


A Study of Visitors to *Asia Trail* Smithsonian National Zoological Park



 Smithsonian Institution

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PREFACE

The National Zoo's *Asia Trail*, with its fascinating animals on display amid varied topography and landscaping, is a very compelling attraction. Visitors' impressions of and reactions to the new exhibition play a key role in determining the success of *Asia Trail* and offer helpful insights for the design of the second phase of the Trail.

This study took place because of the commitment of senior Zoo management to optimize the delivery of programs and services for visitors. I thank the Zoo's director, John Berry, for asking the Office of Policy and Analysis (OP&A) to conduct this study of visitor satisfaction with a variety of aspects of the Trail, including overall environment, ability to connect with the animals and with nature, quality of the programming along the Trail, and different experiences the Trail offers.

This study of *Asia Trail* was a major undertaking that used the skills and talents of many people. It required both qualitative and quantitative research skills, strong analysis, and the ability to communicate with peers, Zoo managers, and the public. I particularly thank three members of my staff who took the lead in bringing the project to fruition: Kathy Ernst, Ioana Munteanu, and Whitney Watriss. They would be the first to acknowledge, however, that they could have done little without the very able assistance – and perseverance in the face of stifling DC summer weather – of the entire OP&A staff and its summer interns. To the following go many thanks:

- Lance Costello, Zahava Doering, Samantha Grauberger, Dave Karns, Andy Pekarik, and James Smith from OP&A
- Kathleen Flahive, Hilary Friedman, Justine Mageau, and Nikoo Paydar, all OP&A interns

Three contractors pitched in to help us on weekends, and for that I am most grateful: Enise Conry, Helen Gushue, and Maya Oliver.

Finally, there is the Zoo's *Asia Trail* team, which facilitated this study and offered many valuable suggestions and comments along the way. I very much appreciate the help of Susan Ades and Kara Blond of the exhibition team, and Nettie Pletcher of the Friends of the National Zoo, who facilitated our interaction with the *Asia Trail* volunteer staff and provided the small souvenirs given to groups with children as thanks for filling out a questionnaire.

Carole M.P. Neves
Director, Office of Policy and Analysis

1. INTRODUCTION

Why did you come to the Asia Trail today?

Well, mainly because of the weather. Also because it's really a day when you might expect to see some of the animals outside. And this is a part of the Zoo where you can sort of get lost...in a good way.

Male college student, March 2007

In October 2006, the National Zoo's *Asia Trail* opened to the public. *Asia Trail*, which encompasses the Fujifilm Giant Panda Habitat, is home to six additional threatened or endangered species native to the Asian continent – red pandas, Asian small-clawed otters, fishing cats, clouded leopards, sloth bears, and a Japanese giant salamander. This series of exhibits – Phase I of a two-phase, \$112 million dollar project that will upgrade nearly 25% of the Zoo's developed area – covers nearly six acres, with a quarter-mile pathway that winds around waterfalls, rocky outcrops, and bamboo groves (Figure 1-1). The new outdoor habitats have special features to keep the animals comfortable in all types of weather, such as heated rocks for the sloth bears and Asian small-clawed otters, a mechanically warmed artificial tree for the clouded leopards, and a water-cooled grotto and fog grove for the giant pandas.

Besides being a showcase for these fascinating animals, *Asia Trail* was designed to be an immersive experience of sights and sounds, with different viewing levels and vantage points, including glass viewing areas that bring visitors eye-to-eye with the animals. The Trail incorporates a full range of interpretive options, including signage, interactive games, and web pages, as well as a corps of 60 volunteer interpreters working with the Friends of the National Zoo (FONZ).¹ Its strong conservation message is delivered through exhibits demonstrating conservation practices in Asia such as sustainable agricultural practices and use of alternative fuels (e.g., bio-gas stoves), and at interactive Decision Stations, where visitors experience the conflicts of interest that exist between people's livelihoods and the conservation of species and habitats. Finally, *Asia Trail* highlights the work of National Zoo scientists with stories and artifacts from their field work in Asia and through photographs and accounts of their pioneering reproductive technology to safeguard the giant panda and other *Asia Trail* species.

The Zoo's *Asia Trail* exhibition team outlined the outcome goals of the Trail in its planning document, *Asia Trail Interpretive Program*:

¹ FONZ is the private side of the National Zoo public/private partnership. FONZ has over 40,000 member families; its main role is to raise funds to support the joint mission to connect people with wildlife and build a society committed to restoring an endangered natural world. For more on FONZ and its role, visit <http://nationalzoo.si.edu/JoinFONZ/Join/>.

II. Key Messages

CELEBRATE

We want to WOW! people with selected attention-grabbing animal adaptations—the highlights that make these creatures fascinating and unique, and the wondrous diversity of the ecosystems of the Asian continent.

STUDY

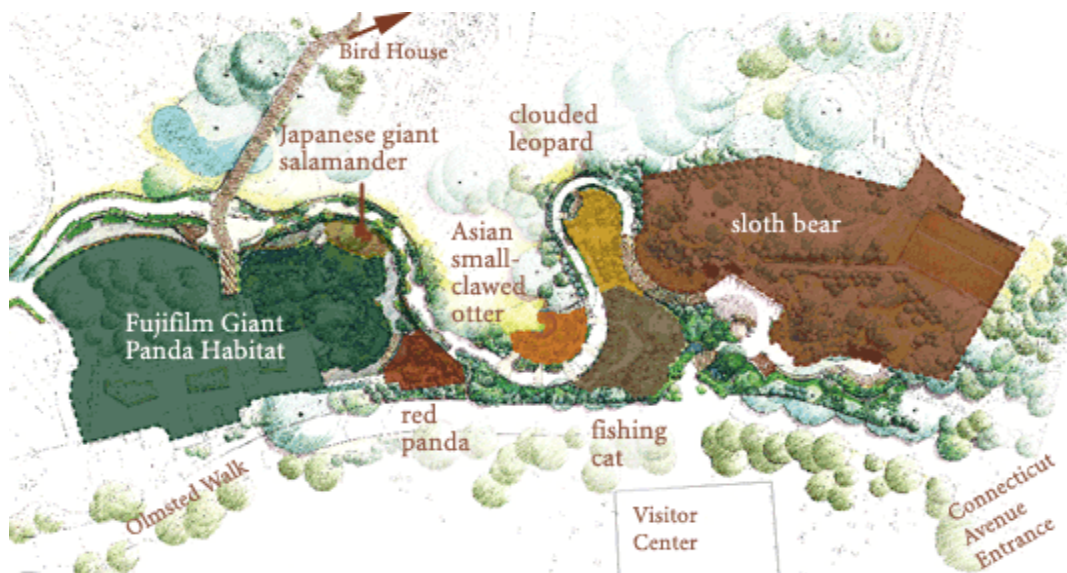
We want people to know that we do science, and to understand the purpose it serves— furthering our understanding of the natural world, using that knowledge to save species and their habitats, and on a local level making the Zoo the very best home it can be for these special animals.

PROTECT

We want to share our vision for the future of conservation, and inspire visitors to make a positive difference. We will reinforce the role the Zoo has to play in these efforts—applying science to find workable solutions that involve local communities in India, China, Thailand and other Asian countries—while showing visitors how their choices have wide-reaching environmental implications.

Soon after the exhibition opened, representatives of the Zoo and FONZ met with Office of Policy and Analysis (OP&A) staff to discuss conducting a survey to assess visitor satisfaction and provide a better understanding of how visitors are experiencing *Asia Trail*. With the design of Phase II of *Asia Trail* coming up, and considering the sizable investment in some new design elements and interpretive devices, the exhibition team was interested in how visitors were using them and in how learning was taking place. It was agreed that some preliminary use and learning data could be collected with a visitor survey, and those results could inform the design of more focused “mini” studies, such as a visitor tracking protocol and in-depth qualitative interviews.

Figure 1-1. Map of *Asia Trail*



Methodology

As part of the survey design, the OP&A study team began by collecting qualitative data on visitors' satisfaction and experiences on *Asia Trail* from two sources. In February 2007, the study team conducted a directed discussion with approximately 30 FONZ volunteer interpreters assigned to *Asia Trail* at their monthly evening meeting.² Representatives of FONZ's education and volunteer division and the Zoo's exhibits and animal management (keeper) divisions were also present. The volunteer interpreters' knowledge and insights as front-line observers of visitor behavior and recipients of visitors' comments, praises, and complaints are included in Appendix A. In March, the study team conducted interviews with 15 visitors or visitor groups on *Asia Trail*, asking them why they came, what they liked most, what they did not like or would change, and whether they came away with any key messages.

The study team then designed an entrance and exit survey (see Appendices B and C) that, in addition to collecting experience and rating data, measured whether visitors' experiences met or exceeded their expectations, and whether changes in viewpoints or knowledge occurred between entering and exiting *Asia Trail*. The survey contained two types of questions – *Asia Trail*-specific questions developed by the OP&A study team, FONZ education, and the Zoo's exhibition team, and standard experience satisfaction and rating questions used in other OP&A surveys. The responses to questions that were common across the *Asia Trail* survey and a summer 2004 Smithsonian-wide survey that included the Zoo were compared.³ All questions used in the *Asia Trail* survey were extensively pre-tested in May.

The OP&A study team handed out survey questionnaires to visitors entering (entrance survey) and exiting (exit survey) *Asia Trail* at the top and bottom of the Trail (the route from the Bird House was not included in the survey). Visitors were intercepted during 17 one and one-half hour sessions from May 18 to May 27, 2007. The study team used a variable interval sampling procedure to assure a random, unbiased selection of visitors. Survey sessions were scheduled so that one visitor could not be intercepted twice, i.e., at both the entrance and the exit. Visitors under age 12 and Zoo or other Smithsonian staff and contractors were not eligible to take the survey. Eight hundred and seventy-six eligible visitors completed the entrance survey (72% of 1,217 people receiving the survey form), and 593 eligible visitors completed the exit survey (65% of 919). The reasons visitors cited most often for not completing the questionnaire were time considerations, fatigue, and language difficulties. All data were adjusted to compensate for visitor flow and ineligibility. Additional details regarding response bias, data analysis and statistical tests, and possible sources of error are discussed in Appendix D.

² An additional nine docents who could not attend provided email responses to the questions.

³ Smithsonian Institution, Office of Policy and Analysis, *Results of the 2004 Smithsonian-wide Survey of Museum Visitors*, Washington, DC: Office of Policy and Analysis, October 2004, http://www.si.edu/opanda/Reports/Reports/SI2004_Survey_Booklet.pdf.

This report presents the main findings to emerge from the study, broken out, where appropriate, by different categories of visitors. Statistically significant results are noted.⁴ The report also presents some conclusions of the OP&A study team.

⁴ A statistically significant outcome is one that has little likelihood of being observed by chance (in this case the likelihood of being observed by chance is only one in twenty).

2. FINDINGS

Demographic Characteristics of Visitors to *Asia Trail*

The survey asked *Asia Trail* visitors to complete a series of demographic questions that together provide a demographic profile of summer visitors to *Asia Trail*. The profiles that emerged at the entrance and exit to the Trail were similar (Table 2-1).

Visit history

Nine in ten visitors said they had been to other zoos (87%), and two in three said they had previously visited NZP (65%). The percentage of new visitors (35%) was slightly higher than in summer 2004 (32%). Of the repeat visitors – those who said they had been to the National Zoo before – almost four in ten (38%) had been on *Asia Trail* before, and 64% were new to the Trail.⁵

Level of awareness of threats to at-risk wildlife and of interest in wildlife conservation

To provide context to other responses, the OP&A study team asked visitors to rate their awareness and interest on these two dimensions. Visitors both entered and exited *Asia Trail* with a high level of interest in wildlife conservation (74% rated themselves at 4 or 5 on a five-point scale, where five is the highest point) and a high level of awareness of the threats to at-risk wildlife (66% rated themselves at 4 or 5). Few respondents put themselves at the low end of the scale.

This level of interest and awareness was essentially the same across different categories of visitors except the Millennials (ages 12 to 18). Nineteen percent of Millennials going in said they were *very aware* (5 on a five-point scale) of the threats to at-risk wildlife; that level increased to 41% upon leaving the Trail. Similarly, 35% of entering Millennials expressed a high level of interest in wildlife conservation, and 47% rated themselves as very interested at the exit.

⁵ Unless otherwise noted, the figures provided in the report are from this exit survey. Where there is a statistically significant difference (see fn. 4 for the definition) between the entrance and exit results, and where the report makes a comparison between the entrance and exit findings, both the entrance and exit figures are provided.

Table 2-1. Visitor Demographics, *Asia Trail*, summer 2007, and National Zoo, summer 2004
(percent)

	<i>Asia Trail</i> 2007		NZP 2004		<i>Asia Trail</i> 2007		NZP 2004	
	Entrance	Exit			Entrance	Exit		
<i>What is your sex?</i>				<i>Are you of Latino/Hispanic origin?</i>				
Male	38	39	44	Yes	13	NA	13	
Female	62	61	56	No	87	NA	87	
<i>What is your age?</i>				<i>What race do you consider yourself to be?</i>				
Age (mean)	37	36	36.5	African American/Black	9	NA	13	
Millennial (12-18)	5	7	[20] ^a	Native Hawaiian/Pacific Islander	1	NA	1	
Generation Y (19-29)	26	31	[20] ^a	American Indian/Native Amer.	2	NA	3	
Generation X (30-40)	34	31	42	Asian American	7	NA	8	
Trailing Baby Boomers (41-51)	20	17	24	White	83	NA	81	
Leading Baby Boomers (52-60)	10	10	10	<i>What is the highest degree or level of school you have completed?</i>				
Postwar (61 and over)	6	4	4	Graduate/professional degree	46	NA	46	
<i>Where do you live?</i>				Bachelor's degree	29	NA	26	
Washington, DC Metro area ^b	28	29	44	Associate degree	5	NA	8	
Southeast	21	23	27	Some college courses	11	NA	11	
Mid Atlantic	22	24	13	High school graduate or less	9	NA	8	
Midwest	5	5	5	<i>Who are you with on Asia Trail today?</i>				
New England	4	3	3	Alone	5	7	NA	
Mountain Plains	4	2	6	Organized group	8	8	NA	
West	3	4	1	Group of youth	1	1	NA	
Other country	6	5	2	Adults only	30	34	NA	
Other US	8	6	NA	Adults with youth (below 18)	44	38	NA	
				With unspecified group	11	11	NA	

NA = question was not asked or was asked differently so that the figures are not comparable.

a. In the summer 2004 National Zoo survey, Millennials were included in the Generation Y group.

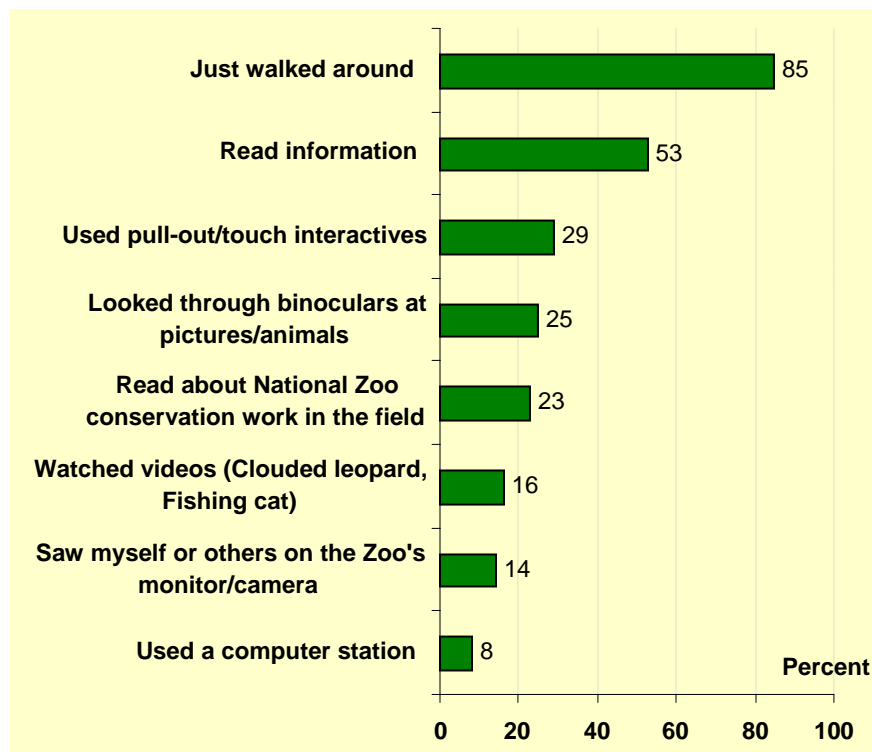
b. Considered local visitors.

c. Question not asked in the summer 2004 Zoo survey.

Exhibition Use

In part to inform planning for Phase II of *Asia Trail*, the OP&A study team looked at how visitors used some of the design elements in the exhibition. The survey asked exiting visitors to mark which of eight listed activities they had engaged in. A very high percentage of visitors indicated they had “just walked around,” and a high percentage said they had “read information” (Figure 2-1). This pattern of use corresponds with visitors’ behaviors as measured in a 1997 study of the Zoo’s *Think Tank* exhibition,⁶ where respondents were asked a similar question. In both exhibitions, visitors engaged in the same three main activities – walking around/watching animals; reading information/exhibit text; and using exhibit interactives.

Figure 2-1. What visitors did on *Asia Trail*



Walking around

The OP&A study team took a closer look at those visitors who marked “just walked around” as the *only* activity they had engaged in while on *Asia Trail*. These visitors, comprising 30% of the population, did not stand out with respect to demographic or background characteristics.

⁶ Smithsonian Institution, Institutional Studies Office, *An Assessment of the Think Tank Exhibition at the National Zoological Park*, Washington DC: Institutional Studies Office, February 1997, p. B-19.

However, their responses differed from the responses of the remaining visitors. When compared with all others, those who marked “just walked around” as their *only* activity were:

- More likely to select fewer satisfying experiences (2.6 vs. 3.9).
- Less likely to mark “gaining information or knowledge” (15% vs. 47%) and “feeling connected with nature” (25% vs. 48%) as satisfying experiences.
- More likely to select fewer strategies to preserve wildlife (2.3 vs. 3.6).
- Considerably less likely to mark “help local villagers develop alternative sources of income that do not impact habitats” (30% vs. 56%), “encourage the use of “green” tools such as bio-gas stoves” (23% vs. 43%), and “reduce human-wildlife conflict over food sources” (25% vs. 45%).

Further, visitors who marked “just walked around” as their only activity were more likely to rate certain aspects of *Asia Trail* – “Overall experience,” “Learning opportunities,” and “Landscape and plantings” – at the lower end (*poor, fair, good*) of the experiences rating scale.

Lastly, these visitors, when compared with all others, were less likely to have *strongly agreed* or *agreed* with the statements, “I feel inspired to play a role in protecting wildlife” (52% vs. 68%) and “National Zoo scientists play key roles in wildlife conservation” (72% vs. 82%).

Intrigued by the findings associated with visitors who said they “just walked around,” the OP&A study team performed additional analysis to identify and analyze behavior patterns of visitors and responses associated with those patterns. These findings are discussed in detail in Appendix E: Additional Analysis.

Reading information

The OP&A study team took a closer look at visitors who said they read information in the exhibition to see if their responses to other questions differed from those of other visitors.

- Reading information was most popular with Leading Edge Baby Boomers (ages 52 to 60) (59%) and least popular with Millennials (37%).

- Compared to other visitors, those who read information were:
 - More likely to have selected “gaining information or knowledge” as a satisfying experience;
 - More likely to have marked more activities on average;
 - More likely to have higher levels of interest in wildlife conservation and awareness of the threats to at-risk wildlife;
 - More likely to have rated their overall experience as *superior*;
 - Twice as likely to have marked “link fragmented habitats with corridors/tunnels to improve breeding” and “encourage use of green tools such as bio-gas stoves” and more likely to have marked “decrease habitat destruction” as strategies most needed to better preserve wildlife; and
 - Much more likely to have *strongly agreed* or *agreed* that “National Zoo scientists play key roles in wildlife conservation” and to “feel inspired to play a role in protecting wildlife.”

Visitors’ Experiences on *Asia Trail*

The study team looked at two factors to assess visitor satisfaction with *Asia Trail*: (1) whether the exhibition met their expectations for satisfying experiences, and (2) which were the most satisfying experiences. The OP&A study team compared the responses to similar experience questions in the summer 2004 National Zoo survey. Finally, the study team looked closely at which categories of visitors found “gaining information or knowledge” a satisfying experience and what other responses were associated with finding that experience satisfying.

Meeting visitors’ expectations

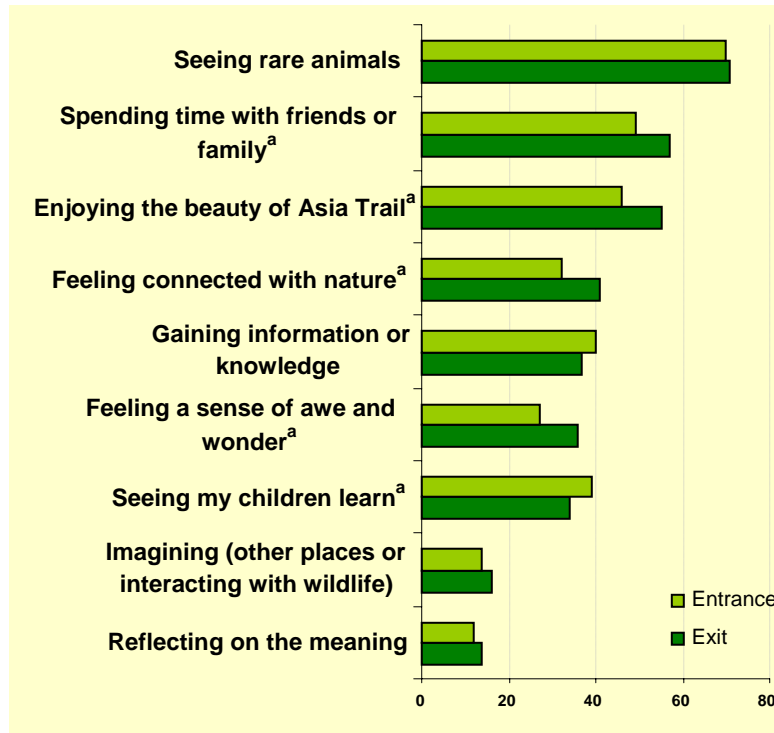
Visitors entering *Asia Trail* were asked to choose from a list of nine experiences the ones they were especially looking forward to, and those exiting the trail were asked to mark which of the nine experiences they found especially satisfying. Visitors anticipated and had a wide range of experiences. Overall, there was a slight increase in the average number of satisfying experiences marked by exiting visitors compared to entering visitors (3.5 vs. 3.2). In the case of several experiences, the percentage of satisfied exiting visitors was higher than that of entering visitors who had anticipated the experience (Figure 2-2).

Most satisfying actual vs. anticipated experiences

Seeing rare animals was by far the most anticipated and actual satisfying experience. Certain categories of visitors especially anticipated this experience: Millennials (84%), Leading Edge Boomers (79%), repeat visitors to *Asia Trail* (75%), and new visitors to the National Zoo (74%).

“Seeing rare animals” not only met the expectations of those who were looking forward to it, but it also proved an especially satisfying experience for visitors regardless of their demographic and background characteristics.

Figure 2-2. Anticipated (entrance) vs. actual (exit) satisfying experiences
(percent)



a. Statistically significant differences between the entrance and exit survey responses.

Spending time with friends or family was the second most anticipated and satisfying experience. “Spending time with friends and family” was especially anticipated by the Millennials (77%), although fewer of this group actually found it satisfying on exit (42%). Spending time was very satisfying for repeat visitors to *Asia Trail* (67%) and to the National Zoo (61%), Generation Yers (65%), and those visiting during the weekend (59% vs. 45% weekday).

Enjoying the beauty of *Asia Trail* was the third most anticipated and satisfying experience. The most likely to anticipate this experience were locals (residing in the Washington, DC metro area) (51%), females (50%), and new and repeat visitors to *Asia Trail* (50% each). Locals (63%), new and repeat visitors to *Asia Trail* (61% each), and repeat visitors to the National Zoo (59%) were the most satisfied with this experience.

Feeling connected with nature is another experience where visitors' actual experiences exceeded their expectations. While most visitors were just as likely to anticipate this experience, locals (48%) and repeat visitors to *Asia Trail* (48%) were more likely to mark "feeling connected with nature" as especially satisfying.

Gaining information or knowledge was found to be especially satisfying by a similar percentage of people as those who anticipated it (37% and 40%, respectively). Because it was a topic of interest to the Zoo's *Asia Trail* team, OP&A staff further analyzed the relationship of the responses of visitors who selected this experience to several other survey questions:

- A slightly higher percentage of those who were *very aware* of the threats to at-risk wildlife (48%) and who were *very interested* in wildlife conservation (47%) expected to find "gaining information and knowledge" satisfying.
- A lower percentage of Millennials found gaining information or knowledge especially satisfying compared with what they had expected (57% at the entrance vs. 36% at the exit).
- Visitors who expected to find gaining information or knowledge as satisfying also looked forward to "reflecting on the meaning of what I'll see" (65%), "imagining (other places or interacting with wildlife)" (61%), and "feeling a sense of awe and wonder" (56%).
- Over half of the visitors who reported using learning activities or tools found "gaining information or knowledge" a satisfying experience; for example, 55% of visitors who watched the videos, 56% of those who used the pull-out/touch interactives, and 54% of those who used a computer station also enjoyed "gaining information or knowledge."

Other factors associated with finding "gaining information or knowledge" especially satisfying were rating "interacting with Zoo staff," "overall experience," and "learning opportunities" as *superior*.

Comparing satisfying experiences: Asia Trail, summer 2007, and National Zoo, summer 2004

The experiences that visitors found satisfying on *Asia Trail* in summer 2007 and at the Zoo in summer 2004 were similar (Table 2-2). One exception is that far more *Asia Trail* visitors selected enjoying beauty as a satisfying experience (although slightly different wording in the two surveys might account for the difference).

Table 2-2. Satisfying experiences, *Asia Trail*, summer 2007 vs. National Zoo, summer 2004
(percent)

<i>Asia Trail</i> 2007		NZN 2004 ^a	
Seeing rare animals	71	62	Seeing the "real thing"
Spending time with friends or family	57	63	Spending time with friends/family
Enjoying the beauty of <i>Asia Trail</i>	55	28	Being moved by beauty
Feeling connected with nature	41	42	Feeling connected with nature
Gaining information or knowledge	37	33	Gaining information or insight
Feeling a sense of awe and wonder	36	29	Feeling awe and wonder
Imagining (other places or interacting with wildlife)	16	13	Imagining or recalling other times or places
Reflecting on the meaning of what I saw	14	14	Reflecting on the meaning of what I saw

a. Because the summer 2004 survey was conducted at all Smithsonian museum sites, the experiences were phrased in such a way as to be applicable across museums.

Viewpoints Regarding Conservation and Zoo Science

The survey contained three questions that aimed to measure visitors' viewpoints with respect to the exhibition goals of exposing visitors to:

- The conflicts of interest that exist between people's livelihoods and the conservation of species and habitat
- The research the Zoo does to understand the species' habitats in the wild
- The Zoo's efforts to provide the best possible home for captive wildlife.

The survey asked entering and exiting visitors (1) to choose which of eight listed strategies *most* needs to be done to better preserve wildlife (Table 2-3), and (2) to express their opinions regarding six wildlife conservation statements using a five-point scale (*strongly disagree*, *somewhat disagree*, *neither agree nor disagree*, *somewhat agree*, *strongly agree*) (Appendix E, Table E-1).

Conservation strategies

As noted, *Asia Trail* visitors as a whole were very interested in wildlife conservation and aware of the threats to at-risk wildlife. Half or more of survey respondents entering the exhibition believed that the strategies "decrease habitat destruction," "preserve wetlands," and "help local villagers develop alternative sources of income that do not impact habitats" were *most* needed. The percentage of entering and exiting visitors marking the various strategies was similar (Table 2-3).

Table 2-3. Visitor opinions on what *most* needs to be done to better preserve wildlife (percent)

	Entrance	Exit
Decrease habitat destruction	73	72
Preserve wetlands	57	54
Help local villagers develop alternative sources of income that do not impact habitats	50	48
Create more national parks	46	52
Encourage the use of “green” tools such as bio-gas stoves ^a	42	35
Reduce human-wildlife conflict over food sources	41	39
Link fragmented habitats with corridors/tunnels to improve breeding	28	25
Move villages outside of protected reserves ^a	16	12

a. Statistically significant difference between the responses of entering and exiting visitors.

Visitors’ agreement or disagreement regarding conservation statements

Seventy-six percent of exiting visitors thought that human enterprise threatens at-risk wildlife, 75% thought that preservation of at-risk wildlife is urgent, and 61% thought that wildlife conservation involves difficult tradeoffs. Seventy-eight percent of exiting visitors understood that National Zoo scientists play key roles in wildlife conservation, and 63% said they feel inspired to play a role in protecting wildlife. The percentage of entering and exiting visitors marking their opinions on the above statements was very similar. The only exception was that more exiting than entering visitors disagreed with the statement, “The animals in the National Zoo live under poor conditions” – 63% and 54%, respectively (Appendix E, Table E-1).

When the data are analyzed by visitor category, some differences appear between the responses of entering and exiting new visitors to *Asia Trail*, i.e., a higher percentage of exiting new visitors than entering new visitors believed that human enterprise threatens at-risk wildlife, that animals in the National Zoo do *not* live under poor conditions, and that National Zoo scientists play key roles in wildlife conservation.

Visitors’ Ratings of *Asia Trail*

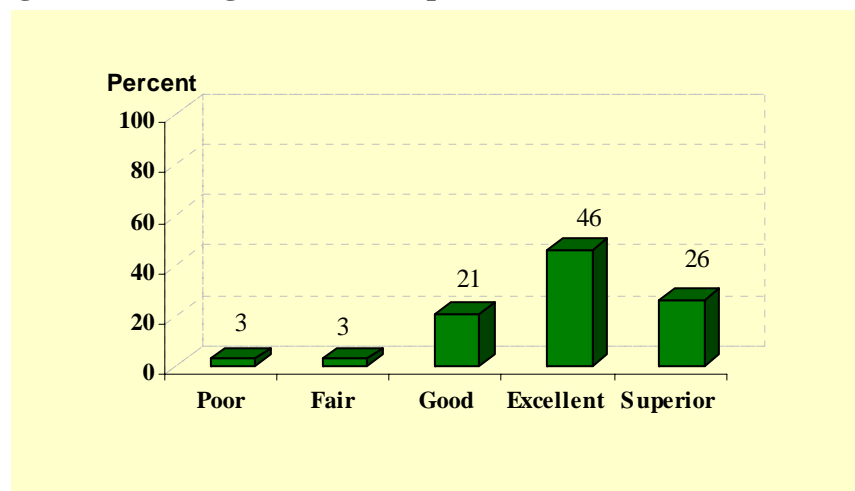
The survey measured whether *Asia Trail* achieved certain results with visitors by asking them to rate the following aspects of the exhibition using a five-point scale of *poor, fair, good, excellent*,

and *superior*: “overall experience,” “learning opportunities,” “things for kids to do,” “getting around *Asia Trail*,” “landscape and plantings,” “interacting with Zoo staff,” and “taking photographs.”

Overall experience

Seventy-two percent of surveyed visitors rated their overall experience as *excellent* or *superior* (Figure 2-3). This result is slightly higher than in the summer 2004 survey, where the combined rating was 62% (Appendix E, Table E-2).

Figure 2-3. Ratings of overall experience, *Asia Trail*, summer 2007



Those who, on average, marked a high number of satisfying experiences and participated in a high number of activities were more likely than others to rate *Asia Trail* as *superior*. Visitors who rated their overall experience on *Asia Trail* as *superior* also tended to:

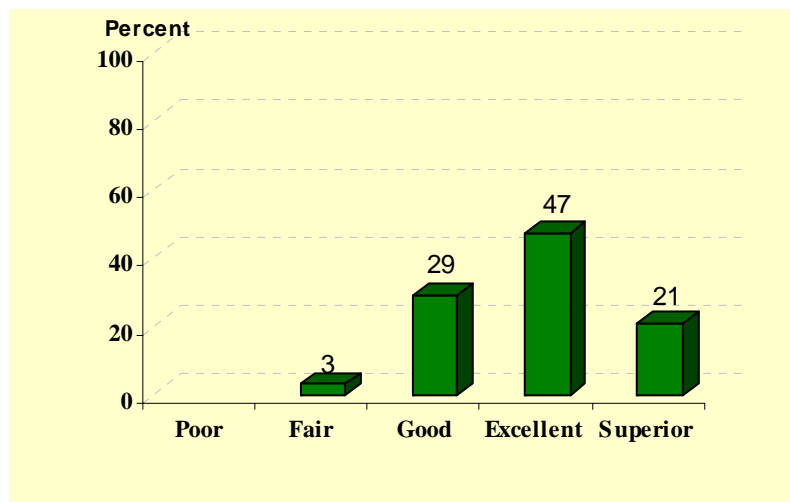
- Be repeat visitors to *Asia Trail* (39%)
- Rate the quality of viewing the animals on *Asia Trail* as better than at other zoos (32%)
- Have the following satisfying experiences: gaining information or knowledge (35%), feeling a sense of awe and wonder (35%), feeling connected with nature (33%), and enjoying the beauty of *Asia Trail* (31%)
- Read about National Zoo conservation work in the field (38%), use pull-out/touch interactives (33%), and read information (31%)

- Be *very interested* in wildlife conservation (38%) and *very aware* of the threats to at-risk wildlife (33%)
- Mark a higher number of strategies to preserve wildlife
- Say they feel inspired to play a role in protecting wildlife
- Disagree that the animals in the National Zoo live under poor conditions.

Learning opportunities

On exiting *Asia Trail*, almost seven in ten respondents (68%) rated the exhibition’s learning opportunities as *excellent* or *superior* (Figure 2-4). These ratings are slightly higher than the combined rating of 63% in the summer 2004 survey (Appendix E, Table E-2).

Figure 2-4. Ratings of learning opportunities, *Asia Trail*, summer 2007



Visitors who rated learning opportunities as *superior* tended to:

- Be repeat visitors to *Asia Trail* (31%)
- Be *very interested* in wildlife conservation (27%) and *very aware* of the threats to at-risk wildlife (26%)
- Have the following satisfying experiences: “imagining (other places or interacting with wildlife)” – 31%, “reflecting on the meaning of what I saw” – 28%, “gaining information or knowledge” – 27%, and “feeling a sense of awe and wonder” – 27%.

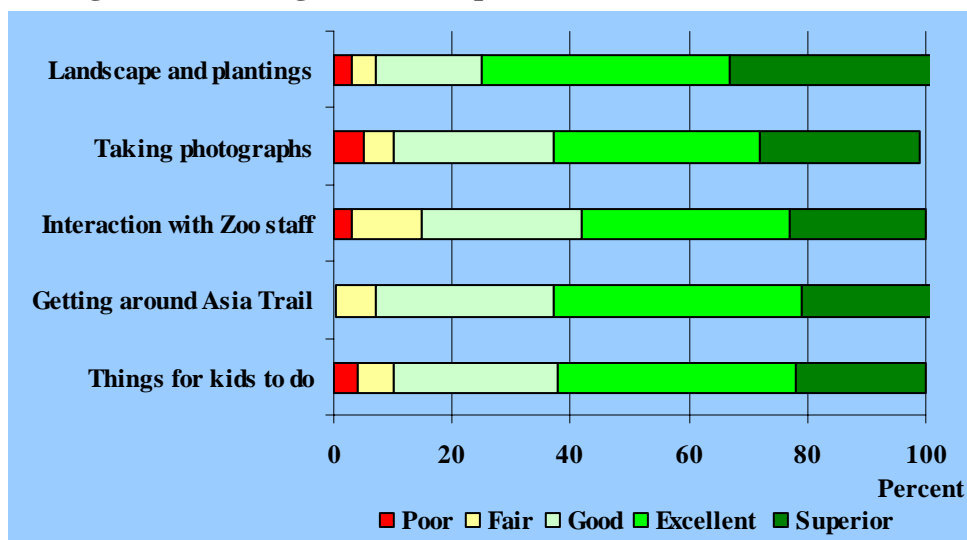
- Read about National Zoo conservation work in the field (32%)

Selecting “gaining information or knowledge” as a satisfying experience, marking the activities “read information” or “read about National Zoo conservation work in the field,” and rating *Asia Trail*’s learning opportunities as *superior* were associated with one another. The implication is that the exhibition’s learning opportunities satisfied those people who came wanting to gain information or knowledge and those who said they read information on *Asia Trail*.

Other ratings

Visitors were asked about their experiences with five other aspects of the exhibition. All five received high ratings (Figure 2-5).

Figure 2-5. Ratings of other aspects of *Asia Trail*, summer 2007



Note: The percentage of visitors who did not rate the various aspects of *Asia Trail* because they felt it did not apply to them was excluded from this figure.

Landscape and plantings. The exhibition staff was especially interested in visitors’ ratings of *Asia Trail*’s landscape and plantings, as considerable effort had gone into making the animals’ habitats both comfortable and viewer-friendly and in making the Trail an immersive experience. When compared to all other visitor ratings of *Asia Trail*, landscape and plantings received the highest percentage of *superior* ratings (34% of exiting visitors). Notably, repeat visitors to *Asia Trail*, those *very aware* of the threats to at-risk wildlife and *very interested* in wildlife conservation, and those who had satisfying experiences such as “feeling connected with nature” or “enjoying the beauty of *Asia Trail*” considered the landscape and plantings to be *superior*.

Taking photographs. The new habitats for the six threatened and endangered Asian species were designed with different viewing locations both to allow for an immersive experience and to give visitors opportunities to take unique photographs. Twenty-seven percent of visitors rated taking photographs as *superior*. Some feedback from visitors, however, suggested that glass partitions designed to bring visitors eye-to-eye with the animals at times produced problematic glare. Visitors who rated taking photographs as *superior* were also likely to rate the quality of viewing the animals they saw on *Asia Trail* as *better* than at other zoos and to find experiences such as “imagining (other places or interacting with animals)” or “seeing rare animals” especially satisfying.

Interaction with Zoo staff. FONZ trained 60 volunteers to provide demonstrations and interpret the Trail for visitors. Zoo staff were also present on the Trail to answer questions. When asked to rate their interactions with Zoo staff, 23% of exiting visitors rated them *superior*. Of all the categories of visitors, repeat visitors to *Asia Trail* were more likely to rate their interactions with Zoo staff as *superior*. At the same time, 19% of visitors marked “not applicable,” despite what the Zoo considers to be a high level of staffing for the Trail. The OP&A study team cannot determine why visitors marked this response. Did they see the staff, or did they feel no need to interact with them (because other sources of information were adequate or because they just wanted to walk and observe)? Were there enough staff relative to the number of visitors? Were the staff in the right places at the right times?

Getting around *Asia Trail*. Ease of movement and wayfinding were of concern to Zoo staff because the Trail is relatively narrow in some spots and likely to create jams during peak times; also, it is not linear and has some side paths, a characteristic some visitors might find confusing. Two thirds of visitors rated getting around the Trail in the top two categories (22% *superior* and 42% *excellent*).

Things for kids to do. *Asia Trail* contains many activities targeted especially to children, such as pull-out and touch interactives, view masters (devices into which visitors can look and see a series of photographs of the animal on view at that spot), camera traps (a hidden video camera that shows what is happening at a particular location, used in the field to monitor wildlife), computer stations, and videos placed at the eye level of small children. Slightly more than one in five visitors rated the children’s activities as *superior*, and two in five rated them as *excellent*. This result is the same as that in the summer 2004 National Zoo survey (Appendix E, Table E-2). Not surprisingly, visitors who marked the most number of activities used on average – as well as those who read about National Zoo conservation work in the field, who saw themselves on the Zoo’s monitor/camera, and who looked through binoculars at pictures/animals – were likely to give a *superior* rating for things for kids to do.

Comparison of the quality of animal viewing with other zoos. As indicated, the habitats of the *Asia Trail* animals were designed for enhanced viewing, and the ratings for this aspect of the Trail were high. Of the 87% of visitors who said they had been to another zoo before the day they were surveyed, the majority (52%) said the quality of viewing on *Asia Trail* was *better* than at the other zoos. Two in five (40%) rated it *about the same*, while 8% rated it *worse*.

3. CONCLUSIONS

On a number of measures, including the *excellent* and *superior* ratings for “overall experience” and the positive comparison with other zoos, *Asia Trail* can be considered a very successful addition to the Zoo. It drew in a large number of visitors who were new to the Zoo and many local visitors who had been to *Asia Trail* before. The ratings were high despite the visits taking place during a very hot, muggy Washington summer and, for those entering the lower end of the Trail, a physically demanding trek up a steep hill. These outcomes are all the more telling given that *Asia Trail* attracted a well-educated audience highly familiar with zoos and very knowledgeable about and interested in wildlife conservation. This was particularly so for the important Generation Y audience.

Asia Trail met and exceeded visitors’ expectations – they came looking forward to a range of experiences, and they got them. Importantly, *Asia Trail* met visitors’ expectations for gaining information or knowledge. Except in the case of Millennials, there was no real change between the entrance and exit survey results on learning-related questions. The fact that *Asia Trail* met this expectation is particularly notable given visitors’ high levels of education and interest in/awareness of wildlife conservation. The Zoo was very successful in providing an environment that connected visitors in all categories with nature and allowed them to experience its beauty and to feel awe and wonder. Visitors wanted to see rare animals and did so. And a high percentage of exiting visitors recognized that the habitats for the *Asia Trail* animals were exceptional, in many cases exceeding expectations.

During the drafting, revising, and editing of this report, the Zoo’s *Asia Trail* team raised several questions about visitors that could not be addressed in the questionnaires. If explored further, answers to the following questions are likely to benefit exhibition makers.

- In terms of activities engaged in on the Trail, the majority of visitors said they “just walked around.” The implication here is that exhibition designers need to find ways to communicate with visitors “in passing,” perhaps providing very short messages more frequently in ways that catch people’s eyes. At the same time, what does “walking around” really mean – that people walk continuously along the Trail with no stops or with many very short stops, or they slow down at some points or stop occasionally? Would people be more inclined to listen to information, e.g., through audio cones, than to read?
- With respect to learning, it should be noted that the survey instrument was not designed to elicit in-depth details about visitors’ learning experiences. What did these highly educated visitors learn – was it something new, or reinforcement of existing learning? To the extent that visiting *Asia Trail* reinforced existing knowledge and awareness – brought it to the forefront of visitors’ minds – should that be considered

an equally important outcome as learning something new? When visitors learned something new, how did they learn it? Is there other information they would have liked? Did some learning not take place because of how or where the information was located? These types of questions are most usefully addressed by speaking directly with visitors. On a related matter, despite the emphasis on things for kids to do, the ratings for *Asia Trail* were no different than those from the summer 2004 National Zoo survey. Here may be another fruitful area for research.

- Seeing rare animals is clearly the predominant reason people came to visit *Asia Trail*. Anecdotal information from other studies suggests that a visitor's ability to see animals is a critical factor in satisfaction with a zoo visit overall. During hot summer days in Washington, DC, many of the Zoo's animals are in their dens and not visible. The OP&A study team wonders if one way to enhance visits to *Asia Trail* is to have videocams on the Trail that show the animals in their dens. Investment in this technology may yield better results compared with other technologies. Underlying all these comments is a fundamental question that the Zoo needs to address as it moves forward with the design of *Asia Trail II* – which types of learning tools and design features merit investment and which do not?
- The literature on museum-going indicates that being able to interact with knowledgeable staff is important to visitors. As noted, a high percentage of visitors who interacted with Zoo staff gave the experience high ratings. But why did so many people not engage with staff, and would having done so have boosted the *excellent* and *superior* ratings? Should staff be more proactive in communicating with visitors? These and other questions can be answered both through observation of visitors and when they do or do not engage with staff, and through interviews with visitors, both of which might be useful for Zoo exhibition planning.

When visitors were broken out by category in the analysis, some interesting differences emerged, as discussed. Three groups in particular may warrant greater attention by the Zoo:

- The core audience of highly educated and conservation-aware and interested visitors, many of them repeat visitors to the Zoo or to *Asia Trail*. Is there more the Zoo can and should do to retain this core audience and to enlist its support in Zoo causes?
- Millennials, because they are of an age that the Zoo should want to reach with its messages and inspiration and because they are a critical future generation of Zoo-goers. In a number of cases, their responses differed from those of other generations of visitors. Unfortunately, their numbers were so small that definitive conclusions cannot be drawn, but a study targeted at this age group would be useful.
- The “just walking around” group comprise a third of the *Asia Trail* audience and was the least satisfied in most ways.

APPENDIX A: VOLUNTEER INTERPRETERS' VIEWS OF ASIA TRAIL

The Office of Policy and Analysis study team conducted a directed discussion with Friends of the National Zoo (FONZ) volunteer interpreters working on *Asia Trail* to get their observations about visitor behavior and comments that visitors have made to them. The following observations are excerpted from the transcript of the discussion with approximately 30 volunteers at the meeting and emails from an additional nine interpreters.

According to the FONZ volunteer interpreters on *Asia Trail*, visitors appreciate the beauty of *Asia Trail*, noting its layout and landscaping:

- *Horticulture is amazing!*
- *They're very impressed with the design... the landscape architecture.*
- *I stress it's a green trail, so they're impressed with that; the sound effects, the fog; they feel like they're on a trail...*
- *They like all the plantings, the trees and bushes and flowers...it's pretty in there, and they enjoy that.*

Visitors comment favorably on the animals' new enclosures. They "are pleased that the animals have such nice places to thrive," and they use such words such as "roomy" and "modern." Visitors seem most happy with how close they can get to the animals and the different levels and vantage points for viewing them and for picture-taking:

- *The close proximity of the animals to the visitors is very exciting, and this experience is very well-received. When the animals are down at the glass, the thrill is there for all of us.*
- *You can observe the animals from so many different levels – if Tian is up in the tree, it's as if he were perfectly posed, like a postcard... When the red pandas are in the trees at the top observation, you are almost eye-to-eye with them. And when they're down foraging in the yard, they'll come right up to you on that Plexiglas barrier, so you really do have a lot of levels to interact with the animals...it's not static.*
- *About a month ago I had a woman come through with a small group of 5 and 6 year-old children, and she raved about the otter exhibit because it was right at eye-level for the kids, and they were just intrigued.*
- *Visitors with cameras love how they can often snap pictures that don't have any artificial elements in them.*

At the same time, interpreters noted that some design features hinder viewing and photography:

- *The sun's glare on the glass and the condensation at both the sloth bear exhibit and the red panda exhibit are the biggest complaints that I have heard. That also applies to the small clawed otter exhibit to a lesser degree. Also, some of the signs that are right in front of the enclosures block the view.*
- *One thing I've noticed is a lot of people tend not to see the giant salamander because of the reflection of the glass, so they are always looking up, thinking the salamander is on top.*

The biggest disappointment for visitors is when the animals are off exhibit. As one interpreter expressed, "It is clear that the number one gripe has been 'where are the animals?'" Visitors wanted more animals to be out, and they asked for posted times for events such as feedings and training. The absence of animals was a particular issue at the time of the discussion – February – because many of the *Asia Trail* species are from warmer climates and cold weather keeps them off-exhibit. Suggestions of ways to mitigate the situation ranged from inexpensive signage to expensive habitat reconfiguration.

- *The ability to see the animals at all times in- or outdoors. One visitor from Salt Lake City said she was disappointed that you can only see the indoor dens in the Panda House – even in the small Salt Lake Zoo you have the choice of indoor or outdoor habitat, and she expected the same here.*
- *Signage and/or up-to-date information at the information booth about what is on or off view. (It was noted that because you are dealing with live collections that are not locked outside, there is no way to know exactly what is going to happen; a keeper would have to take time every half hour to change a sign or update information.)*
 - *Have signs that say the animals may not be outside due to inclement or cold weather. These could be left at the animal exhibits for the winter or posted at the Asia Trail entrances and along the Asia Trail path.*
 - *For the many visitors who come specifically to see the giant pandas, in the best of all possible worlds, there would be signs (anything from blackboards to electric signs) telling visitors that, for example, Tai is in such and such an enclosure and Tian is inside...and that the keepers will be putting out some bamboo or an enrichment object at such and such a time.*
- *Give the volunteers a reliable way of learning what will be happening during our shift so we can tell visitors where to be and when. We don't know when the animals are going to be moved from one yard to another or withdrawn for training or medical tests, or when the keepers will be cleaning an enclosure or putting food out for the animals. Perhaps the keepers can write down a schedule on a chalkboard in the kitchen...or radio us...or tell the volunteers operating the webcam what will be going on, and we can check with them.*

In addition to animal-related signage, many of the visitor comments involved the need to improve general wayfinding and navigation.

- *When I'm on the lower panda trail, people will see people on the upper trail and can't figure out how to get there.*
- *I had very frantic parents ask, "Where is the closest bathroom, and how can they get there?" Because of the winding Asia Trail, you can be stuck in it and not know which direction you should go.*
- *People feel stuck on the Trail since there is no way to get out to the main walkway except at the top and bottom.*
- *Paths are not wide enough for double strollers.*

The volunteer interpreters raised some safety issues that they had observed:

- *When twilight falls, the steps at the clouded leopards are not adequately lit.*
- *The small square signs that are about three feet off the ground have sharp corners.*
- *Some of the rocks in the middle of the Trail surprise visitors who aren't paying attention and cause accidents/collisions.*
- *That staircase next to red pandas looks inviting because you can see Olmstead Walk, but there is a hot wire there and one little yellow sign that says, "Do not use" ...I'm not sure that's enough for the visitors to know it could be dangerous to take this little step.*
- *[At giant pandas, a ledge by the bamboo storage building]: It actually was a very serious safety problem about a week or so ago when there was a tremendous amount of ice and snow there...it was quite crowded with a lot of photographers, and there was one woman who just would not get down, and she literally almost fell into the exhibit.*

The OP&A study team asked the docents to share their observations about how visitors are using the *Asia Trail* interpretive activities. They said that kids love to play with the pull-out signs on the animal cutouts at each exhibit, and older kids use the interactive educational tools quite a bit. With school groups especially, the multimedia aspects are very reinforcing compared to just telling the children information:

- *The interior panda house graphics/videos are getting a lot of use, with very positive feedback, but the keyboard type-in-a-question doesn't seem to be used a lot – maybe we could post example questions/answers?*
- *The camera trap by fishing cats engages the kids. All the bronze statues attract the kids... they use the What in the Wild signs and the log books.*
- *The day the Trail opened we had "trading cards" for all the animals – it would be great to continue to have something like that to hand to folks who want more permanent information, or for kids as souvenirs.*
- *What I can remember is hearing the kids go through the little questions by the sloth bear exhibit: Are they eating? Are they sleeping?*
- *When we're in an area talking to people about the diet, or the habitat, or the conservation measures, it's very reinforcing when you can point to one of these printed materials that are making the same point. Especially in the conservation area, you can talk to them about what's going on in China...*

- *I find that they like the [pull-outs] with the fur, especially little children because they can touch it.*
- *At the fishing cats, it is very difficult to explain, even with Electra and Isaac walking around...and if you can point people to that video, it's amazing, they get so much more out of the experience, because they're seeing not only why they're called fishing cats, but they're seeing the cats in their habitat.*
- *The Webcam has been a nice tutorial, and a lot of people feel like they've been to the Zoo before they get here. Kids are very savvy when it comes to the Internet, so they've started their tour of the Zoo electronically. When they get there, it's easy for them to talk to us, and it comes together for them.*
- *I've had a couple of youngsters who have helped me interpret because they've been reading the signage and they already have the information up here [in their heads]. So while I'm talking to their parents, they'll be adding extra information...I will stop and let them continue if they know the information (and encourage them to come back in a few years and be one our interpreters!).*

Interpreters pointed to some negatives, such as difficulty finding the objects mentioned in the question mark signs (e.g., the objects are covered with leaves); low placement of the fishing cat video; and some things already broken. In addition, the docents said they had not seen many people at two outside education exhibits – the Giant Panda Experience Zone and the Sloth Bear Conservation Plaza.

- *It is unfortunate, but even as I try to direct people toward the conservation stations, it's been a hard sell, although the information is presented so well. I don't see many people using them.*
- *People also miss the video and topographical maps underneath on that lower level. Very few people go back there; I often suggest it, but if the animals are out and visible, it's vacant. It's unfortunate because those maps are fabulous.*
- *I find the conservation stations both at the panda area and near the sloth bears are pretty underutilized...Families and kids are spending the time in front of the animals and talking with you in front of the animals, but in the conservation stations I haven't found a lot of time spent exploring what's there and learning from it.*

The Asia Trail team's efforts to establish a noticeable presence of interpreters on the Trail with deep knowledge of their subject matter was reviewed favorably:

- *[Visitors] like having the interpreters and the keepers who do the demos come out and talk to them. I've had many people say, "Gee, we've been to other zoos, and there aren't people like you to talk to."*
- *More sophisticated visitors who've been to many zoos will assume you are an interpreter like they find at other zoos, and you start talking, and they realize you have a great depth of knowledge, and 45 minutes later, it's WOW, that was so great to have a chance to talk.*

The level of engagement observed by the interpreters mirrors the results of the OP&A survey:

- *I think it's a function of what visitors bring to the Zoo by way of their own background and interest. People who work in an area that involves science and research, those are the ones who ask a lot of questions and are really interested in being directed to the educational places within the Trail. Other people are just there because they want to get the kids out of the house and they want to see animals moving around, and if you start talking to them about research and conservation and endangered species, they start to drift away.*
- *It depends on a lot of variables: age of visitors (older kids and older adults seem most interested in learning; teenagers and college-aged people are just there to kill time), how crowded the Zoo is on the day of their visit, how many volunteers are on hand to talk to people, how well educated the volunteers are on the Asia Trail species.*
- *Honestly, most people are there with children who have short attention spans, so they glance at the animals and move on. Then there are the "pandarazzi" who are there constantly and aren't interested in anything volunteers have to say. On slow days when there aren't many people around, it's possible to engage some people in a conversation, but most visitors seem to be in a hurry to get on to the next exhibit.*

The OP&A study team queried the docents about their sense of what visitors are coming away with. While much depended on the nature of the visitor, as described above, interpreters talked about several areas that sparked interest and provided openings for discussion:

- *Lots of questions in recent days about Tai's weaning and the plans for permanently separating him from Mei.*
- *Merlin's (sloth bear) pacing is very troubling to the visitors. When an interpreter or keeper is present, we can discuss this.*
- *At the Panda House, what frequently comes up is when is Tai leaving, and how long are they here and so forth, so that is a springboard for talking about the agreement, and the money that the Chinese are getting, how they're using it, how much more they're putting into it, what success they're having with their captivity breeding, the addition to habitat and reserves in China. So it really does let you launch into that.*
- *Some people are really dedicated and educated and have been to zoos all over the world and want to compare and ask a lot of questions. You can get into the conservation area kinds of questions because they want to know why Tian and the cub are separated. So that leads to conversations about scent marking and habitats and how the pandas live, and they want to know about their predators, and you can show the Yulong photos.*
- *I get a lot of questions from the 10 to 12 year olds about, when the keepers are out doing something, "how do you get to do that?" So it's an opportunity to talk about, not the specific academics, but what you can learn and experience as you grow. I think there are a lot of young people who are saying, maybe I can do this.*
- *Another indirect way that the message is getting across is that people come to Asia Trail, and they see all these animals they never heard of. It's not just coming to the Zoo to see*

zebras, it's all animals that are in some way or another endangered or threatened. Then you can talk about the fact that that is what zoos are these days, not entertainment places, there's much more going on. It's really an eye opener.

- *Knowing that they exist in the world is just one step closer. People didn't even know what a clouded leopard was. Now they know. Maybe when they get home they'll look it up on the Internet...Sort of the same thing about the sloth bears. Those are uncommon animals, and the sign says sloth bear, and everyone thinks it is a big sloth, so that's my entrée to say, "It's not a sloth, it's a bear" and how that name came about.*
- *The best example of a good human/animal message is the camera trap. It really holds people long enough to allow them to read and comprehend the poaching issue.*

And then there are defining moments that can happen to visitors and interpreters alike. As one interpreter relayed, *"I had a really interesting opportunity when I was alone inside the Panda House. There was a pile of people around me and one woman asked, 'What use are pandas?' I was floored by the question. I had to gather myself, and I said, 'Other than their obvious economic use to China, they have a use to me. I would be diminished without him there. We would all be diminished. We would all be diminished without things we have to be afraid of.' Finally I think I connected with her, I saw her nod."* Not to mention, as another interpreter added, *"You know how fast bamboo would take over the earth if there weren't pandas?"*
[laughter]

APPENDIX B: ENTRANCE SURVEY

EntranceB

Asia Trail Visitor Survey

Is this your first visit to the National Zoo?

Yes

No **If NO, Is this your first visit to Asia Trail?**

Yes No

What experiences are you *especially* looking forward to on Asia Trail today? [mark one or more]

- Feeling a sense of awe and wonder
- Seeing my children learn
- Enjoying the beauty of Asia Trail
- Imagining (other places or interacting with wildlife)
- Seeing rare animals
- Gaining information or knowledge
- Reflecting on the meaning of what I will see
- Spending time with friends or family
- Feeling connected with nature

How aware are you of the threats to at-risk wildlife?

Not aware Very aware

1 2 3 4 5

How interested are you in wildlife conservation?

Not interested Very interested

1 2 3 4 5

What do you think *most* needs to be done to better preserve wildlife? [mark one or more]

- Preserve wetlands
- Reduce human-wildlife conflict over food sources
- Encourage use of "green" tools such as bio-gas stoves
- Help local villagers develop alternative sources of income that do not impact habitats
- Link fragmented habitats with corridors/tunnels to improve breeding
- Decrease habitat destruction
- Move villagers outside of protected reserves
- Create more national parks

For each of the statements below, please give us your opinion:

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Preservation of at-risk wildlife is not urgent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Human enterprise threatens at-risk wildlife	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
National Zoo scientists play key roles in wildlife conservation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The animals in the National Zoo live under poor conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wildlife conservation involves difficult tradeoffs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel inspired to play a role in protecting wildlife	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

What is your sex? Female Male

What is your age? _____

Where do you live? United States, Zip Code:

Other country, Specify: _____

Are you of Latino/Hispanic origin? No Yes

What race do you consider yourself to be? [mark one or more]

African American/Black Asian American
 Native Hawaiian/Pacific Islander White
 American Indian/Native American

Who are you with on Asia Trail today?

I am alone
 I am with a school group/organized group
 I am with others

If with others, how many people are you with? [please write number of people and not ages]

_____ Adults over 18
 _____ Youth 12 to 17
 _____ Children under 12

What is the highest degree or level of school you have completed?

- High school graduate or less
- Some college courses
- Associate degree
- Bachelor's degree
- Graduate/professional degree

THANK YOU!

APPENDIX C: EXIT SURVEY

ExitA

Asia Trail Visitor Survey

Is this your first visit to the National Zoo?
 Yes
 No **If NO, is this your first visit to Asia Trail?**
 Yes No

How aware are you of the threats to at-risk wildlife?
 Not aware Very aware
 1 2 3 4 5

How interested are you in wildlife conservation?
 Not interested Very interested
 1 2 3 4 5

What experiences were especially satisfying for you on Asia Trail today? [mark one or more]

- Feeling connected with nature
- Spending time with friends or family
- Reflecting on the meaning of what I saw
- Gaining information or knowledge
- Seeing rare animals
- Imagining (other places or interacting with wildlife)
- Enjoying the beauty of Asia Trail
- Seeing my children learn
- Feeling a sense of awe and wonder

Please rate your experience with the following aspects of Asia Trail based on your visit today.

	Poor	Fair	Good	Excellent	Superior	Not Applicable
Overall experience	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Learning opportunities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Things for kids to do	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Getting around Asia Trail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Landscape and plantings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Interacting with Zoo staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Taking photographs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

For each of the statements below, please give us your opinion:

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Preservation of at-risk wildlife is not urgent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Human enterprise threatens at-risk wildlife	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
National Zoo scientists play key roles in wildlife conservation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The animals in the National Zoo live under poor conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wildlife conservation involves difficult tradeoffs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel inspired to play a role in protecting wildlife	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Have you been to a Zoo other than the National Zoo before today?
 No
 Yes **If YES, rate the quality of viewing the animals you saw on Asia Trail compared to other zoos:**
 Worse About the same Better
 I did not see any animals

Where do you live?
 United States, Zip Code:
 Other country, Specify: _____

I RL RT RO

Which of the following did you do on Asia Trail today? [mark one or more]

- Looked through binoculars at pictures/animals
- Watched videos (Clouded leopard, Fishing cat)
- Read information
- Saw myself or others on the zoo's monitor/camera
- Read about National Zoo conservation work in the field
- Used pull-out/touch interactives
- Used a computer station
- Just walked around

What do you think most needs to be done to better preserve wildlife? [mark one or more]

- Create more national parks
- Move villagers outside of protected reserves
- Decrease habitat destruction
- Link fragmented habitats with corridors/tunnels to improve breeding
- Help local villagers develop alternative sources of income that do not impact habitats
- Encourage use of "green" tools such as bio-gas stoves
- Reduce human-wildlife conflict over food sources
- Preserve wetlands

What is your sex? Female Male

What is your age? _____

Who are you with on Asia Trail today?
 I am alone I am with an organized group
 I am with others

If with others, how many people are you with? (please write number of people and not ages)
 Adults _____ Youth _____ Children _____
 18 or over 12 to 17 under 12

Have you taken any college courses?
 Yes No

THANK YOU!

I RL RT RO

THANK YOU!

APPENDIX D: NOTES ON THE METHODOLOGY

Response bias. To check for possible bias, the OP&A study team looked at all characteristics available both for visitors who completed the survey and those who refused within a multivariate statistical model. The study team found, other factors being equal, that (1) visitors exiting the exhibition were more likely to refuse compared with those entering the exhibition, and (2) visitors accompanied by a large group of people were more likely to refuse than those in other configurations. Refusal rates were the same across other variables.

Analysis and statistical tests. The data were analyzed using statistical methods such as descriptive statistics (statistical tests: z-test, chi square); mean comparisons (t-test); correlations and statistical modeling (analysis of variance, bivariate correlations, and multivariate logistical regression); and data reduction methods (factor analysis). All statistical tests have been conducted using 95% confidence intervals. This report contains the statistically significant findings.

Sources of error

Sample size: The approximate sampling error for a simple random sample of 873 observations (completed entrance surveys) is plus or minus 3.3 percentage points at a 95% confidence level. For a random sample of 562 observations (completed exit surveys), it is plus or minus 4 percentage points at a 95% confidence level.

Question design: This source of error can result from poorly designed, phrased, or unclear questions that the survey respondent may interpret differently than the researcher intended. Another source of construct validity¹ error lies in the timing of the measurement. For example, while visiting *Asia Trail* might increase a visitor's awareness of threats to at-risk wildlife, this effect may occur beyond the time of measurement, namely, the exhibition exit.

¹ Construct validity refers to the accuracy of measurement and whether the instrument is measuring what the research intends to measure.

APPENDIX E: ADDITIONAL ANALYSIS

This appendix reports on the results of additional analyses conducted by the Office of Policy and Analysis study team: behavior patterns, visitor ratings in the summer of 2007 and 2004, and visitor responses to the *Asia Trail* survey broken out by different visitor categories.

Behavior Patterns

Intrigued by the high percentage of visitors who only marked “just walked around” on *Asia Trail* and not any of the other eight listed activities, the study team ran a factor analysis² to look for patterns in visitors’ behaviors. Based on the results, visitors’ behaviors seemed to fall into three patterns³:

- **Pattern 1** was correlated with “looked through binoculars at pictures/animals,” “watched videos,” “used a computer station,” and “saw myself or others on the zoo’s monitor/camera.” The OP&A study team labeled this behavior pattern “Gaming.”
- **Pattern 2** was correlated with those who “just walked around.” The OP&A study team labeled this behavior pattern “Walking.”
- **Pattern 3** was correlated with those who marked “read information,” “read about National Zoo conservation work in the field,” and “used pull-out/touch interactives.” The OP&A study team labeled this behavior pattern “Reading.”

The study team then looked at the associations between these behavior patterns and other responses to the survey questions. The analysis showed that certain behaviors were associated with certain experiences, conservation strategies, and ratings, although not with any particular demographic characteristics.

Gaming Behavior

Visitors who were more likely to be associated with *Gaming* were more likely to have had experiences such as “feeling connected with nature,” “reflecting on the meaning of what I saw,”

² Factor analysis is a methodology based on the assumption that there are underlying factors (in this case behavior patterns) that are smaller in number than the numbers of observed variables (in this case the activities visitors completed on the Trail) and are responsible for the associations among the observed variables.

³ Although visitors to some degree exhibited behaviors found in each of the three groups, based on their dominant pattern of behavior, as determined from analysis of the data, their behavior was more likely to be associated with one of the groups.

and “feeling a sense of awe and wonder.” They were also much more likely to have marked the conservation strategies that were discussed in the decision stations on *Asia Trail*: “move villages outside of protected reserves,” “help local villagers develop alternative sources of income that do not impact habitats,” and “reduce human-wildlife conflict over food sources.” The only other outstanding results associated with *Gaming* were *superior* ratings for “getting around *Asia Trail*” and for “things for kids to do.”

Walking Behavior

Visitors who were more likely to be associated with *Walking* were more likely to have found “seeing rare animals,” “feeling a sense of awe and wonder,” and “spending time with friends and family” to be especially satisfying experiences. There were no conservation strategies highly associated with the responses of visitors more likely to be associated with *Walking*, but there was a weak association with three conservation strategies: “decrease habitat destruction,” “help local villagers develop alternative sources of income that do not impact habitats,” and “reduce human-wildlife conflict over food sources.” Visitors associated with *Walking* were more likely than others to rate “learning opportunities” as *superior*. This latter finding is hard to interpret, given that the visitors associated with *Walking* did not engage in any other activities along the Trail. Perhaps they felt they were learning by just looking.

Reading Behavior

Reading behavior was associated with high levels of both awareness of threats to at-risk wildlife and interest in wildlife conservation. Visitors who were associated with *Reading* were more likely to have more satisfying experiences on average than other visitors, and were especially more likely to have selected:

- Gaining information or knowledge
- Reflecting on the meaning of what I saw
- Feeling a sense of awe and wonder
- Decrease habitat destruction
- Link fragmented habitats with corridors/tunnels to improve breeding
- Encourage the use of “green” tools such as bio-gas stoves
- Help local villagers develop alternative sources of income that do not impact habitats

Reading behavior was also associated with:

- *Excellent* ratings for “things for kids to do”
- *Excellent* or *superior* ratings for “overall satisfaction” and “learning opportunities”
- *Superior* ratings for “landscape and plantings”

Overall, the analysis suggests that those visitors associated with *Reading* behavior were more “satisfied” with their visit to *Asia Trail* than were the visitors associated with *Gaming* and *Walking* – the readers had a higher number of satisfying experiences and higher ratings of exhibition features. Neither those visitors associated with *Reading* or *Walking* behaviors were particularly associated with *superior* ratings for “overall experience.”

This analysis raises several questions. For example, are the observed behavior patterns true of visitors at other zoos, aquaria, museums, and cultural attractions? What kind of demographic or background characteristics might predict these types of behaviors? What features of future zoo exhibitions could enhance the experiences associated with these behavior patterns? Are there other kinds of experiences that are particularly sought by those who favor *Walking* or *Gaming* behaviors?

Additional Data on Visitor Responses to *Asia Trail*, Summer 2007

Table E-1. Visitor agreement/disagreement with six conservation-related statements
(percent)

Statements	Strongly Disagree		Disagree		Neither Agree nor Disagree		Agree		Strongly Agree	
	Entrance	Exit	Entrance	Exit	Entrance	Exit	Entrance	Exit	Entrance	Exit
Preservation of at risk wildlife is not urgent	65	60	16	16	5	8	7	7	8	10
Human enterprise threatens at-risk wildlife	9	6	7	6	9	12	27	29	48	47
National Zoo scientists play key roles in wildlife conservation	6	4	4	3	16	15	33	38	41	41
The animals in the National Zoo live under poor conditions ^a	27	32	27	32	31	24	11	9	4	4
Wildlife conservation involves difficult tradeoffs	9	4	10	8	25	26	39	43	20	18
I feel inspired to play a role in protecting wildlife	4	2	6	4	28	31	38	40	25	23

a. Statistically significant difference between the responses of entering and exiting visitors.

A Comparison of Visitor Ratings, *Asia Trail*, Summer 2007, and National Zoo, Summer 2004

Table E-2. Selected visitor ratings, *Asia Trail*, summer 2007, and National Zoo, summer 2004, survey results
(percent)

	Poor	Fair	Good	Excellent	Superior
<i>Overall experience</i>					
NZP 2004	0	8	31	48	14
<i>Asia Trail</i> 2007	3	3	21	46	26
<i>Learning opportunities</i>					
NZP 2004	1	6	30	44	19
<i>Asia Trail</i> 2007		3	29	47	21
<i>Things for kids to do</i>					
NZP 2004	2	6	33	37	21
<i>Asia Trail</i> 2007	4	6	28	40	22
<i>Interaction with (helpfulness of) museum staff</i>					
NZP 2004	1	6	33	40	20
<i>Asia Trail</i> 2007	3	12	27	35	23

The OP&A study team looked at the responses of all visitors in the aggregate and by key visitor groups, such as: new and repeat visitors to the National Zoo and to *Asia Trail*; local visitors; age categories; and gender. The statistically significant⁴ results are presented in Tables E-3–5. Note that if a cell does not contain a number, or if a question from the questionnaires does not appear in the table, it means there was no statistically significant difference to report.

Following are some points to help in reading the tables:

- NZ = National Zoo, AT = *Asia Trail*
EN = entrance, EX = exit
- *Blue numbers*: the results for all visitors. These are provided as a point of reference for the figures provided by visitor category
Red numbers: entrance results by category of visitors
Black numbers: exit results by category of visitors

⁴ A statistically significant outcome has little likelihood of being observed by chance (in this case the likelihood of being observed by chance is only one in twenty).

- Identifying and comparing statistically significant results *within* visitor groups
 - ❖ *Pink shading* indicates an *increase* in percentage between entering and exiting visitors within the same group (e.g., in Table E-3, in the first row with pink shading, more exiting repeat visitors to the Zoo marked “feeling connected with nature” than did entering ones, and the second block of pink shading in that same row indicates that more exiting repeat visitors to *Asia Trail* marked “feeling connected with nature” than entering ones).
 - ❖ *Grey shading* indicates a *decrease* in percentage between entering and exiting visitors within the same group (e.g., in Table E-3, the first row with grey shading shows that fewer exiting new visitors to the National Zoo marked “seeing my children learn” than entering ones).
- Identifying and comparing statistically significant results *across* visitor groups.

Numbers that are not shaded and that appear under two different visitor groups indicate a statistically significant difference across the two groups. For example, in Table E-3, the second row, “Visitors with graduate/professional degree,” the two red numbers, 58 and 42, indicate a statistically significant difference between the entrance findings for the group “Repeat visitors to *Asia Trail*” and the group “New visitors to *Asia Trail*.”

Table E-3. Responses of new and repeat visitors to the National Zoo and Asia Trail
(percent)

Questions	All		History with NZ				History with AT			
	Visitors		Repeat		New		Repeat		New	
	En	Ex	En	Ex	En	Ex	En	Ex	En	Ex
Percent of total visitors			65	65	35	35	36	38	64	62
Visitors with graduate/professional degree	46						58		42	
Locals	28	29	38		11		44		33	
Visitors with adults only	30	34	30		35					
Visitors with adults and youth	44	38	44		37					
Feeling connected with nature	32	41	31	44		36	32	48	30	44
Spending time with friends or family	49	57	50	61		50	55	67	49	59
Seeing rare animals	70	71	67		74		75		66	
Enjoying the beauty of Asia Trail	46	55	48	59	41	47	50	61	50	61
Seeing my children learn	39	34		40	35	22				
Feeling a sense of awe and wonder	27	36	26	35	28	37	26	40		33
Watched videos (Clouded leopard, Fishing cat)		16		18		11				
Read about National Zoo science conservation work in the field		23						30		21
Used a computer station		8						12		4
Looked through binoculars at pictures/animals		25						19		29
Help local villagers develop alternate sources of income that do not impact habitats	50	48			48	40				
Encourage the use of "green" tools such as bio-gas stoves	42	35	44	36					42	32
Move villages outside of protected reserves	16	12			17	10				
Overall experience was superior		26						38		19
Learning opportunities were superior		21						29		14
Landscape and plantings were superior		34						44		26
Interacting with Zoo staff was superior		23						29		13
Human enterprise threatens at-risk wildlife (Agree & Strongly Agree)	76	76					84		69	77
National Zoo scientists play a key role in wildlife conservation (Agree & Strongly Agree)	74	78							70	81
The animals in the National Zoo live under poor conditions (Disagree & Strongly Disagree)	54	63	56	64	51	63			51	68
Wildlife conservation involves difficult tradeoffs (Agree & Strongly Agree)	59	61			56	62				
I feel inspired to play a role in protecting wildlife (Agree & Strongly Agree)	63	63					70		53	
Have been to a zoo other than the National Zoo before today		87						94		88
The quality of viewing the animals on Asia Trail, compared to other zoos was better		52		60		41				

Table E-4. Responses of local and non-local visitors
(percent)

Questions	All		Residence			
	Visitors		Non-locals		Locals	
	En	Ex	En	Ex	En	Ex
Percent of visitors			72	71	28	29
Generation Y (19-29)	26	31	23	30	34	33
Weekday	36	20	38	27	28	23
Graduate/professional degree	46		42		58	
African American/Black	9		7		15	
White	83		85		76	
Repeat visitors to National Zoo	65	65	57	57	87	86
First time visitors to National Zoo	35	35	44	44	13	14
Repeat visitors to <i>Asia Trail</i>	36	38	34	32	42	48
First time visitors to <i>Asia Trail</i>	64	62	66	68	58	52
Feeling connected with nature	32	41	29	38	38	48
Spending time with friends or family	49	57	47	56	54	
Imagining (other places or interacting with wildlife)	14	16	11	17	18	
Enjoying the beauty of <i>Asia Trail</i>	46	55	43	52	51	63
Seeing my children learn	39	34	41	35		
Feeling a sense of awe and wonder	27	36	27	37		
Help local villagers develop alternate sources of income that do not impact habitats	50	48	46	44	55	56
Encourage the use of "green" tools such as bio-gas stoves	42	35	41	35		
Reduce human-wildlife conflict over food sources	41	39	41	35		45
Move villages outside of protected reserves	16	12	17	12		
The animals in the National Zoo live under poor conditions (Disagree & Strongly Disagree)	54	63	55	65	52	63
The quality of viewing the animals on <i>Asia Trail</i> , compared to other zoos was better		52		50		64

Table E-5. Responses of visitors to *Asia Trail* by generation
(percent)

Questions	All		Generations											
	Visitors		Millennials		Gen Y		Gen X		Trailing Edge BB		Leading Edge BB		Postwar	
	En	Ex	En	Ex	En	Ex	En	Ex	En	Ex	En	Ex	En	Ex
Percent of total visitors			5	7	26	31	34	31	20	17	10	10	6	4
Male	38	39	50	50	29	37	39	37	42	44	42	40	43	56
Female	62	61	50	50	71	62	61	63	58	56	58	60	57	44
Visited with organized group	8	8	16	23	7	8	10	8	9	9	1	1	8	0
Asian Americans	7		2		12		8		3		5		4	
Whites	83		80		76		82		86		91		89	
Repeat visitors to National Zoo	65	65	47	45	66	55	63	75	72	66	67	65	64	72
First-time visitors to National Zoo	35	35	54	55	35	45	37	24	38	34	33	35	36	28
Repeat visitors to <i>Asia Trail</i>	36	38	32	44	35	36	45	48	29	34	39	29	26	18
First-time visitors to <i>Asia Trail</i>	64	62	68	56	65	64	56	52	71	66	60	70	74	82
Very aware (5) of the threats to at-risk wildlife	35	36	19	41	30	24	27	31	45	42	46	53	50	39
Very interested (5) in wildlife conservation	40	42	35	47	34	39	31	36	49	45	60	60	60	44
Spending time with friends or family	46	57	77	42	47	65	53		43	57	51		39	59
Reflecting on the meaning	12	14		13		12		12		12		29		12
Gaining information or knowledge	40	37	57	36	36		34		50	34	42		49	
Seeing rare animals	70	71	84		69		67		65		79		83	
Imagining (other places or interacting with wildlife)	14	16	36		14		12		12		14		4	
Enjoying the beauty of <i>Asia Trail</i>	46	55			43	57								24
Seeing my children learn	39	34	12	13	23	22	55	50	50	44	27	22	26	24
Feeling a sense of awe and wonder	27	36			26	37							21	44
Read information		53		37		54		50		53		59		79
Looked through binoculars at pictures/animals		25		43		24		25		28		19		8
Preserve wetlands	57	54	64	43	49	46	57	53	61	66	63	66	73	59
Create more national parks	46	52	73		42	57	48		47		51		48	
Help local villagers develop alternate sources of income that do not impact habitats	50	48	36	47	41	36	49	47	56	54	54	59	67	86
Encourage the use of "green" tools such as bio-gas stoves	42	35	47	26			41	33			45	27		
Reduce human-wildlife conflict over food sources	41	39	44		32		41		45		52		51	
Link fragmented habitats with corridors to improve breeding	28	25	25	20	16	18	29	22	38	25	26	46	36	35
Move villages outside of protected reserves	16	12	32		14		12		19		18		20	
Landscape and plantings superior		34		36		32		35		25		51		33
Preservation of at risk wildlife is not urgent (Disagree & Strongly Disagree)	80	75	93		80		80		85	75	63		83	
Human enterprise threatens at-risk wildlife (Agree & Strongly Agree)	76	76		59		72		78		85		74		82
National Zoo scientists play a key role in wildlife conservation (Agree & Strongly Agree)	74	78	62		77		73		74	89	85		65	
The animals in the National Zoo live under poor conditions (Disagree & Strongly Disagree)	54	63	45		44	61	57		62		56		56	
Wildlife conservation involves difficult tradeoffs (Agree & Strongly Agree)	59	61	40	43	52	57	58	61	65	70	68	68	67	68
Have been to a zoo other than the National Zoo before today		87		86		80		92		86		93		100

