River House tool interactive	58.4
What's in the Muck? tool interactive	52.3
Stingray live specimen tank	51.3
Tetra Tank low-tech interactive w/specimen	50.3
Anaconda low-tech interactive model	45.7
Stomach Search low-tech interactive	44.2
Mo's Welcome video	44.2
What Does a Fish Should Like? tool interactive	37.6
Amazon Mural computer interactive	32.0
Bloody Suckers video	28.9
Annual Flood Cycle interactive	28.4
Candiru Karaoke video interactive	27.9
Catfish Table low-tech interactive	27.9
Shock of the Electric Eel interactive	27.4
Where Are We Going? panel w/map	26.9
Mega-Piranha tool interactive w/specimen	26.4
Catfish Diversity tool interactive	26.4
Anaconda video	25.4
Paulo and the Mysterious Muckfish video	25.4
The Real Seven Perils flip panels w/artwork	24.9
Catfish Diversity specimen case	21.8
Fish Festival artifact case w/labels and images and audio	20.8
Can You Sort These Catfish? interactive	20.8
Marine Invaders computer interactive	20.3

[10] There were 93 exhibits in *Amazon Voyage*. However, 12 exhibits (section flags and accompanying models) were considered "notice only."

As shown in Table 20, there were 24 exhibits at which 20 to 10 percent of visitors stopped.

Table 20
Exhibits at which 20 to 10 Percent of Visitors Stopped
(*n* = 197)

Exhibit	Percent who Stopped
River Family panel w/image	18.8
River Homes flipbook	17.3
Stingray Pattern Matching low-tech interactive	16.8
Candiru panel w/specimen	16.8
A Tetra's Journey interactive	16.2
The Flooded Forest panel w/lenticular artwork	16.2
Do You Think This Is a Big Fish? panel w/model	15.7
Introduction panel	15.2
Encante Dance Costume artifact case w/labels and images	15.2
Red-bellied Piranha computer interactive w/specimen	14.7
Black Piranha computer interactive w/specimen	14.7
Fula-preta Piranha computer interactive w/specimen	14.2
It's Raining Again panel w/lenticular artwork	13.7
Child and Turtle panel w/image	13.7
Amazon Mural artwork (on wall)	13.2
The Amazon River Is a Great Place to Live	13.2
Why So Many Colors? panel w/models	13.2
Elongate Piranha computer interactive w/specimen	12.7
River People (Living Room) flipbook	12.2
Stomach Search panel	12.2
Sharp Defense panel w/specimen and w/image	11.2
What Does a Fish Sound Like? panel w/image	11.2
Why So Many Fish? Panel	10.7
Can You Sort These Catfish? panel w/image	10.2

As presented in Table 21, the fewest visitors stopped at the There Are More Than 2,000 Species of Fish panel, Marine Invaders panel, and Remembering Godwana artwork (1 percent each).

Table 21
Exhibits at which Less than 10 Percent of Visitors Stopped
(*n* = 197)

Exhibit	Percent who Stopped
In the Dry Season… panel w/images	8.6
A Perilous Journey video	8.1
A Tetra's Journey panel w/image	7.6
The Tales Teeth Tell panel w/image	7.1
Freshwater Stingrays panel w/image	7.1
Fishes of the Amazonia panel w/image	6.1
Shock of the Electric Eel panel w/image	6.1
Acknowledgement panel	5.6
Top Ten Reasons Why… panel	5.6
River Highways flipbook	5.6
Field Research panel w/image	5.1
A Perilous Journey panel w/image	5.1
Moment of Realization panel w/specimen	4.6
How Would You Know If One Species Was Missing? panel	4.6
The Real Seven Perils panel w/images	4.1
Contributors panel	3.6
Fishermen Used to Catch… panel w/images and w/artifact	3.6
Mega-Piranha artwork	3.6
Electric Fish panel	3.6
How Many Species of Catfish Are There? panel	3.6
Tree Trunk artwork	2.5
This Fish Is So New to Science panel w/artwork	2.5
Why Is It Important to Preserve the Amazon? panel	2.0
Piranha Attack panel	2.0
Amazon Mural artwork (on divider)	2.0
The Amazon River Has the Greatest Aquatic Biodiversity panel	2.0
Camouflage photos	2.0
Human Activities Can Change the Environment Forever panel	1.5
Candiru model in case	1.5
There Are More Than 2,000 Species of Fish panel	1.0
Marine Invaders panel	1.0
Remembering Godwana artwork	0.5

VISITATION OF EACH EXHIBIT TYPE

The exhibition included nine main exhibit types: panels with text, images, and/or artwork; panels with specimens, artifacts, and/or models; flip panels/flip books; video; computer interactives; cases with artifacts, specimens, and/or models; interactives; tool-based interactives; and flags/models.

Time Spent at Each Exhibit Type

As presented in Table 22, visitors spent the most time at computer interactives and video components (median time of about 3 minutes each). Visitors spent about two and one-half minutes at tool interactives and general interactives (median times of 2 minutes 33 seconds and 2 minutes 28 seconds, respectively). They spent the least time at panels with specimens, artifacts and/or models (median times of 20 seconds).

Table 22
Time Spent at Each Exhibit Type

Exhibit Type	Number of Exhibits Available	Number of Visitors who Stopped	Median Time
Computer interactives	7	127	2 min., 57 sec.
Video	5	139	2 min., 53 sec.
Tool interactives	6	171	2 min., 33 sec.
Interactives	9	176	2 min., 28 sec.
Panels with images and/or artwork	39	141	40 sec.
Flip panels/flip books	4	88	37 sec.
Cases	5	141	38 sec.
Panels with specimens and/or models	6	82	20 sec.
Flags/models	12	36	n/a*

*Notice is defined as stopping for fewer than 3 seconds.

When time spent at each exhibit type was examined among venues and demographic characteristics, three statistically significant relationships emerged (see Table 23). Visitors with children spent more time at interactives and tool interactives than did visitors without children. Likewise, children spent more time at interactives and tool interactives than did adult visitors. Visitors to the Ripley Center spent more time at videos than did visitors to MMS.

Table 23
Differences in Time Spent at Each Exhibit Type by Demographic Characteristics and Venue

Exhibit Type	Significant Variable	Mean Time	±
Interactives	Visiting with child:[1]		
	Yes	3 min., 59 sec.	3 min., 11 sec.
	No	2 min., 3 sec.	2 min., 3 sec.
	Age:[2]		
	Child	4 min., 37 sec.	3 min., 24 sec.
	Adult	2 min., 57 sec.	2 min., 46 sec.
Tool interactives	Visiting with child:[3]		
	Yes	4 min., 42 sec.	4 min., 25 sec.
	No	2 min., 20 sec	2 min., 45 sec.
	Age:[4]		
	Child	5 min., 54 sec.	5 min., 43 sec.
	Adult	3 min., 21 sec.	3 min., 24 sec.
Video	Venue:[5]		
	Ripley Center	4 min., 17 sec.	3 min., 15 sec.
	MMS	2 min., 54 sec.	2 min., 38 sec.

[1] t =-4.416; df = 174; p = 0.00
[2] t = 3.326; df = 169; p = 0.01
[3] t =-3.840; df = 169; p = 0.00
[4] t = 2.632; df = 42; p = 0.01
[5] t =- 2.778; df = 134; p = 0.01

Stops at Each Exhibit Type

As shown in Table 24, almost all visitors stopped at interactives and tool interactives (89 percent and 87 percent, respectively). Almost three-quarters stopped at panels with images and/or artwork, cases, and videos (72 percent, 72 percent, and 71 percent, respectively). The fewest number of visitors noticed the flags and/or models (18 percent).

In terms of the number of stops visitors made at each exhibit type, visitors made the most stops at interactives, tool interactives, and panels with images and/or artwork (median of 3 stops each). Visitors stopped at cases, flip panels/books, panels with specimens/models, and noticed flags/models a median of one time.

Table 24
Stops Made at Each Exhibit Type
(*n* = 197)

Exhibit Type	Number of Exhibits Available	Percent of Visitors who Stopped	Median Number of Stops
Interactives	9	89.3	3.0
Tool interactives	6	86.8	3.0
Panels with images/artwork	39	71.6	3.0
Cases	5	71.6	1.0
Video	5	70.6	2.0
Computer interactives	7	64.5	2.0
Flip panels/flip books	4	44.7	1.0
Panels with specimens/models	6	41.6	1.0
Flags/models	12	18.3	1.0

When the number of stops made at each exhibit type was examined to determine which variables—including demographic characteristics, visiting with children, and site—influenced the total number of stops made at each exhibit type, seven statistically significant relationships emerged (see Table 25). Children and visitors with children stopped at more interactive exhibits than did those without children. Visitors without children stopped at more panels than did visitors with children. Visitors to *Amazon Voyage* at the Ripley Center stopped at more panels, tool interactives, videos, and cases than did those at MMS.

Table 25
Differences in Number of Stops Made at Each Exhibit Type by Demographic Characteristics and Venue

Exhibit Type	Significant Variable	Mean Number of Stops	±
Interactive	Age:[1]		
	Child	3.9	0.3
	Adult	2.9	0.1
	Visiting with child:[2]		
	Yes	3.4	0.2
	No	2.6	0.2
Panels	Visiting with child:[3]		
	Yes	3.3	2.5
	No	4.8	4.3
	Venue:[4]		
	MMS	2.5	2.0
	Ripley Center	4.7	3.8
Tools interactives	Venue:[5]		
	Ripley Center	3.5	1.4
	MMS	2.5	1.3
Video	Venue:[6]		
	Ripley Center	2.0	1.1
	MMS	1.5	0.8
Cases	Venue:[7]		
	Ripley Center	1.8	0.8
	MMS	1.3	0.4

[1] $t = 3.056$; $df = 174$; $p = 0.01$
[2] $t = -3.066$; $df = 174$; $p = 0.01$
[3] $t = 2.758$; $df = 139$; $p = 0.01$
[4] $t = -3.745$; $df = 139$; $p = 0.00$
[5] $t = -4.886$; $df = 169$; $p = 0.00$
[6] $t = -3.330$; $df = 137$; $p = 0.01$
[7] $t = -4.249$; $df = 139$; $p = 0.00$

VISTOR BEHAVIORS

Summary of Behaviors

Observers noted 10 behaviors. Total incidences of each behavior are provided in Table 26. Detailed information about behaviors at individual exhibits is provided in Appendix H.

As presented in Table 26, over four-fifths of visitors did activities and watched videos (82 percent and 81 percent, respectively). More than one-half exhibited all but three of the observed behaviors: listened to audio, noticed, and used tools (46 percent, 18 percent, and 17 percent, respectively).

Table 26
Percentage of Visitors who Exhibited Behaviors in *Amazon Voyage*
(*n* = 197)

Behavior	Total %
Did activities	82.2
Watched video	81.2
Read aloud/discussed content at any exhibits	64.0
Used flip panel or book	64.0
Used computer	57.4
Looked at (pointed to/touched)	55.3
Coached or were coached at activities	51.3
Listened to audio/instructions	46.2
Noticed*	18.2
Used tool	17.0

*Museum visitors often glance at flags and models to ascertain the identification of an object, rather than stopping for seconds or longer to read them. For this evaluation, a "notice" was defined as looking at a panel for less than 3 seconds.

As indicated in Table 27, visitors did a median of three activities and watched videos or discussed the contents of three exhibits each. They used two flip panels/books, used two computers, looked at images or artwork at two exhibits, or coached or were coached at two exhibits each. Visitors noticed models/flags, used tools or listened to audio instructions at one exhibit each.

Table 27
Total Number of Behaviors Exhibited in *Amazon Voyage*

Behavior	Number of Activities Available	*n*	Median	Min.	Max.	Mean	±
Did activities	15	162	3.0	1.0	13.0	3.4	2.9
Watched video	9	172	3.0	1.0	9.0	3.0	1.8
Read aloud/discussed content at any exhibits	87	126	3.0	1.0	36.0	4.3	5.3
Used flip panel or book	11	71	2.0	1.0	9.0	4.0	2.6
Used computer	9	93	2.0	1.0	8.0	2.5	1.5
Looked at (pointed to/ touched)	53	109	2.0	1.0	14.0	2.7	2.5
Coach or were coached at activities	21	101	2.0	1.0	12.0	3.1	2.5
Noticed	12	36	1.0	1.0	8.0	1.7	1.4
Used tools	5	113	1.0	1.0	5.0	1.1	1.1
Listened to audio/instructions	2	42	1.0	1.0	2.0	1.2	0.4

Visitors at the Ripley Center watched more videos, read more panels, used more computer interactives, listened to more audio components, and looked at more artwork or images than did visitors at MMS (see Table 28).

Table 28
Differences in Behaviors by Venue

Behavior	Predictor Variable	Mean	±
Videos watched	Venue:[1]		
	Ripley Center	3.7	3.0
	MMS	2.2	2.3
Panels read aloud or discussed	Venue:[2]		
	Ripley Center	4.0	6.0
	MMS	1.4	1.4
Computer interactives used	Venue:[3]		
	Ripley Center	1.5	1.8
	MMS	0.9	1.4
Exhibits looked (pointed) at	Venue:[4]		
	Ripley Center	1.9	2.8
	MMS	0.9	1.3
Audio components used	Venue:[5]		
	Ripley Center	0.4	0.6
	MMS	0.1	0.4

[1] t =-3.819; df = 195; p = 0.00 [2] t = -4.089; df = 195; p = 0.00 [3] t = -2.631; df = 195; p = 0.01
[4] t =-3.135; df = 195; p = 0.01 [5] t = -3.120; df = 195; p = 0.00

Visitors in groups with children used more activities, used more tool interactives, and coached or were coached more frequently by visitors in their group than those without children (see Table 29). Likewise, children participated in more activities, and used more computer interactives, tool interactives, and audio components than adult visitors (see Table 30). The relationship between language spoken and coaching was not statistically significant. Similarly, the relationship between language spoken and reading/discussing exhibit content was not significant.

Table 29
Differences in Behaviors by Group Composition

Behavior	Predictor Variable: Group	Mean	±
Did activities	With children:[1]		
	Yes	4.0	3.0
	No	2.3	2.4
Used tool interactives	With children:[2]		
	Yes	1.2	1.2
	No	0.7	0.9
Coached or were coached	With children:[3]		
	Yes	2.5	2.7
	No	0.3	0.9

[1] t =--4.061; df = 195; p = 0.00 [2] t = -3.496; df = 191; p = 0.00 [3] t = -6.833; df = 195; p = 0.00

Table 30
Differences in Behaviors by Age

Behavior	Predictor Variable: Age	Mean	±
Did activities	Age:[1]		
	Child	5.8	3.2
	Adult	2.8	5.6
Used computers	Age:[2]		
	Child	2.0	1.9
	Adult	1.0	1.5
Used tool interactives	Age:[3]		
	Child	1.9	1.2
	Adult	0.8	1.0
Used audio components	Age:[4]		
	Child	0.7	0.7
	Adult	0.2	0.4

[1] t =4.998; df = 41; p = 0.00 [2] t = 2.791; df =40; p = 0.01 [3] t = 5.359; df = 41; p = 0.00 [4] t = 5.547; df = 195; p = 0.00

Exhibit Misuse

Evidence of misuse among *Amazon Voyage* exhibits was minimal. What's in the Muck? experienced the highest incidence—observers noted seven visitors misusing the tool interactive (see Table 31). A few visitors were also observed misusing the Red-bellied Piranha computer interactive (three visitors), the Fula-preta Piranha computer interactive (three visitors), the Stingray Pattern Matching low-tech interactive (three visitors), and the Shock of the Electric Eel interactive (three visitors).

Table 31
Number of Visitors who Exhibited Misuse at Individual Exhibits (in percent)
(*n* = 197)

Exhibit	Number of Visitors Used Exhibit	Misused
What's in the Muck? tool interactive	103	7
Red-bellied Piranha computer interactive	29	3
Fula-preta Piranha computer interactive	28	3
Stingray Pattern Matching low-tech interactive	33	3
Shock of the Electric Eel interactive	54	3
The Real Seven Perils flip panels	49	2
Marine Invaders computer interactive	40	2
What Does a Fish Sound Like? tool interactive	74	2
Catfish Diversity tool interactive	52	2
Annual Flood Cycle interactive	56	1
Anaconda video	50	1
Black Piranha computer interactive	29	1
Amazon Mural computer interactive	63	1
Paulo and the Mysterious Muckfish video	50	1
Stomach Search low-tech interactive	87	1

II. PRINCIPAL FINDINGS: EXIT INTERVIEWS

RK&A conducted interviews with a random sample of visitor groups after they exited *Amazon Voyage* at MMS and the Ripley Center. Interviews were conducted with 74 visitor groups—42 groups at MMS and 32 groups at the Ripley Center. Of the 74 groups RK&A interviewed, 41 were families and 33 were adult-only groups. In all, the groups were comprised of 102 visitors, including 87 adults and 15 children (less than 18 years). Slightly more than one-quarter of interviewee groups—all at MMS—were Spanish speakers (n = 21). Exactly one-half of interviewees were female, and exactly one-half were male. Interviewees' ages ranged from seven years to 69 years with the adults' median age being 43 years and the children's median age being 12 years (see Appendix I for demographic data broken down by site).

About two-thirds of MMS interviewees were repeat visitors (n = 27). The majority of the repeat visitors had visited four or fewer times over the past 12 months. Slightly more than one-half of the Ripley Center interviewees were repeat visitors to the Smithsonian Institution (n = 27), but the majority of those were first-time visitors to the Ripley Center. Of the repeat visitors to the Smithsonian Institution, three-quarters had visited the Smithsonian Institution once or twice in the past 12 months.

Of all the visitor groups that were approached and asked to participate in the study, 46 declined to do so, making the refusal rate 38 percent.[11]

The three sets of interviews (MMS, Ripley Center, and Spanish speakers) were analyzed separately, and there were no significant differences between the groups. Nevertheless, some minor differences are noted throughout this section.

VISITOR RESPONSE TO THE EXHIBITION

Overall Opinion

The majority of interviewees provided positive responses when asked their opinion of *Amazon Voyage*. Many of these interviewees explained that they enjoyed the exhibition because of its interactive components and experiential opportunities (see the first and second quotations below). Other interviewees couched their positive response in terms of positive reactions to the exhibition's content (see the third quotation).

> I found it very good, with a lot of diversity of multimedia, and ways to stimulate adults and kids, to get involved and feel in a more direct way the different aspects of the Amazon. [male, 50, Spanish speaker, MMS]

[11] The refusal rate at MMS was twice as high as the refusal rate at the Ripley Center, thus accounting for the overall high recruitment rate. From experience, we know that visitor groups with children are more likely to decline participation in an interview than groups without children. Since MMS consisted of more family groups than the Ripley Center, its refusal rate was higher.

> There was a part where you could stick your hands in some gloves and feel the different things you can find in the water. It made me feel like I was really there, in the river. [male, 48, MMS]

> [I liked] learning about the Amazon and seeing some things that have to do with the Amazon. It just brought it more to life for us. [female, 47, Ripley Center]

Many others talked about their positive experiences in light of their families or their children. In particular, these interviewees delighted in an exhibition that appealed to both children and adults (see the quotation below). Interviewees at MMS discussed their positive responses in terms of opportunities for their children to learn. Although a few interviewees in the Ripley Center discussed this particular aspect, the discussion was more extensive among MMS interviewees.

> It was good. The kids loved it. And to me that's a measure of success [female, 48, Ripley Center]

Slightly less than one-third of interviewees provided positive responses when asked their opinion of *Amazon Voyage*, but did not provide explanations to support their responses.

In contrast, about one-fifth of interviewees talked about the exhibition in less positive terms. A few of these interviewees discussed their discomfort with specific images in *Amazon Voyage* (see the quotation below). A few others explained that the exhibition, in general, did not hold their interest.

> It was hard to see the pictures of how some people treat you know, um, the lack of conservation in the Amazon to see some of the animals in such distress. That was hard to look at. But you know that's a reality of life. It's an important part of the exhibit. [female, 38, MMS]

Favorite and Least Favorite Aspects

When asked to identify their favorite part of *Amazon Voyage*, interviewees described a wide variety of exhibit components. The majority of the interviewees preferred exhibits with opportunities for immersive or interactive experiences, citing components such as the Anaconda low-tech interactive model, the Tetra Tank low-tech interactive with specimen (see the quotation below), and the What's in the Muck? as their favorites.

> The Anaconda. I think they said from sixty to two hundred pounds. And I picked up its tail, but I couldn't pick up the whole body. Cause it was really heavy. [female, 13, Ripley Center]

Many interviewees said they enjoyed the exhibits from which they learned new information, including Fresh Water Stingrays, (Catfish) Stomach Search low-tech interactive, and the Candiru Karaoke computer interactive (see the two quotations below).

> I liked the one that showed the fish in the stream, the different kinds of fish that there are. And I didn't know there were fresh water stingrays until I saw that. I learned something new just by looking at that. [male, 27, MMS]

> I liked singing the song on the Can Do Do To You. (Okay. Why is that?) Because it involved music and the Museum. And it was educational. And now I know the name of that fish. [female, 42, Ripley Center]

The Encante Stage interactive with Fish Festival artwork was a favorite among family groups because children said they enjoyed dressing up in costumes, and the adults explained that they enjoyed watching their children dress up and dance (see the quotation below).

> [I liked] the part with the Brazilian dances. I liked the fact that the kids can dress up as fishes. [male, 47, MMS]

Several interviewees cited Mo's Welcome Boat as their favorite because it provided an interesting orientation to *Amazon Voyage* (see the quotation below).

> I liked the movie where the guy tells you about the Seven Perils of the Amazon. (Why is that?) Because it's informative. It tells you all the different ones and then you can actually walk through the exhibits and see each of the different animals and creatures. [female, 38, Ripley Center]

When asked to name their least favorite part of *Amazon Voyage*, the majority of interviewees responded positively, saying they did not have a least favorite part. Nevertheless, several interviewees cited least-favorite aspects of the exhibition. For example, these interviewees explained that they could not understand how to use a component or did not feel that the exhibit component was meant for them (see the first and second quotations below). A few interviewees shared their disappointment when they believed they were not successful at an exhibit (see the third quotation). This was particularly true of What is in the Muck? and What Does a Fish Sound Like?

> I thought the thing where there's a stick and you put it in the water ant it makes noises like the fish are supposed to make [was my least favorite]. A lot of them seemed very alike. And [when] you push[ed] the buttons, the little kids got confused with the buttons. They thought they were making a noise, but it really was just because they pushed the button. And they weren't anywhere near where they were supposed to be. [female, 17, MMS]

> (Which was your least favorite?) Probably the fish festival because it was geared towards children with the costumes and everything. It was cute watching other people's children playing there, but as an adult here with no children, it wasn't really much to look at. [female, 37, MMS]

> [I didn't like] the one with the muck, where you put your hands in the muck because I only saw leaves in there, so I really didn't get that much out of that one. [male, 27, MMS]

Accessing Content

To further assess visitors' experiences with *Amazon Voyage*, the evaluator asked interviewees to discuss their feelings about the amount of information available in the exhibition. As a follow-up, the evaluator also asked about the level of information in the exhibition. Slightly less than one-half of interviewees responded positively to the amount and level of information. Several of these explained that the amount and level of information in the exhibition enabled them to have successful family interactions (see the two quotations below).

> I thought it was perfect because I came with my kids and I need a level that they can understand but one in which I can learn things at the same time. [male, 47, with one child, 9, Spanish speakers, MMS]

> It was short but to the point. That's what kids need. And also the adults, so that if the child doesn't understand or doesn't know, then they could relate the message to their children in a very short self-explanatory manner. [female, 32, Ripley Center]

Other interviewees explained that the distribution of information allowed them to "pick and choose" based on their personal needs and interests. They cited a mixture of interactives, panel text, and multimedia presentations (see the two quotations below).

> There's a lot of information there, but, like I said, depending on how old you are, you pick and choose what you are interested in. And so we obviously stayed away from the more complicated exhibits. [male, 48, MMS]

> I think one good thing about it was that it was different types of information. We'd have stuff that was written out or stuff that was on video, so whichever . . . way you take in information better [you can choose to look at or read]. [male, 24, MMS]

Slightly more than one-third of the interviewees responded neutrally about the amount of information. Some of these respondents indicated that the amount of information was just right to hold their attention (see the first quotation below). A few interviewees explained that *Amazon Voyage* provided a "taste of the Amazon" and the interviewee could use the exhibition as a starting point to learn more (see the second quotation).

> I think for that kind of exhibit, it was just enough. It wasn't too detailed. It was to where you had enough attention, but wouldn't lose your attention. [male, 29, Ripley Center]

> I thought it was basic and concise. I suppose that if you want to investigate further, you can start with the information provided here. It's all very clear. [male, 46, Spanish speaker, MMS]

Some of the interviewees suggested that the amount and level of information was just right for adults but too much or too difficult for children (see the quotations below). All but one of these interviewees was visiting the exhibition in adult-only groups.

> For me it was fine. For someone younger? I don't know. It might be too much. [female, 17, MMS]

> It seems more geared for kids, so it's probably a lot of information for them. [male, 20, Ripley Center]

A similar number of interviewees suggested that the amount and level of information was just right for children, but not advanced or interesting enough for adults (see the quotation below).

> I think it is sufficient, especially for kids. For adults it could be too little, but you still learn. [male, 50, Spanish-speaker, MMS]

A few interviewees expressed a desire for more information. Several of these interviewees explained that some of the exhibits could have used more information (see the two quotations below).

> I thought some of the exhibits lacked a lot of information. Some of them only have one paragraph of information and it leaves you wanting more. [female, 20, Spanish speaker, MMS]

> I would have liked a little more in-depth on some stuff because I'm a [fisheries] person. [female, 47, Ripley Center]

Other interviewees suggested that there was too much information. These interviewees talked about needing more time to read all the information (see the two quotations below).

> There's a lot of information. If you have the time to sit there and read everything you can learn something. [male, 24, Spanish speaker, MMS]

> It depends on the time you're willing to dedicate to it. I think the amount of information is adequate for a person who is willing to stay here about 30 to 45 minutes. I was here for a while, and it was a little overwhelming to try to see it in 10 minutes. [male, 50, Spanish speaker, MMS]

Spanish Audio and Text

The Spanish text for *Amazon Voyage* is a "universal" Spanish that would be familiar and comfortable for all Spanish speakers regardless of their dialect. To assess the suitability of the Spanish texts, Spanish speaking interviewees in MMS were specifically asked to reflect on the vocabulary and language in the exhibition. The majority of these interviewees responded positively to the Spanish texts (see the two quotations below).

> I didn't have trouble understanding it. I thought it was pretty neutral. [female, 24, Spanish speaker, MMS]
>
> It was good; it was neutral. I've lived in Chile, in Uruguay. I've traveled all over in Columbia, Mexico, etc., and I think they achieved a very generic Spanish. [male, 50, Spanish speaker, MMS]

UNDERSTANDING CONTENT

Exhibition Main Idea

Interviewees were asked to describe the exhibition's themes. More than one-third of interviewees suggested that the exhibition's main focus was biodiversity and the importance of maintaining biological diversity (see the two quotations below).

> Most of all, [the exhibit shows] the habitat of the Amazon, the animals, also the dangers you can find there. It shows kids the diversity of animals you can find in the Amazon. [female, 36, Spanish speaker, MMS]
>
> I think we're trying to appreciate the biological diversity of the Amazon. And geographically [of] its importance. And the importance of maintaining that biological diversity. [male, 48, MMS]

Roughly the same number of interviewees identified "culture" (see the first quotation below) or discussed the human relationship with the Amazon River as the exhibition's main focus. Many of these appeared to understand the relationship between the local population and the river (see the second quotation).

> I think it is achieving its goal of getting people to know a little about life in the Amazon. The part that has some photos and maps about the habitat there, the picture of the house with the satellite and everything you have here, the things on the floor, on the tables, everything helps me understand better how people live there. [male, 44, Spanish speaker, MMS]
>
> [The theme is] trying to educate about the Amazon River. And some of the ways that the things out of the river affect the local economies and things like that. [male, 26, Ripley Center]

Some interviewees talked about conservation (see the first quotation below). Interviewees who discussed conservation stressed the relationship between awareness of the Amazon and conservation of the Amazon (see the second quotation). Although many talked about the need to conserve the Amazon's environment, few spoke of biology as a way to understand how to conserve (see the third quotation).

> I got the impression it was about ecology and preserving and what things are in there. [female, 42, Ripley Center]

> How life is in the Amazon, and the importance of taking care of the environment for the future. [male, 47, Spanish speaker, MMS]

> To make people aware of what is in the Amazon. I don't think some people really realize the amount of animal species that are there. But also, given that there are that many species of animals that we need to be aware of conservation. [female, 38, MMS]

A few interviewees referred to field research. These interviewees talked about the relationships between field research and conservation (see the quotation below).

> Biologists are good for the environment because they're helping [to] preserves and record what is there so we know better about it. So that if someone does start digging or wants to build a building, you can't do that. [female, 28, Ripley Center]

Organizational Structure of Amazon Voyage

About one-half of interviewees detected separate sections of *Amazon Voyage*. When asked to describe the sections, the majority of interviewees discussed each section by general topic (see the first quotation below). Others defined each section by specific activities (see the second quotation).

> There's a section about animals and fish, another about habitat, and another one that's more about biodiversity. [male, 44, Spanish speaker, MMS]

> Well there's the catfish exhibit, then the piranhas, the tetra section, the dancing section and that's what I remember. [female, 24, Spanish speaker, MMS]

A few interviewees explained that they detected sections of the exhibition, but could not describe them (see the quotation below).

> I didn't really pay much attention to it, but I did notice that there were sections [male, 50, Spanish speaker, MMS].

More than one-third of interviewees did not detect exhibition sections. A few of these assumed that the exhibition was organized, but could not explain how (see the first quotation below). A few respondents suggested that they had not paid enough attention (see the second quotation).

> I guess I did [know there were sections], but I don't really know what those were specifically. [female, 39, Ripley Center]

> I really didn't pay attention, but I know there was some division. I didn't pay that much attention. [male, 50, Ripley Center]

Specific Content Learned

To access the extent of visitor understanding of the exhibition's major themes, RK&A asked interviewees to reflect on major themes in the exhibition including biodiversity, scientific research presented in the exhibition, and lives of people who live in the Amazon.

Biodiversity

The evaluator asked interviewees to describe any new learning they gained about biodiversity while visiting *Amazon Voyage*. Slightly less than two-thirds of interviewees discussed biodiversity, in general, as the variety of life that is found in the Amazon (see the first and second quotations below). Many of these cited specific examples from the exhibition such as catfish or piranhas (see the third and fourth quotations).

> And the opening mural that shows all the different species of fish was really amazing! We could have stood there for the whole time and learned [about all] kinds of fish. [female, 42, Ripley Center]

> Being aware of the types of different organisms that are in the Amazon. [male, 45, MMS]

> I had no idea there were that many different piranhas. [female, 47, Ripley Center]

> [I learned that] there are many species of catfish, and that out of the 2,900 species discovered, 1,200 are in the Amazon. [female, 24, Spanish speaker, MMS]

Several interviewees explained that they already knew about biodiversity before visiting the exhibition. However, their responses did not indicate that these interviewees could better explain biodiversity in the Amazon than could other interviewees.

As a follow-up, the evaluator asked interviewees to explain why they thought a discussion about biodiversity belonged in an exhibition about the Amazon. Almost one-half of interviewees discussed the importance of educating the public in general, and children specifically, about the Amazon. These interviews connected awareness with education which would lead others to appreciate the environment and promote conservation (see the first quotation below). About one-third of the interviewees talked about the symbiotic relationship between biology and the environment in the Amazon (see the second and third quotations).

> Because the Amazon is such a big river and there's a lot of different variety. And getting people to know about the diversity on the river is crucial to conservation of the environment. [male, 26, Ripley Center]

> But I didn't know there was four or five different species of the piranha and all of them playing a different role. In cleaning up the Amazon River. [male, 36, Ripley Center]

> We also appreciate the fact that the natural cycles of flooding and the seasonal cycles are important for that biological diversity. [male, 48, MMS]

A few interviewees appeared confused by the term "biodiversity." These interviewees talked about biodiversity in terms of variety in human culture (see the quotation below).

> That's different cultures, different ways [of] what they do. How they survive in this part of the country. [male, 43, MMS]

Scientists

About two-thirds of the interviewees remembered stories about scientists who work in the Amazon (see the first and second quotations below). These interviewees cited specific exhibit components linked to the scientists, such as What Does a Fish Sound Like? and What is in the Muck?.

> We actually just looked at one. The scientist that dealt with the anacondas. [female, 38, Spanish speaker, MMS]

> The only scientist that we really heard was the [one] with the radio fish. It just seemed interesting that somebody would go out and choose as a career detecting radio fish. [male, 29, Ripley Center]

When asked "what struck you most about the scientists and their stories?" the majority of these interviewees spoke about the psychological characteristics of the scientists, such as one interviewee from the Ripley Center who explained, "they're dedicated to their work." Other interviewees discussed the difficult lives these scientists appeared to have (see the quotation below).

> I think that sometimes it can be hard. If they're not used to it, but I think they have a lot of fun and learn stuff. [female, 12, MMS]

A few interviewees applied the stories to their own lives. One interviewee at MMS explained, "I do not want to be grabbing that snake." A few other interviewees conveyed surprise and interest in discovering that scientists are in the Amazon (see the quotation below).

> About the guy in the boat. He takes you on a real boat tour of the Amazon. I thought that was cool because I think it brings a different perspective. You forget what medium is used to get that kind of information. And I thought it brought to light what a scientist really does. [female, 21, Ripley Center]

Just about one-third of the interviewees did not remember seeing stories about scientists in *Amazon Voyage*. The majority of these interviewees explained that they had either moved through the exhibition quickly or were not interested in the subject.

People of the Amazon

RK&A asked interviewees to describe any new learning they gained about people who live in the Amazon. More than one-half of the interviewees talked about Amazonian connections to the land. Interviewees discussed cultural symbols and celebrations that have developed in relationship to the environment (see the quotation below).

> [The exhibits] talk about the celebration, a yearly celebration. The people celebrate the fact that all the varieties of fish bring attention to the Amazon and bring economic life for them as well. So in turn they're thanking the fish. And thanking the environment by having a celebration. [female, 38, MMS]

Some interviewees talked about the influence of the environment on Amazonian lifestyles (see the two quotations below). These interviewees appeared to understand that the Amazonian way of life, such as housing, has developed as a direct response to the environment, as explained by a child at MMS, "They have to build real tall houses."

> The fact that they have such an extreme change in the water level. And it just seems wild! You'd have to change your whole lifestyle depending on the season. [female, 42, Ripley Center]

> Dealing with the natural elements of how the water flows up, and then their whole life changed because, I mean when the water's low, they have a certain lifestyle. And then when the water rises, they have a totally different lifestyle which means that even though they're sort of a primitive lifestyle, but they really need to incorporate a lot of planning and have to be flexible in their transitions in the way they live because of nature. So . . . their life is lived among, around nature. [female, 30, MMS]

Several interviewees discussed the Amazonian dependency on the land to support the community economically. The majority of these interviewees discussed the negative affects on the environment caused by economic need, rather than caused by a disregard for conservation efforts (see the first quotation below). These interviewees loosely suggested that communities outside of the Amazon need to change their consumption and economic habits so that Amazonian communities can change their economic dependency on the environment (see the second quotation).

> I thought it did a nice job [of] showing that one of the problems isn't that they are going out and slaughtering animals cause they want to. It's because of how they're living and the poverty that they are in. That's their way, they need to make money. And we need to figure out how to change that. [male, 38, Ripley Center]

> The most important thing I learned was that they are moved by economic problems, and so without thinking about how they're destroying their own habitat, they kill whatever they need to kill, and sell its skin, and export whatever, without knowing that they are helping rich people get richer, and they're staying in the same conditions without taking care of the only thing they have that's their land and their animals. There's a part that shows the whole process through which they do business. They are constantly offered money to kill their own habitat to start the story of a business that ends in a lot of money. They get paid like 50 cents for each fish, and people end up selling them for a lot of money. [female, 17, MMS]

Several interviewees used the terminology "primitive" or "third world" when discussing the lifestyle of the Amazonian communities (see the first quotation below). A few interviewees who held this perception tended to also convey the idea that people of the Amazon are also more connected to nature than people outside the Amazon (see the second quotation). Interviewees with this perception expressed astonishment at seeing satellite dishes and other symbols of life outside the Amazon in the Amazon (see the third quotation).

> They live pretty much the way third world people would live. Off the land. The best they can in their environment. [male, 30, Ripley Center]

> They're probably more natural, more nature oriented. They have a greater appreciation for nature and different forms of life. And they have a respect for it. [female, 48, Ripley Center]

> I saw that native people that live there have satellite dishes. They have TVs. That just seems kind of weird because they like to watch soap operas and soccer matches. I thought that was interesting. [female, 52, Ripley Center]

VISITOR PERCEPTIONS

The evaluator asked interviewees to discuss the exhibition in terms of their own lives. Approximately one-third of interviewees responded by comparing their own lives to those of the Amazonian community. Many spoke about an appreciation for what they perceived to be a simpler life (see the first quotation below). Other interviewees spoke about the difficult lives of people in the Amazon (see the second quotation) and, as one person commented, "Our lives are easier."

> I guess an appreciation for a different culture. And a culture that isn't so caught up in modern life the way we are. [female, 39, Ripley Center]

> It affected me a little in the sense that I am very happy that I don't live in the Amazon. [female, 17, MMS]

About one-fourth of interviewees expressed a desire to travel to the Amazon after seeing the exhibition (see the quotation below). However, these interviewees did not identify traveling to the Amazon with opportunities to conserve and promote science in the Amazon.

> [It is] another interesting place of the world. (And, in what ways did your experiences in the exhibition affect your overall attitude toward or interest in the Amazon?) It would be an interesting place to tour. [male, 30, Ripley Center]

Although interviewees discussed examples of field research earlier in their interviews, few talked about the exhibition's impact on their attitudes about science. The majority of interviewees who mentioned science clarified that the exhibition was interesting because of their pre-visit interest in science. A few connected science with conservation efforts (see the quotation below).

> That humankind should be more careful because we're destroying everything. Things are important to us. Like, for example, the trees. The animal species that are yet to be discovered. [female, 20, MMS]

About one-third of interviewees talked about the impact of *Amazon Voyage* on their attitudes toward biodiversity. The majority of these suggested that they are now more aware of Amazonian biodiversity (see the quotation below).

> You know now I can say 'Oh, I know this about the Amazon' or 'do you know that these little piranhas eat…' and stuff like that. So I guess it was good basis of knowledge overall. I learned a lot of different things. [female, 21, Ripley Center]

Several interviewees explained that the exhibit reinforced their interest in and understanding of conservation (see the first quotation below). Several other interviewees explained that the exhibition influenced their attitude about conservation (see the second quotation). However, many of these were previously aware of the importance of conservation.

> I feel more aware of what is going on down there. When you talk about things like deforestation it's hard to really understand, but when you see things like these it's easy to see the importance of it. [male, 44, MMS]

> It strengthened my desire to get people to realize these things. It's like a wake-up call. [male, 20, Spanish speaker, MMS]

A few interviewees moved from an understanding of biodiversity and conservation to talking about appreciation and protection (see the quotation below).

> Usually we don't give enough importance to the issue of ecology, so from appreciating the biodiversity in the Amazon and also seeing its vulnerability, your sensitivity to the issue increases, and eventually your solidarity with the cause and things that have to do with protecting it. [male, 50, Spanish speaker, MMS]

APPENDICES

All data collection instruments for this study have been omitted for proprietary reasons.

APPENDIX A

Definitions of Misuse and Broken Exhibits

	Exhibit Name	Misuse	Broken
FLOODPLAIN LAKE (Anaconda)			
4	*Encante* Stage interactive	n/a	Video
8	The Annual Flood Cycle interactive	Spinning handle without pressing button Pressing button without purpose Not allowing water to level before turning dial/pressing button	Empty tank Missing dial
11	Anaconda Video	Pressing buttons without purpose	Video
16	The Real Seven Perils flip panels w/artwork	Spinning flip panel without purpose	n/a
18	Anaconda low-tech interactive model	n/a	Missing model
FLOATING HOME (Caiman)			
23	River People flipbook	Flipping pages without purpose	n/a
26	A Tetra's Journey interactive	n/a	Panels don't light up Missing handle
31	River House tool interactive	Shining flashlight anywhere but the case Play with flashlight without purpose	Missing flashlight Panels don't light up Animals don't pop out
33	River Homes flipbook	Flipping pages without purpose	n/a
PIRANHA			
36	Mega-Piranha tool interactive	Sliding tool without looking at specimens Sliding tool without purpose	Missing tool
41	Red-bellied Piranha computer interactive w/specimen	Spinning dial/pressing buttons without purpose	Computer
42	Fula-preta Piranha computer interactive w/specimen	Spinning dial/pressing buttons without purpose	Computer
43	Elongate Piranha computer interactive w/specimen	Spinning dial/pressing buttons without purpose	Computer
44	Black Piranha computer interactive w/specimen	Spinning dial/pressing buttons without purpose	Computer
48	Perilous Journey video	Pressing buttons without purpose	Video
AMAZON RIVER MURAL			
52	Amazon Mural computer interactive (3)	Pressing buttons without purpose Playing with joystick without purpose	Computer
SANDY BANK (Stingray)			
56	Stingray Live Specimen Tank	Tapping, knocking on tank	n/a
58	Stingray Pattern Matching low-tech interactive	Using stingrays as a weapon Throwing stingrays haphazardly	Missing stingrays
61	Marine Invaders computer interactive	Spinning dial/pressing buttons without purpose	Computer

FLOODED FOREST (Electric Eel)			
65	Paulo and the Mysterious Muckfish video	Pressing buttons without purpose	Video
68	What's In the Muck? tool interactive	Throwing muck Splashing Wrestling, playing with other users	Empty chamber
70	Shock of the Electric Eel interactive	Spinning crank without purpose, without touching diodes	Electricity off Missing crank
73	What Does a Fish Sound Like? tool interactive	Hit buttons without purpose	Missing tool Empty tank
DEEP CHANNEL (Catfish/Candiru)			
74	Bloody Suckers video	Pressing buttons without purpose	Video
77	Candiru Karaoke computer interactive	Pressing buttons without purpose	Video Missing microphone
81	Catfish Table low-tech interactive	Using catfish as a weapon (e.g., throwing, hitting other visitors)	Missing catfish pieces
84	Can You Sort These Catfish? low-tech interactive	Using cards as a weapon, throwing cards Using cards without purpose	Missing cards
88	Catfish Diversity tool interactive	Shining flashlight anywhere but the trunk Play with flashlight without purpose	Missing flashlight
90	Stomach Search low-tech interactive	Putting things into the stomach (e.g., trash) Pulling contents beyond tether	Missing fish
MO'S BOAT			
92	Mo's Welcome video (203)	Pressing buttons without purpose	Video
93	River Highway flip book	Flipping pages without purpose	n/a

APPENDIX B

List of New Variables Created from the *Amazon Voyage* Observational Data

- Add up "stop" columns to determine total number of stops made in the exhibition
- Add up "notice" columns to determine total number of notices in the exhibition
- Compare time and stops data with Serrell's Sweep Rate Index and Percentage Diligent Visitor

- Add up time spent in each section
- Add up number of stops made in each section
- Determine how many sections visitors stopped in (mean, median)
- Determine how many visitors stopped in two or more sections
- Determine how many visitors stopped in over one-half or the sections
- Calculate percentage of total time spent in each section
- Calculate percentage of total stops made in each section
- Note time spent sitting on benches but not using reading boards will be subtracted from the total time (since non-exhibit-related behavior)

- Add up time spent at each type of exhibit
- Add up number of stops made at each type of exhibit
- Calculate percentage of total time spent at each type of exhibit
- Calculate percentage of total stops made at each type of exhibit

- Calculate time spent at each exhibit
- Calculate percentage of visitors who stopped at each exhibit

- Add up behaviors to determine total incidence in the exhibition
- Add up behaviors in each section
- Add up behaviors at each type of exhibit
- Add up behaviors at each exhibit
- Determine how many visitors do one or more activities

APPENDIX C

List of Statistical Analyses Run on the *Amazon Voyage* Observational Data

ANOVA

Language spoken	X	Each read aloud behavior Each coach/be coached behavior Total read aloud discuss behavior Total coach/be coached behavior

T-tests

Gender Ages (Adult/child) Visiting with children Venue (MMS and Ripley)	X	Total time Total stops Total incidence of each behavior Total stops made in each section of the exhibition Total number of sections visited Total stops made in each section Time spent at each type of exhibit Total stops made at each type of exhibit

Chi-square Statistic

Venue (MMS or Ripley)	X	Gender Ages (3 groups) Visiting with children Level of crowding

APPENDIX D

Detailed Information about Behaviors at Specific Exhibits

Table 32
Number of Visitors who Used Audio

Exhibit Name	Number of Visitors Stopped	Number of Visitors Used Audio
Used audio at Fish Festival artifact case	41	12
Used audio instructions at What Does a Fish Sound Like? Tool interactive	74	37

Table 33
Number of Visitors who Used Activities

Exhibit Name	Number of Visitors Stopped	Number of Visitors Used Exhibits
What's In the Muck?	103	78
River House	115	72
Stomach Search	87	57
Anaconda model	90	52
Danced at Encante Stage	124	50
What Does a Fish Sound Like?	74	50
The Annual Flood Cycle	56	42
Shock of the Electric Eel	54	42
Catfish Diversity tool	52	41
Tetra Tank	99	36
Catfish Table	55	28
Can You Sort These Catfish?	41	26
Stingray Pattern Matching	33	20
A Tetra's Journey	32	19
Candiru Karaoke	55	16

Table 34
Number of Visitors who Coached or Were Coached at Each Interactive

Exhibit Name	Number of Visitors Stopped	Number of Visitors Coached or Were Coached
Anaconda model	90	29
River House	115	29
Stomach Search	87	27
Encante Stage	124	25
What's In the Muck?	103	25
Amazon Mural computer	63	24
Tetra Tank	99	21
Shock of the Electric Eel	54	18
Annual Flood Cycle	56	17
Catfish Table	55	16
Can You Sort These Catfish?	55	16
What Does a Fish Sound Like?	74	14
Candiru Karaoke	55	14
Marine Invaders computer	40	12
Red-bellied Piranha computer	29	8
Catfish Diversity	52	8
Stingray Pattern Matching	33	7
Black Piranha computer	29	7
Elongate Piranha computer	25	6
A Tetra's Journey	32	3
Fula-preta Piranha computer	28	3

Table 35
Number of Visitors who Looked at Each Exhibit

Exhibit Name	Number of Visitors Stopped	Number of Visitors Looked at (Pointed to)
Stingray specimens	101	42
Tetra Tank specimen	99	31
Mega-Piranha specimen	52	17
Encante Stage artwork	124	14
Where Are We Going? panel	53	11
Catfish Diversity specimen	43	10
Candiru panel/specimen	33	9
Fish Festival artifact	41	8
Do You Think This Is a Big Fish? panel	31	8
Black Piranha specimen	29	8
Why So Many Colors? panel	26	8
Flooded Forest panel	32	8
Real Seven Perils Damming flip panels	49	7
Amazon Mural artwork	26	7
Introduction panel	30	6
Fish Festival image/video	41	6
Real Seven Perils Commercial flip panels	49	6
Moment of Realization specimen	9	6
Real Seven Perils Ranching flip panels	49	5
Real Seven Perils Bio-piracy flip panels	49	5
Real Seven Perils Poaching flip panels	49	5
Elongate Piranha specimen	25	5
Encante Dance Costume artifact case	30	4
It's Raining Again! panel	27	4
Real Seven Perils Mining flip panels	49	4
River Family panel	37	4
Sharp Defense specimen	22	4
What Does a Fish Sound Like? panel	22	4
Real Seven Perils Logging flip panels	49	3
Tree trunk artwork	5	3
Mega-Piranha artwork	7	3
Red-bellied Piranha specimen	29	3
Sharp Defense panel	22	3
Dry Season panel	17	2
A Tetra's Journey	15	2
Fula-preta Piranha specimen	28	2
The Amazon River is a Great Place to Swim panel	26	2
Shock of the Electric Eel panel	12	2
Fishes of the Amazon	12	1
A Perilous Journey panel	10	1

Camouflage photos	4	1
Can You Sort These Catfish panel	20	1
Remembering Gondwana artwork	1	0
Fisherman Used to Catch panel	7	0
Real Seven Perils panel	8	0
Fisherman Used to Catch panel	7	0
Child and Turtle panel	27	0
The Tales Teeth Tell panel	14	0
Field Research panel	10	0
Freshwater Stingray panel	14	0
This Fish is New to Science panel	5	0

Table 36
Number of Visitors used Computer Interactives

Exhibit Name	Stopped	Used Computers	Number of Visitors Used 1 Screen	Used 2 Screens	Used 3 Screens	Used 4 Screens
Elongate Piranha computer interactive	25	17	11	1	1	4
Plack Piranha computer interactive	29	20	12	2	2	4
Amazon Mural computer interactive	63	49	27	12	10	n/a
Amazon Mural – Mural screen	63	22	n/a	n/a	n/a	n/a
Amazon Mural – Explorer screen	63	27	n/a	n/a	n/a	n/a
Amazon Mural – Challenge screen	63	26	n/a	n/a	n/a	n/a
Marine Invaders computer interactive	40	30	n/a	n/a	n/a	n/a
Fula-preta Piranha computer interactive	28	22	15	3	1	3
Red-bellied Piranha computer interactive	29	24	14	3	0	7

Table 37
Number of Visitors used Flip Books and Flip Panels

	Number of Visitors				
Exhibit Name	**Stopped**	**Used Exhibit**	**Used 1 Side**	**Used 2 Sides**	**Used 3 Sides**
Real Seven Perils flip panels	49	29	n/a	n/a	n/a
Commercial panel	49	12	10	4	8
Logging panel	49	16	8	2	6
Ranching panel	49	22	10	3	9
Mining panel	49	24	11	3	10
Bio-piracy panel	49	21	10	3	8
Poaching panel	49	16	9	1	6
Damming	49	18	8	2	8

Table 38
Number of Visitors who Used Tools at Interactives

Exhibit Name	Number of Visitors	
	Stopped	Used Tool
Dressed up at Encante Stage interactive	124	18
Used tool at River House	115	62
Used tool at Mega-Piranha	145	36
Used tool at What Does a Fish Sound Like?	123	46
Used tool at Catfish Diversity	145	29

Table 39
Number of Visitors who Read Aloud or Discussed Content at Each Exhibit (in percent)

Exhibit	Number of Visitors Stopped	Number of Visitors Read Aloud or Discussed Content
Fishermen Used to Catch… panel w/images and w/artifact	7	7
Annual Flood Cycle interactive	56	32
Amazon Mural artwork (on divider)	4	2
Shock of the Electric Eel interactive	54	25
Stomach Search panel	24	11
Mega-Piranha artwork	7	3
In the Dry Season… panel w/images	17	7
What's in the Muck? tool interactive	103	38
Amazon Mural artwork (on wall)	26	9
Stomach Search low-tech interactive	87	30
Moment of Realization panel w/specimen	9	3
Electric Fish panel	7	2
Bloody Suckers video	57	16
A Tetra's Journey interactive	32	9
The Flooded Forest panel w/lenticular artwork	32	9
What Does a Fish Sound Like? panel w/image	22	6
River Highways flipbook	11	3
Amazon Mural computer interactive	63	17
Can You Sort These Catfish? interactive	41	11
Shock of the Electric Eel panel w/image	12	3
The Amazon River Has the Greatest Aquatic Biodiversity panel	4	1
Camouflage photos	4	1
Elongate Piranha computer interactive w/specimen	25	6
Stingray live specimen tank	101	23
Mega-Piranha tool interactive w/specimen	52	11
Candiru panel w/specimen	33	7
Where Are We Going? panel w/map	53	11
River People (Living Room) flipbook	24	5
Mo's Welcome video	87	18
Black Piranha computer interactive w/specimen	29	6
River Homes flipbook	34	7
Paulo and the Mysterious Muckfish video	50	10
This Fish Is So New to Science panel w/artwork	5	1
Tetra Tank low-tech interactive w/specimen	99	19
It's Raining Again panel w/lenticular artwork	27	5
River House tool interactive	115	21
Candiru Karaoke video interactive	55	10
Catfish Table low-tech interactive	55	10
Sharp Defense panel w/specimen and w/image	22	4
Top Ten Reasons Why… panel	11	2

Red-bellied Piranha computer interactive w/specimen	29	5
Anaconda low-tech interactive model	90	15
Fishes of the Amazonia panel w/image	12	2
Anaconda video	50	8
The Amazon River Is a Great Place to Live	26	4
Encante Dance Stage interactive w/artwork	124	19
Stingray Pattern Matching low-tech interactive	33	5
Marine Invaders computer interactive	40	6
Freshwater Stingrays panel w/image	14	2
Contributors panel	7	1
How Many Species of Catfish Are There? panel	7	1
Catfish Diversity specimen case	43	6
A Tetra's Journey panel w/image	15	2
What Does a Fish Should Like? tool interactive	74	9
Fish Festival artifact case w/labels and images and w/audio	41	5
Why So Many Colors? panel w/models	26	3
River Family panel w/image	37	4
The Real Seven Perils Bio-piracy flip panels	49	5
Introduction panel	30	3
A Perilous Journey panel w/image	10	1
Do You Think This Is a Big Fish? panel w/model	31	3
Why So Many Fish? panel	21	2
Child and Turtle panel w/image	27	2
Fula-preta Piranha computer interactive w/specimen	28	2
The Tales Teeth Tell panel w/image	14	1
A Perilous Journey video	16	1
The Real Seven Perils Ranching flip panels	49	3
The Real Seven Perils Damming flip panels	49	3
Catfish Diversity tool interactive	52	3
Can You Sort These Catfish? panel w/image	20	1
The Real Seven Perils Commercial flip panels	49	2
The Real Seven Perils Logging flip panels	49	2
Encante Dance Costume artifact case w/labels and images	30	1
The Real Seven Perils Mining flip panels	49	1
The Real Seven Perils Poaching flip panels	49	1
The Real Seven Perils panel w/images	49	0
Acknowledgement panel	11	0
Field Research panel w/image	10	0
How Would You Know If One Species Was Missing? panel	9	0
Tree Trunk artwork	5	0
Why Is It Important to Preserve the Amazon? panel	4	0
Piranha Attack panel	4	0
Human Activities Can Change the Environment Forever panel	3	0
There Are More Than 2,000 Species of Fish panel	2	0
Marine Invaders panel	2	0
Remembering Godwana artwork	1	0

Table 40
Percentage of Visitors who Noticed Each Flag and Model
(*n* = 197)

Panel	Percent Noticed
Catfish model	5.1
Piranha model	4.1
Anaconda flag	3.0
Pink dolphin model	3.0
Pink dolphin model	3.0
Candiru flag	3.0
Caiman flag	2.5
Catfish flag	2.5
Electric eel flag and/or model	1.5
Piranha flag	1.0
Stingray flag	1.0
Stingray model	1.0

Table 41
Number of Visitors who Watched Video

Exhibit Name	Stopped	Number of Visitors Watched Part of Video	Watched Entire Video
Encante Stage video	124	88	n/a
Watch Conservation video	50	6	14
Watch Field Research video	50	6	15
Watch Being a Scientist video	50	5	13
Watch a Perilous Journey video	16	8	7
Watch Paulo and the Mysterious Muckfish video	50	29	17
Watch Bloody Suckers video	57	27	27
Watch Candiru Karaoke video	55	22	28
Watch Mo's Welcome video	87	23	60

Appendix E

Interview Demographic Data by Site

Ripley Center

Of the 32 groups RK&A interviewed at the Ripley Center, 10 were families, 13 were adult-only groups, and 9 were adults visiting alone comprising a total of 53 visitors -- 48 adults and 5 children (under 18 years). Nearly two-thirds of interviewees were female and one-third were male. Interviewees' ages ranged from 10 to 69 years old with the adults' median age being 35.8 years and the children's' median age being 12.2 years. Just over one-half of the interviewees were repeat visitors to the Smithsonian Institution. However all but a few of the interviewees were first-time visitors to the Ripley Center. Of the repeat visitors to the Smithsonian Institution, three-quarters had visited the Smithsonian Institution once or twice in the past twelve months.

Miami Museum of Science & Planetarium, English Speakers

Of the 21 English speaking groups RK&A interviewed at the Miami Museum of Science & Planetarium (MMS), 17 were families, 3 were adults visiting alone, and 1 adult visited alone, comprising a total of 24 visitors -- 17 adults and 7 children. Nearly two-thirds of interviewees were male and one-third were female. Interviewees' ages ranged from 7 to 65 years old with the adults' median age being 39.5 years and the children's' median age being 11.4 years. Nearly three-quarters of interviewees were repeat visitors to MMS and approximately one-fourth were first time visitors. Of the repeat visitors to MMS, nearly two-thirds had visited multiple times in the past twelve months.

Miami Museum of Science & Planetarium, Spanish Speakers

Of the 21 Spanish speaking groups RK&A interviewed at MMS, 14 were families, 4 were adults visiting alone, and 3 were adult-only groups, comprising a total of 25 visitors -- 22 adults and 3 children (under 18 years). Nearly two-thirds of interviewees were male and one-third were female. Interviewees' ages ranged from 8 to 60 years old with the adults' median age being 38.1 years and the children's' median age being 11 years. Just over one-half of interviewees were repeat visitors to MMS and just under one-half were first time visitors. Of the repeat visitors to MMS, just under one-third had visited only once or twice in the past twelve months.

Table 42
Location of Interviews (in percent)

Location of Interviews (N=74)	%
MMS	56.6
Ripley Center	43.2

Table 43
Group Composition (in percent)

Group Composition (*n*=74)	%
Families	56.6
Adult Only	44.6

Table 44
Visitor Characteristics (in percent)

Characteristics	%
Age (*n*=102)	
Adults	85.3
Children	14.7
Language (*n*=74)	
English	71.6
Spanish	28.4
Gender (*n*=102)	
Female	50
Male	50

Table 45
Visitation (in percent)

Visitation	First Visit (%)	Repeat Visit (%)
MMS (*n* = 42)	35.7	64.3
Smithsonian Institution (*n* = 48)	43.8	56.2
Ripley Center	93.8	6.2