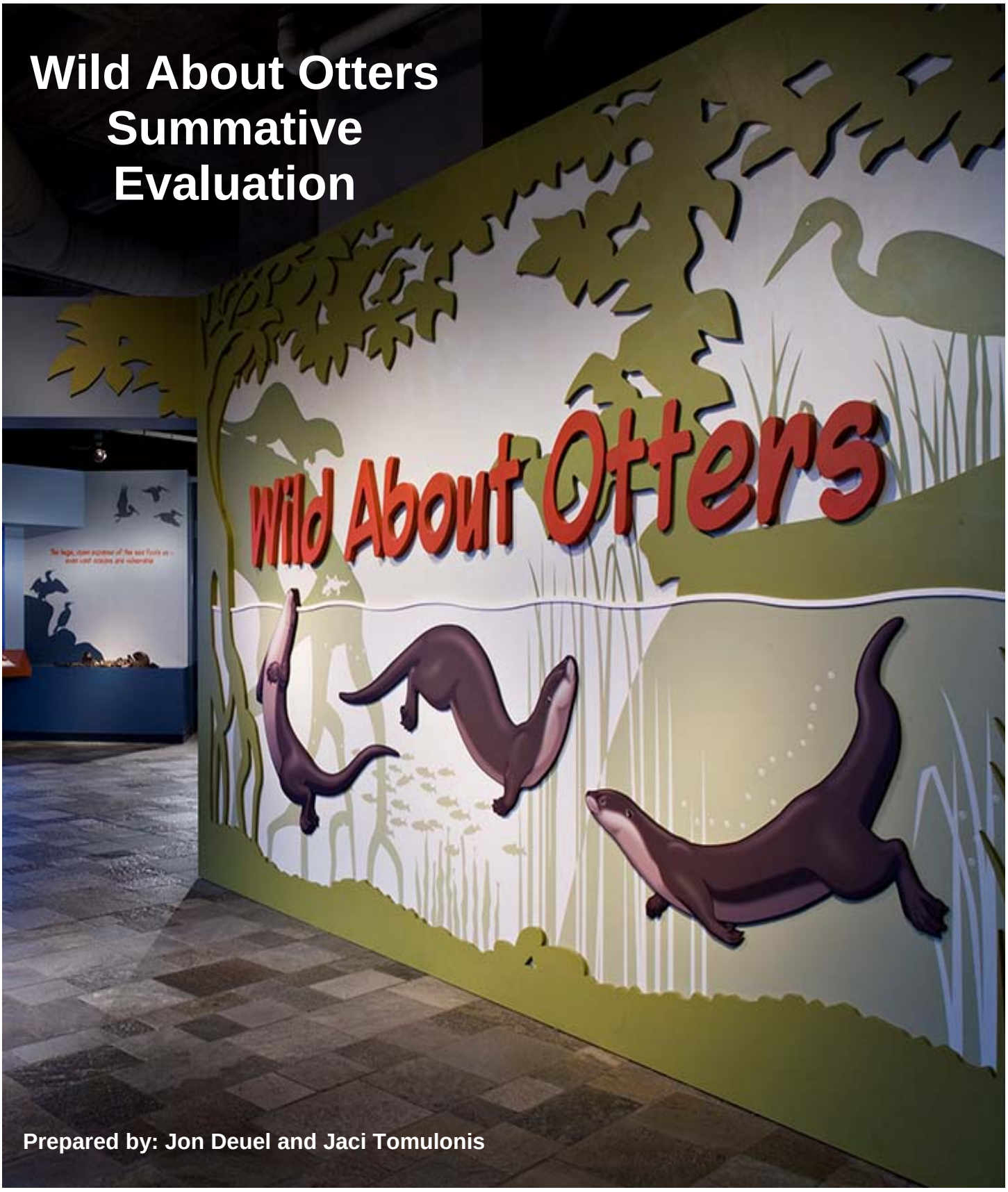
Wild About Otters Summative Evaluation



Prepared by: Jon Deuel and Jaci Tomulonis

MONTEREY BAY AQUARIUM

Contents

Tables and Figures

Timing and tracking observations

Structured exit interviews

Bilingual graphic panels interviews with visitors who speak Spanish

Executive summary

During 2007, the Exhibits Department conducted a summative evaluation of Wild About Otters to document visitors' interest in and their responses to this temporary exhibition. This study was conducted in three parts to examine visitors' behaviors and responses to aspects of the exhibition, including conservation content, emotional reactions and bilingual graphic panels.

Research questions

1. *How are visitors using the exhibition? Which exhibits are they attending to and for how long?*
2. *What did visitors think Wild About Otters was about?*
3. *What conservation content did visitors remember immediately after exiting Wild About Otters and where in the exhibition did they remember seeing the information?*
4. *What were visitors' emotional responses to Wild About Otters*?
5. *How are visitors who speak Spanish using the bilingual graphic panels?*
6. *How much information do visitors who speak Spanish prefer to have translated on a graphic panel and why?*

Methods

We used multiple research methods to evaluate Wild About Otters, including:

Method	Sample size	Description
Timing and tracking observations	151 visitors	Unobtrusive observations of what visitors attended to and for how long
Exhibition exit interviews	215 visitors	Structured interviews using forced-choice and open-ended questions
Bilingual label interviews	100 visitors who speak Spanish	Structured interviews using forced-choice and open-ended questions

Main findings

1. *How are visitors using the exhibition? Which exhibits are they attending to and for how long?*

On average, visitors spent 13 minutes in Wild About Otters and attended to 26% of the exhibits. While visitors moved through the exhibition at a slower rate than previous temporary exhibitions at the Aquarium, they attended to a smaller proportion of exhibits when compared to other temporary exhibitions of recent past.

The three otter enclosures were visited by the largest majority of visitors—92% at the African otter family enclosure, 82% at the African otter pair enclosure and 79% at the Asian otter enclosure. In addition to the otters, other animal tanks—the vine snakes and Asian river planted tank exhibits—were well attended (49% and 45%, respectively).

The longest average stay times also occurred at the three otter enclosures—visitors spent nearly four minutes to two and one-half minutes at the otter enclosures. However, these times differed greatly depending on the activity of the otters—if the otters were actively moving around, visitors stayed nearly five minutes. If the otters were asleep, visitors stayed just over one minute.

2. *What did visitors think Wild About Otters was about?*

When visitors were asked what they thought Wild About Otters was about, their responses fell into two groups. The first group (58%) focused on the exhibition of otters, including their lifestyle and characteristics. The second group (41%) focused on otter conservation and the preservation of their ecosystems, including the importance (and limited supply) of fresh water.

3. *What conservation content did visitors remember immediately after exiting Wild About Otters, and where in the exhibition did they remember seeing the information?*

When asked immediately after exiting the exhibition, a majority of visitors (80%) said they remembered seeing or hearing something about conservation in the exhibition. Ninety percent of these visitors cited specific information, and more than half of this group cited messages in which people played a role, such as water conservation, human impacts on ecosystems and the connections between human and otter ecosystems. The proportion of visitors who remembered conservation content and remembered specific messages in Wild About Otters was greater than in Ocean's Edge, Sharks: Myth and Mystery and Jellies: Living Art.

4. *What were visitors' emotional responses to Wild About Otters?*

To understand visitors' emotional experience in Wild About Otters, researchers asked visitors to describe a "special moment" they may have had as they were going through the exhibition. A majority of visitors (72%) mentioned their emotional connection to the otters and other animals on exhibit. When describing their experience, visitors used the word "cute," usually to describe the otters, but many visitors also used the words "like," "love," "fun" and "enjoy" when describing their experience. Exploring visitors' emotions, attitudes and feelings are a valuable step to understanding how to effectively communicate content.[1]

[1] When examining human emotions, feelings, attitudes, values and beliefs, the term *affect* is often used to describe the experience. *Affective learning* describes the process of people engaging with their emotions

Social psychology research suggests that museum visitors' positive moods lead to increased attention and better receptivity of cognitive concepts, which helps change attitudes during the communication of information.[2] Also, the emotional nature of learning cognitive concepts determines what visitors repeat, share, reflect on and ultimately remember (or choose not to remember) about their museum experience.[3]

During visits to zoos and aquariums, visitors' positive emotional response to animals is an important aspect in fostering positive attitudes toward the conservation of those animals and their habitats. Also, when emotions and cognitive knowledge work in concert, they are a strong predictor of behavior.[4] In other words, when visitors feel a positive emotional connection to an animal and know something about that animal, they may want to take action on the animal's behalf.

Another aspect of learning is the connection to a specific physical context, like a classroom, a library or the Aquarium. A challenge many learners face is the ability to take knowledge gained in one context and transfer it to another—for example, learning about tide pool conservation behavior at the Aquarium and applying those concepts when visiting an actual tide pool. When learners transfer their knowledge from one context to another, the result is greater subsequent learning.[5]

When visitors described their emotional experiences in Wild About Otters, researchers divided those experiences into two categories. One group of visitors (69%) expressed a direct emotional connection with the exhibition, usually to the animals, describing their emotional experience within the context of the Aquarium. The second group of visitors (26%) described their emotional experience in terms of a connection between the exhibition and their personal lives. When this group made a connection with the exhibition and their personal lives, they were transferring their positive emotional experience from one context (inside the exhibit) to another (outside the Aquarium). This phenomenon, when combined with visitors' positive emotional experience, is a powerful mechanism to better communicate exhibition content, especially conservation content.

5. *How are visitors who speak Spanish using the bilingual graphic panels?*

Nearly three-quarters (74%) of visitors who speak Spanish, regardless of amount of Spanish spoken at home, read a graphic panel associated with interactive exhibits in Wild About Otters. Of these visitors, the majority read at least part of the Spanish language featured on the graphic

---

and values. Although we understand that both cognitive learning (facts and figures, for example) and affective learning occurs in Aquarium exhibitions, we know much more about the cognitive experience than the affective experience. Previous Aquarium visitor studies have quantified the cognitive information a visitor has gained from an exhibition. However, little Aquarium research has assessed changes in visitor attitudes or appreciation about a subject. This type of research has proven challenging since emotions, feelings, attitudes and beliefs are intangible, and affective learning is abstract. The Aquarium should pursue this type of research in the future.

[2] Webb, Robert C. *Changing Attitudes Through Affect*. Paper presented at the Visitor Studies Association Annual Conference, 2004.

[3] Myers, O. E., et al. *Emotional Dimensions of Watching Zoo Animals*. Curator (47/3), 2004.

[4] Ibid.

[5] Falk and Dierking. *Learning from Museums*. Walnut Creek, CA: Alta Mira Press, 2000.

panel with over half reading only the Spanish language parts of the panel. Overall, the Spanish language text was read far more frequently than the English text.

6. *How much information do visitors who speak Spanish prefer to have translated on a graphic panel and why?*

The vast majority (86%) of visitors who speak Spanish, regardless of amount of Spanish spoken at home, preferred the largest amount of Spanish translation, when presented with three options. This group of visitors said that more translation provided more complete information and was easier to understand. By translating the entire graphic panel into Spanish, visitors who speak Spanish thought the Aquarium could better communicate content, and they would be able to learn more information.

Timing and tracking observations

Timing and tracking observations provide a detailed picture of how visitors are using an exhibition, including how visitors move through an exhibition.

These observations were intended to address how visitors use the exhibition, which elements they attend to and how long they stop at a particular element.

Method

A total of 151 visitors were unobtrusively observed during their visit to Wild About Otters. Half of the observations were conducted during summer (August), when the Aquarium attracts more first-time visitors and crowding is more common. The remaining observations were conducted in fall (October and November), when the Aquarium typically attracts more repeat visitors and crowding is less common.

Adult visitors were randomly selected for observation as they entered the exhibition. In addition to tracking which exhibits visitors attended and for how long, researchers noted the visitors' gender, estimated their age and noted if they were visiting with children. [6]

[6] This report uses "attending to" rather than "stopping at" to describe the time visitors spend at various exhibits. "Attending to" means visitors spend two or more seconds looking at or interacting with an exhibit, regardless of whether they physically stop at that exhibit. "Attending to" incorporates the time someone is looking at an exhibit while walking past, whereas the more traditional "stopping at" measure does not. Not counting this additional time is especially problematic at large tanks and exhibits, where visitors can attend to an exhibit for a long period of time while strolling past. Additionally, some exhibits or labels are designed to provide an overview by glancing at a title and/or subtitle, which can be done without physically stopping. For those reasons, we decided that the term "attending to" provides a more comprehensive and accurate measure of visitor attention.

1.1. *How are visitors using the exhibition? Which exhibits are they attending to and for how long?*

On average, visitors spent 13 minutes in Wild About Otters and attended to 26% of the exhibits (Table 1.1). Visitors moved more slowly through Wild About Otters than in both Sharks: Myth and Mystery and Jellies: Living Art. Also, visitors moved through Wild About Otters at a similar rate to visitors who were observed in similar-sized exhibitions in other museums, zoos and aquariums across the nation (Table 1.2). [7]

Even though visitors moved at a slower rate than in previous temporary exhibitions at the Aquarium, visitors attended to a smaller proportion of exhibits (26%) in Wild About Otters than the other temporary exhibitions of recent past (Table 1.2). Half of the total exhibits were contained in the highly concentrated13-species section. The high density of exhibits in a small area likely contributed to visitors attending to only one-quarter of the total exhibits.

Note: See *Appendix A* for background on expectations for total time spent in exhibitions.

Table 1.1: Summary of visitor behavior in Wild About Otters [8]

Measure	Mean	Lowest	Highest
Number of exhibits attended to (out of 44)	11	1	28
Proportion of exhibits attended to	26%	1%	64%
Time spent in exhibition (min:sec)	13:04	1:35	49:55
Proportion of total time at exhibits	64%	11%	92%

Table 1.2: Comparison of Wild About Otter to other Aquarium exhibitions

Exhibition	Square feet	Average total time	Sweep rate index (SRI)	Number of exhibits	Median % of exhibits attended to
Wild About Otters	**4,600**	**13.0**	**354**	**44**	**26%**
Sharks: Myth and Mystery	4,609	12.9	357	43	44%
Jellies: Living Art	4,650	9.5	490	42	34%
Vanishing Wildlife	1,702	5.7	299	16	22%
National Study	3,000 to 6,000	15.9	337	39 (avg.)	36%

[7] Data from the timing and tracking study of 110 nationwide museums can be found in Serrell, B. (1998). *Paying Attention: Visitors and Museum Exhibits*. Washington, DC: American Association of Museums.

[8] There were no statistically significant differences between groups with children and adult-only groups for each of the measures in *Table 1*.

Similar to all Aquarium exhibitions, temporary or permanent, the animal exhibits were the most attended by visitors. The three otter enclosures were divided into four viewing sections for each enclosure. When taken as a whole, the three otter enclosures were visited by a majority of visitors in the exhibit (92% at the African otter family enclosure, 82% at the African otter pair enclosure and 79% at the Asian otter enclosure). When taken as individual viewing sections, more than half of the 12 sections fall in the top third of most attended exhibits.

In addition to the otters, other animal tanks—the vine snakes and Asian river planted tank exhibits were well attended (49% and 45%, respectively). The most attended interactive exhibits were the differences between sea otters and river otters interactive and the North American river otter interactive in the 13-species area where kids were able to watch an otter behavior in the wild and then mimic their movements by gliding down a slide (Figure 1.1 and Appendix B).

The longest average stay times also occurred at the three otter enclosures. On average, visitors spent nearly four minutes at the African otter family enclosure, over three minutes at the Asian otter enclosure and about two and one-half minutes at the African otter pair enclosure. However, these times differed greatly depending on the activity of the otters—if the otters were actively moving around, visitors stayed for longer than the average time (from three to nearly five minutes). If the otters were asleep, visitors stayed for less than the average time—just over one minute (Figure 1.2 and Appendix C).

These findings, while intuitive, support research from Anderson et al., who found that the mean stay time of visitors to otter exhibits at Zoo Atlanta "approximately tripled [when otters were] at medium-high activity levels, when compared to low . . . activity levels." [9]

Overall, the otters in each enclosure were active the majority of the time that visitors were present. The Asian otters were the most active (86% of the time), followed by the African otter family (75% of the time) and the African otter pair (62% of the time) (Table 1.3).

In addition to the relatively long stay times at the otter enclosures, visitors spent over one minute at the binocular bank in the sea otter area (where 87% of visitors who stopped used the binoculars), at the vine snakes tank and at the differences between sea otters and river otters interactive (Figure 1.2 and Appendix C).

Table 1.3: Proportion of otter activity level in Wild About Otters

Activity level	Asian otters	African otter family	African otter pair
Active	86%	75%	62%
Asleep	14%	25%	38%

[9] Anderson et al. (2003). Enhancing the Zoo Visitor's Experience by Public Animal Training and Oral Interpretation at an Otter Exhibit. *Environment and Behavior*, 35 (6), 826-841.

Figure 1.1: Proportion of visitors attending to each exhibit
Note: See *Appendix B* for tabular list of proportion of visitors attending to each exhibit.

Figure 1.2: Mean time visitors spent at each exhibit
Note: See *Appendix C* for tabular list of mean time visitors spent at each exhibit.

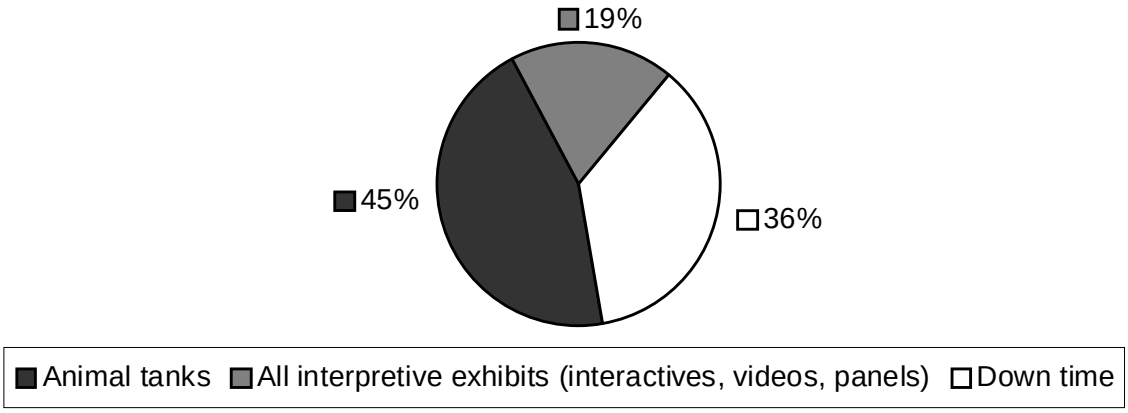
1.2. *What percentage of time do visitors spend at different exhibits?*

Visitors spent about two-thirds (64%) of their time attending to the exhibits—with nearly half of their time in the exhibition (45%) at the live animal tanks and 19% of their time at interpretive exhibits without a live animal component (Figure 1.3).

Visitors spent the rest of their time (36%) in other ways, such as walking from one exhibit to the next, briefly scanning exhibit areas, chatting with other people, etc. [10] Since some exhibition areas had low concentrations of exhibits (for example, between the Asian river tank and the Asian otter enclosure), visitors would walk relatively long distances from exhibit to exhibit. On the other hand, in areas with higher concentrations of exhibits (like the 13-species section) visitors would commit time scanning the many exhibits before attending to or stopping at a particular exhibit. Although there certainly are other factors, these two contribute to the proportion of visitors' time not attending to exhibits in Wild About Otters.

Figure 1.3: Proportion of total time spent by visitors per exhibit type

Note: See *Appendix D* for a list of the exhibits, how they were classified and tabular list visitor time proportions by exhibit type.



[10] Down time in the exhibition is the percentage of time visitors spent engaged in other behaviors besides attending to the exhibits (i.e., moving between exhibits, scanning exhibit areas, looking at Aquarium maps, having conversations, sitting down, etc.).

*S*tructured exit interviews

Structured interviews with visitors leaving the exhibition were conducted to measure the immediate impacts of a visit to Wild About Otters. The interviews were designed to answer three main research questions:

- What were visitors' general impressions after seeing the exhibition?
- How well did the exhibition communicate content, and specifically, conservation content?
- What were visitors' emotional reactions to the exhibition?

Method

In 2007, 215 randomly selected adult visitors were interviewed about their experience in Wild About Otters. Visitors were approached as they were exiting the exhibition and asked if they would be willing to answer some questions. If they consented, their responses were recorded on a form. [11] To control for seasonal differences, data were collected in both summer and fall. Of the 215 interviews, 109 were conducted in the summer (August) and 106 were conducted in the fall (October).

[11] See *Appendix E* for the interview instrument.

2.1. *What did visitors think Wild About Otters was about?*

Immediately upon exiting the exhibit, visitors were asked what they thought Wild About Otters was about; their responses fell into two groups. The first group (58%) focused on the exhibition of otters, including their lifestyle, characteristics and introducing visitors to the variety of otter species. The second group (41%) focused on otter conservation and the preservation of their ecosystems, including the importance (and limited supply) of fresh water (Table 2.1).

Table 2.1: What visitors thought Wild About Otters was about

Note: Some visitors gave a multifaceted response that fit more than one category, so the frequency of responses exceeds the number of visitors who responded. Examples of visitor quotes for each category appear in *Appendix F*.

What visitors thought Wild About Otters was about	Frequency	Percent
Introducing/showing/educating about otters	**155**	**58%**
General introducing/showing/educating about otters	65	24%
Otter lifestyle	42	16%
Variety of otters in the world	35	13%
Otter characteristics	6	2%
Other animals that share otter habitat	4	2%
Comparing fresh water otters and sea otters	3	1%
Conservation/protection/preservation	**111**	**41%**
Otters	61	23%
Fresh/clean water	22	8%
Human effects	10	4%
Habitats/environments	9	3%
General conservation/protection/preservation	9	3%
I don't know	**2**	**1%**
Total responses	**268**	**100%**

2.2. *What did visitors learn in Wild About Otters?*

To determine what content was primarily communicated, visitors were asked to consider the exhibition and complete this sentence: “I never realized that. . . .” The most common type of response (39%) cited the differences among otter species, including differences between river otters and sea otters. Other responses included learning about otter characteristics (24%) and otter behaviors (23%) (Table 2.2). An additional 8% of responses cited conservation information without being prompted. Subsequent interview questions focused specifically on conservation content.

Table 2.2: Visitor learning in Wild About Otters

Note: Some visitors gave a multifaceted response that fit more than one category, so the frequency of responses exceeds the number of visitors who responded. Examples of visitor quotes for each category appear in *Appendix F*.

Visitor learning in Wild About Otters	Frequency	Percent
Differences among otter types/species	**91**	**39%**
General differences among otter types/species	49	21%
Comparison of fresh water otters and sea otters	19	8%
Geographic locations	18	8%
Fresh water otters	5	2%
Otter characteristics	**54**	**24%**
Subjective physical description (cute, graceful, etc.)	31	14%
Comparisons to people, pets and other animals	13	6%
Biological description	9	4%
Otter behaviors	**53**	**23%**
Conservation information	**17**	**8%**
Endangered/threatened animals	8	4%
Human impact on otters	6	3%
Importance of water/fresh water	3	1%
Information about animals other than otters	**5**	**2%**
Nothing/unspecific	**9**	**4%**
Total responses	**229**	**100%**

2.3. *What conservation content did visitors remember immediately after exiting Wild About Otters, and where in the exhibition did they remember seeing the information?*

Well over half of the interview responses cited conservation messages where people played a role, such as water conservation, human impacts on ecosystems and the connections between human and otter ecosystems. Also, 10% of responses cited specific videos that featured John Cleese as places where they had heard and seen conservation information.

When asked immediately after exiting the exhibition, a majority of visitors (79%) said they remembered seeing or hearing something about conservation in the exhibition. However, repeat visitors to the Aquarium (85%) were more likely than first-time visitors (68%), and members (92%) were more likely than non-members (75%), to say they remembered seeing or hearing conservation information.

Of all the responses from visitors who said they remembered seeing or hearing conservation information, 90% featured specific information, though the subject matter of the responses varied. The majority of comments (72%) related to three main categories: species survival issues (26%), water conservation (26%) and human impacts on ecosystems (20%) (Table 2.3).

These visitors were also asked where they remembered seeing or hearing conservation information, and 85% of the responses cited a specific area of the exhibit, while 15% could not remember. Specific exhibits or exhibit types (e.g., 13-species area or videos) were cited by 51% of visitors, while unspecific areas of the exhibition (e.g. “throughout” or “at the end”) were cited by the remaining 35% (Table 2.4).

The proportion of visitors who remembered conservation content and remembered specific messages in Wild About Otters was greater than in Ocean’s Edge, Sharks: Myth and Mystery and Jellies: Living Art.

Table 2.3: Visitors' recollections of conservation content immediately after exiting Wild About Otters

Note: Some visitors gave multiple responses that fit more than one category, so the frequency of responses exceeds the number of visitors who responded. Examples of visitor quotes for each category appear in *Appendix F*.

What conservation content do you remember seeing or hearing?	Frequency	Percent
Species (otters, frogs, etc.) survival issues	**46**	**26%**
Otters need clean water/habitat	28	16%
Endangered species/extinction issues	12	7%
General species survival issues	6	3%
Water conservation	**45**	**26%**
General water conservation	28	16%
Limited fresh/clean water	17	10%
Human impacts/effects on ecosystems	**33**	**20%**
(Over) Development	10	6%
Pollution	9	5%
General human impacts/effects on ecosystems	7	5%
Runoff	4	2%
Improper waste disposal	2	1%
Ecosystem protection/preservation	1	1%
Habitat conservation/preservation	**13**	**8%**
General habitat conservation/preservation	5	3%
Wetlands	3	2%
Lakes	2	1%
Rivers	2	1%
Forests	1	1%
Cats/disposal of cat litter	**8**	**5%**
All water is connected	**5**	**3%**
Human/otter ecosystem health connection	**3**	**2%**
Nothing/unspecific	**18**	**10%**
Total responses	**172**	**100%**

Table 2.4: Visitors' recollections of where they had seen conservation information in Wild About Otters

Note: Some visitors cited multiple area responses that fit more than one category, so the frequency of responses exceeds the number of visitors who responded.

Where in the exhibition did you see conservation information?	Frequency	Percent
Exhibit types	**53**	**31%**
Videos (unspecific)	23	13%
John Cleese Videos	17	10%
Graphics	13	8%
Specific exhibits/areas	**34**	**20%**
13-species area	12	7%
Asian otter exhibit	7	4%
African otter exhibit	4	2%
Frog exhibit	4	2%
Lake Chad exhibit	3	2%
Craft room	2	1%
Vine snake exhibit	1	1%
Lake Tanganyika exhibit	1	1%
Unspecific exhibit area	**60**	**35%**
Throughout	28	16%
At the end	19	11%
At the beginning	8	5%
In the middle	5	3%
Did not remember specifically	**26**	**15%**
Total responses	**173**	**100%**

2.4. *What were visitors' emotional responses to Wild About Otters*?

To understand visitors' emotional experience in Wild About Otters, researchers asked visitors to describe a "special moment" they may have had as they were going through the exhibition. Nearly all responses (95%) from visitors discussed some kind of emotional connection to the exhibition. A majority of visitors (72%) mentioned their emotional connection to the otters and other animals on exhibit (Table 2.5). When describing their experience, visitors used the word "cute," usually to describe the otters, but many visitors also used the words "like," "love," "fun" and "enjoy" when describing their experience (Figure 2.1). Exploring visitors' emotions, attitudes and feelings are a valuable step to understanding how to effectively communicate content.[12]

Social psychology research suggests that museum visitors' positive moods lead to increased attention and better receptivity of cognitive concepts, which helps change attitudes during the communication of information.[13] Also, the emotional nature of learning cognitive concepts determines what visitors repeat, share, reflect on and ultimately remember (or choose not to remember) about their museum experience.[14]

During visits to zoos and aquariums, visitors' positive emotional response to animals is an important aspect in fostering positive attitudes toward the conservation of those animals and their habitats. Also, when emotions and cognitive knowledge work in concert, they are a strong predictor of behavior.[15] In other words, when visitors feel a positive emotional connection to an animal and know something about that animal, they may want to take action on the animal's behalf.

Another aspect of learning is the connection to a specific physical context, like a classroom, a library or the Aquarium. A challenge many learners face is the ability to take knowledge gained in one context and transfer it to another—for example, learning about tide pool conservation behavior at the Aquarium and applying those concepts when visiting an actual tide pool. When learners transfer their knowledge from one context to another, the result is greater subsequent learning.[16]

---

[12] When examining human emotions, feelings, attitudes, values and beliefs, the term *affect* is often used to describe the experience. *Affective learning* describes the process of people engaging with their emotions and values. Although we understand that both cognitive learning (facts and figures, for example) and affective learning occurs in Aquarium exhibitions, we know much more about the cognitive experience than the affective experience. Previous Aquarium visitor studies have quantified the cognitive information a visitor has gained from an exhibition. However, little Aquarium research has assessed changes in visitor attitudes or appreciation about a subject. This type of research has proven challenging since emotions, feelings, attitudes and beliefs are intangible, and affective learning is abstract.

[13] Webb, Robert C. *Changing Attitudes Through Affect*. Paper presented at the Visitor Studies Association Annual Conference, 2004.

[14] Myers, O. E., et al. *Emotional Dimensions of Watching Zoo Animals*. Curator (47/3), 2004.

[15] Ibid.

[16] Falk and Dierking. *Learning from Museums*. Walnut Creek, CA: Alta Mira Press, 2000.

When visitors described their emotional experiences in Wild About Otters, researchers divided those experiences into two categories. One group of visitors (69%) expressed a direct emotional connection with the exhibition, usually to the animals, describing their emotional experience within the context of the Aquarium (Table 2.5). For example, one visitor said:

> "They're [Asian otters] really cute. There was a whole set of otters sleeping and one came up and jumped on them. He spurred-on the group and they all went playing in the water."

The second group of visitors (26%) described their emotional experience in terms of a connection between the exhibition and their personal lives, usually a family member or pet (Table 2.5). For example, one visitor said:

> "Watching them [otters] reminded me of my grandkids—they are cuddly and close, but will mess around, too, with boundless energy."

When this group made a connection with the exhibition and their personal lives, they were transferring their positive emotional experience from one context (inside the exhibit) to another (outside the Aquarium). This phenomenon, when combined with visitors' positive emotional experience, is a powerful mechanism to better communicate exhibition content, especially conservation content.

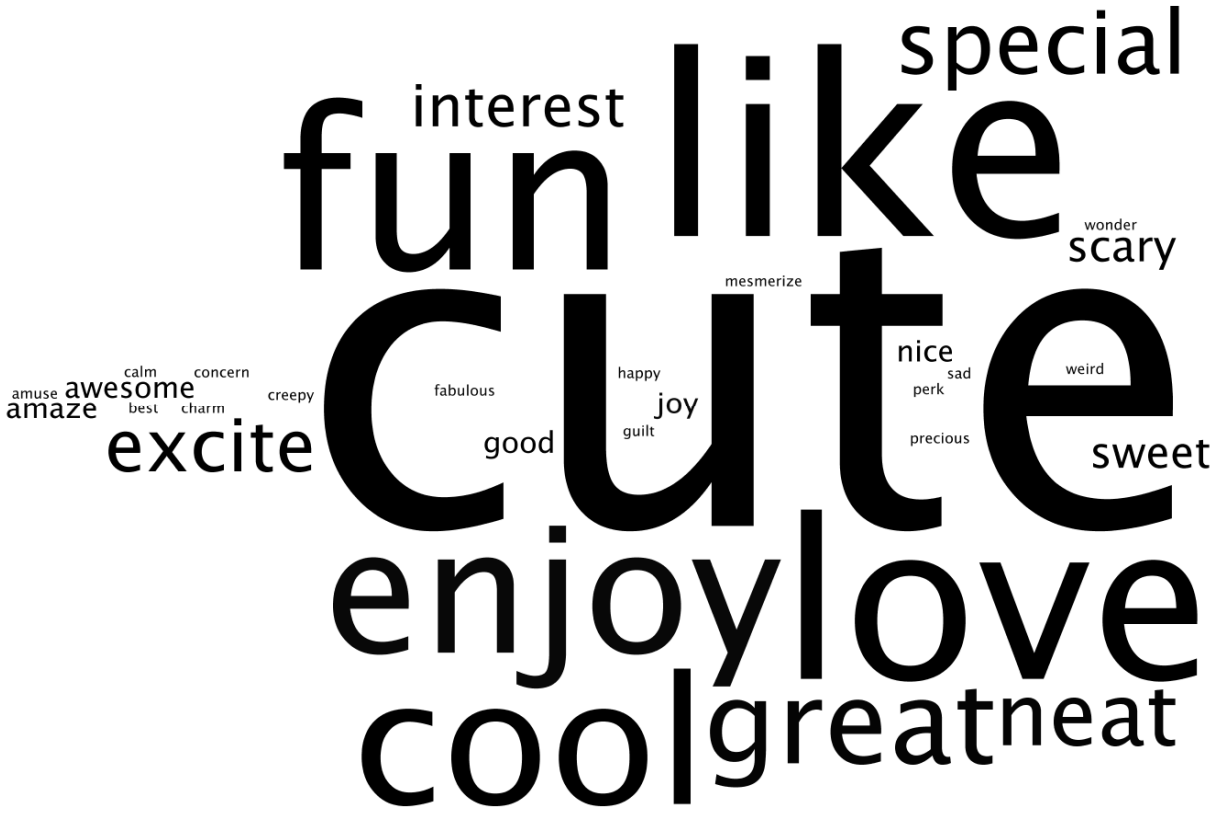
Table 2.5: Visitors' "special moments" (emotional responses) while in Wild About Otters

Note: Some visitors gave a multifaceted response that fit more than one category, so the frequency of responses exceeds the number of visitors who responded. Examples of visitor quotes for each category, as well as further explanation of the coding process appear in *Appendix F*.

Visitors' "special moments" while in Wild About Otters	Frequency	Percent
Emotional connection directly with exhibition elements	**162**	**69%**
The otters on exhibit	115	49%
Non-animal exhibits	23	10%
Other (than otter) animal exhibits	16	7%
General emotional connection with the exhibition	8	3%
Emotional connection between someone or something and the exhibition elements	**63**	**26%**
Children and otters on exhibit	30	13%
Children and non-animal exhibits	19	8%
Pets and otters on exhibit	6	2%
General connection between someone and the exhibition	6	2%
Pets and other animal exhibits	2	1%
No special moments	**11**	**5%**
Total responses	**236**	**100%**

In addition to the content analysis of visitors' description of their "special moment" in Wild About Otters, the emotion words visitors' used were also analyzed. By a large margin, visitors used the word "cute" (usually applied to otters) in the description of their emotional experiences. Other words used by many visitors were "like," "love," "fun" and "enjoy" (Figure 2.1). [17]

Figure 2.1: Emotion words used by visitors when describing their "special moment" in Wild About Otters



[17] The data in *Figure 2.1* is displayed as a tag cloud (or word cloud), where the frequency of specific text is represented in relative size—in this case, the more frequently the emotion word was used by visitors, the larger the word appears in the *Figure*. This display was created using the Wordle software application found at http://wordle.net.

Bilingual graphic panels interviews with visitors who speak Spanish

Structured interviews were conducted with visitors who spoke Spanish to determine the use of and reaction to the bilingual graphic panels featured in Wild About Otters. The interviews were designed to answer four main research questions:

- How are visitors who speak Spanish using the bilingual graphic panels?
- If these visitors do not use/read the graphic panels, why don't they?
- What are these visitors' reactions to the amount of information presented on the bilingual graphic panels?
- How much information do visitors who speak Spanish prefer to have translated on a graphic panel and why?

Method

During the Aquarium's *Monterey County Open House* event in December 2007, 100 randomly selected visitors who spoke Spanish at least some of the time at home were intercepted by researchers in the 13-species section of the exhibition.[18] The initial intercept, spoken in English, asked visitors if they spoke Spanish. If so, they were then given the option of conducting the interview in Spanish or English. The large majority of interviews (84%) were conducted in Spanish, and 16% were conducted in English.

Of the visitors interviewed, 43% spoke Spanish *all of the time at home*, 32% spoke Spanish *most of the time at home* and 25% spoke Spanish *some of the time at home*.

Researchers instructed interviewees (and the other members of their group) to use one of two pre-chosen interactive exhibits. When the group had finished using the interactive, the originally selected visitor was interviewed.[19] Researchers chose the Neotropical otter exhibit and the Hairy-nosed otter exhibit based on the close proximity of the interactives' corresponding bilingual graphic panels. Just over half (58%) of the interviews were conducted at the Neotropical otter exhibit and 42% were conducted at the Hairy-nosed otter exhibit.

[18] The nine-day *Monterey County Open House* special event period was chosen by researchers since there have historically been more visitors who in attendance who speak Spanish. During this event, people who reside in Monterey County can visit the Aquarium for free. Those who visit for free during the Open House (typically over half of all visitors during this event) are more likely than those who do not visit for free to speak Spanish.

[19] See *Appendix G* for the interview instrument.

3.1. *How are visitors who speak Spanish using the bilingual graphic panels?*

Nearly three-quarters (74%) of visitors interviewed read the graphic panel while using the interactive exhibit. Of these visitors, the majority (77%) read at least part of the Spanish language featured on the graphic panel with over half (59%) reading only the Spanish language parts of the graphic panel (Table 3.1).

Also, visitors who speak Spanish *all of the time at home* were more likely to read only the Spanish parts of the graphic panel.

Table 3.1: Language read on bilingual graphic panel by visitors who speak Spanish

Language read	Frequency	Percent
Spanish only	44	59%
English only	17	23%
Both Spanish and English	13	18%
Total responses	**74**	**100%**

During their interview, the visitors who read the graphic panel while using the interactive were asked to highlight the parts they read on a paper copy. The most frequently read text was the subhead in the Spanish section of the Neotropical otter panel. The most frequently read parts of the Hairy-nosed otter panel were individual words in the body of the Spanish language text, like "*nutria*," "*40 años*" and "*otros sobreviven*."

Those small differences aside, the Spanish language text on both panels was read far more frequently than the English text, regardless of amount of Spanish spoken at home (Figures 3.1 and 3.2).

Figure 3.1: Neotropical otter graphic panel

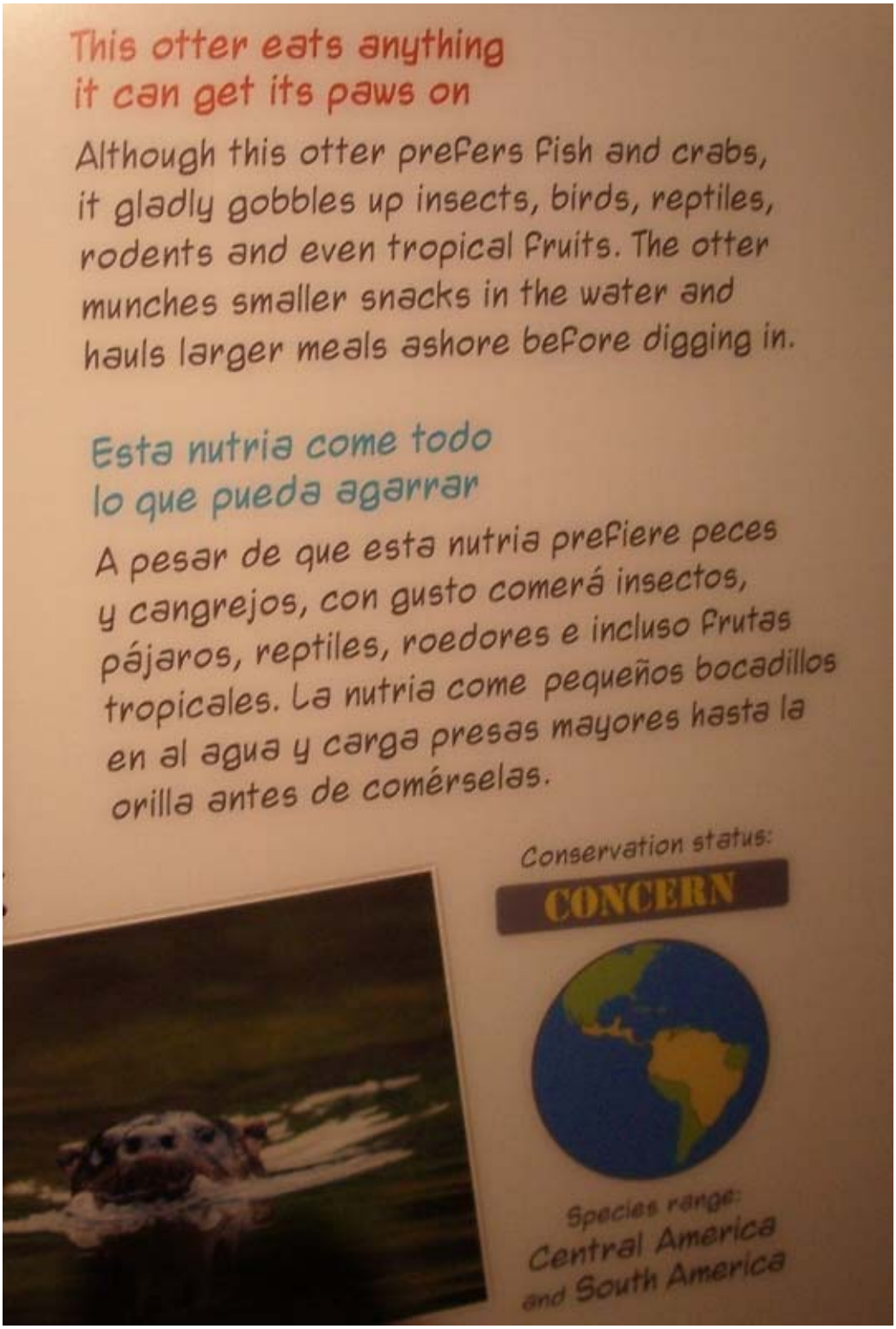
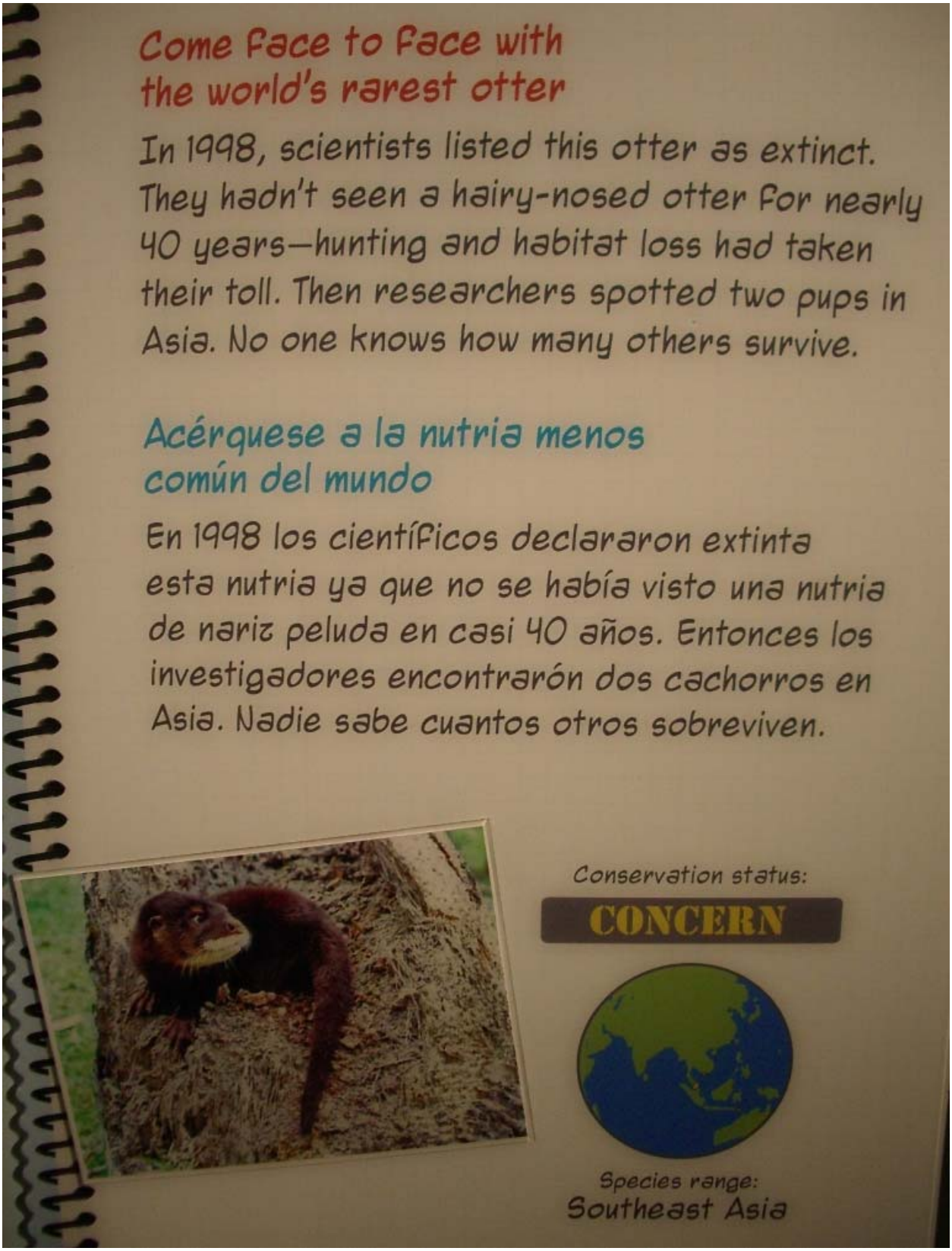


Figure 3.2: Hairy-nosed otter graphic panel



3.2. *If visitors who speak Spanish do not use/read the graphic panels, why don't they?*

About one-quarter (26% or *n*=26) of visitors interviewed did not read the graphic panel while using the exhibit; there were no differences based on the amount of Spanish spoken at home. These visitors were then provided a list of possible reasons why they did not read the panel.

Many of these visitors did not see the panel, while *some* were busy helping their kids use the exhibit or were too focused using the exhibit themselves.

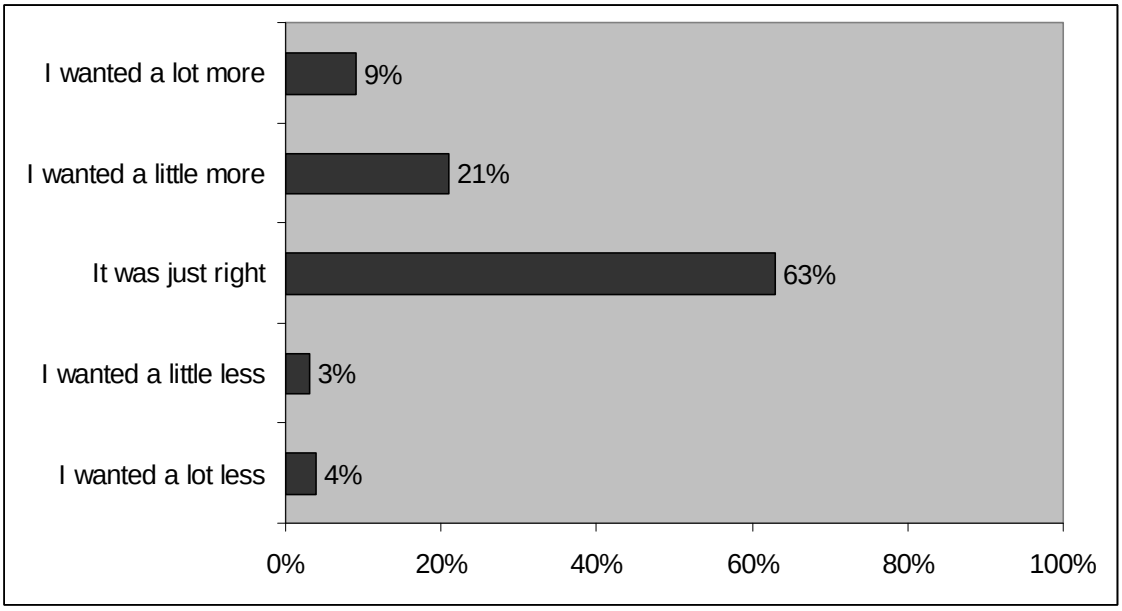
Also, a *few* visitors noticed the panel (or only the photos on the panel), but it seemed like too much to read or they do not like to read labels.

3.3. *What are these visitors' reactions to the amount of information presented on the bilingual graphic panels?*

Researchers asked all visitors interviewed to take another (or a first) look at the graphic panel that corresponded with the exhibit they used and were asked what they thought of the amount of information on the panel.

Visitors were then provided a range of options from which a majority (63%) thought the amount of information on the panel *was just right* while another 21% *wanted a little more* information; there were no differences based on the amount of Spanish spoken at home (Figure 3.3).

Figure 3.3: Visitors' reactions to the amount of information presented on the bilingual graphic panels



3.4. How much information do visitors who speak Spanish prefer to have translated on a graphic panel and why?

When visitors were presented with three options for the amount of graphic panel translation into Spanish—the exhibit title only; the title and the subhead; or the title, the subhead and the text—the vast majority (86%) preferred the latter option with the most Spanish translation, and there were no differences based on the amount of Spanish spoken at home (Table 3.2).

Table 3.2: Preferred amount of graphic panel translation from visitors who speak Spanish

Amount preferred	Frequency	Percent
Exhibit title, subhead and text	87	87%
Exhibit title and subhead	9	9%
Exhibit title only	4	4%
Total responses	**100**	**100%**

When the visitors who preferred the most Spanish translation were asked about their preference, a vast majority of this group (87%) said more translation provided more complete information and was easier to understand. By translating the entire graphic panel into Spanish, visitors who speak Spanish thought the Aquarium could better communicate content and they would be able to learn more information.

In addition, a few visitors said that more translation was helpful for learning English (and/or Spanish) words for adults and children alike. Also, more translation made communication easier within the visitor's group, especially between parents and children. Finally, more translation provided an equal opportunity and was more accommodating for visitors who speak Spanish (Table 3).

Table 3.3: Visitors' reasons for preferring the exhibit title, subhead and text translated into Spanish

Note: Examples of visitor quotes for each category appear in *Appendix H*.

Visitors' reasons for preferring the entire graphic panel be translated into Spanish	Frequency	Percent
More translation in Spanish provides more complete information that was easier to understand	76	87%
More translation was helpful for learning English and/or Spanish	5	6%
More translation made it easier to communicate within the visitor's group	3	3%
More translation provides equal opportunity for visitors who speak Spanish	3	3%
Total responses	**87**	**100%**

The preference for the most Spanish translation was not limited to those visitors who read only Spanish. Many visitors who read only the English, and even those who read none of the panel, preferred to have all the information translated. This finding is evidence that translation preferences are not solely based on the communication of content. While there may be a multitude of reasons, some of the additional reasons that emerged as factors into translation preferences were learning vocabulary in each language and providing equal opportunity for visitors who speak only Spanish.

Appendix A: Background on timing and tracking expectations

One of the difficult aspects of interpreting results from timing and tracking studies is defining a "normal" amount of time spent and/or defining a "typical" percentage of stops. The quotes below, from Beverly Serrell's *Paying Attention: Visitors and Museum Exhibitions* (p. IX), provides some context to compare findings from this study with findings from a meta-analysis that focused on a variety of 110 exhibitions in museums nationwide.

- "In 80% of the exhibitions, the average total visit time was less than 20 minutes regardless of the size or topic of the exhibition."

- "Frequency distributions of time spent in exhibitions showed that most visitors spend relatively little time and fewer visitors spend longer times."

- "Visitors typically stopped at about one-third of the exhibition elements."

- "In general, the amount of time visitors spent in an exhibition was directly and positively related to the number of elements at which they stopped."

- "Comparisons across groups of exhibitions suggest that time spent and stops made differed among three subgroups (large exhibitions, old or pre-renovation exhibitions, and diorama-like exhibitions), but did not differ significantly among exhibition topics or types of museums."

- "Among the 110 exhibitions in this study, exceptionally thoroughly used exhibitions were uncommon. These included exhibitions that charged a fee, were newly opened, contained elements that were extremely captivating, or attracted an audience that was apparently very intentional about being thorough."

Appendix B: Percentage of visitors attending to each exhibit

Exhibit	Proportion attending
African otter family enclosure: all views	92%
African otter pair enclosure: all views	82%
Asian otter enclosure: all views	79%
Asian otter view two	69%
African otter family view three	65%
African otter family view one	61%
African otter pair view two	60%
African otter family view two	57%
Vine snake tank	49%
Asian river tank	45%
Sea otter/river otter difference interactive	44%
13 species: North American river otter slide	42%
Lake Tanganyika tank	39%
African otter pair view one	37%
Lake Chad tank	36%
Asian frog tank	36%
African otter pop-up view	35%
Archerfish tank	34%
Otter art room	33%
13 species: Giant otter interactive	32%
Intro/Binocular bank	31%
Lake Victoria tank	29%
13 species: Asian small clawed otter interactive	28%
African otter family view four	27%
John Cleese end video	25%
Sea otter bronze sculpture/touchable model	24%
Asian otter pop-up view	23%
13 species: Hairy-nosed otter interactive	22%
Asian otter view one	21%
Asian otter water conservation video	21%
Sea otter conservation video	15%
13 species: Eurasian otter video	13%
13 species: Neotropical otter interactive	13%
Asian otter view three	13%
African otter pair pop-down view	11%
13 species: Water conservation video	11%
13 species: African spotted-necked interactive	11%
13 species: Cape/Congo otter interactive	11%
13 species: smooth-coated otter video	9%
Southern sea otter panel	9%
13 species: Southern river otter interactive	9%
13 species: Introductory panel	6%
Exhibition title wall	5%
African otter family introductory panel	5%
Sea otter introductory panel	3%
13 species: Marine otter panel	3%
Asian otter introductory panel	3%

Appendix C: Average time spent by visitors attending to each exhibit

Exhibit	Time attending to (min:sec)
African otter family enclosure: all views (*all otter conditions*)	3:45
African otter family enclosure: all views (*otters active*)	4:23
African otter family enclosure: all views (*otters asleep*)	1:26
Asian otter enclosure: all views (*all otter conditions*)	3:19
Asian otter enclosure: all views (*otter active*)	3:30
Asian otter enclosure: all views (*otter asleep*)	1:44
African otter pair enclosure: all views (*all otter conditions*)	2:23
African otter pair enclosure: all views (*otters active*)	3:07
African otter pair enclosure: all views (*otters asleep*)	1:11
Otter art room	2:18
Intro/Binocular bank	1:35
Vine snake tank	1:19
Asian otter view two (*all otter conditions*)	1:18
Asian otter view two (*otter active*)	1:20
Asian otter view two (*otter asleep*)	:54
Asian otter view one (*all otter conditions*)	1:13
Asian otter view one (*otter active*)	1:20
Asian otter view one (*otter asleep*)	:28
Sea otter/river otter difference interactive	1:01
African otter family view two (*all otter conditions*)	1:00
African otter family view two (*otter active*)	1:11
African otter family view two (*otter asleep*)	:24
13 species: Neotropical otter interactive (feeding game)	1:00
African otter family view one (*all otter conditions*)	:59
African otter family view one (*otter active*)	1:09
African otter family view one (*otter asleep*)	:15
African otter pair view two (*all otter conditions*)	:56
African otter pair view two (*otter active*)	1:13
African otter pair view two (*otter asleep*)	:26
African otter family view four (*all otter conditions*)	:54
African otter family view four (*otter active*)	1:03
African otter family view four (*otter asleep*)	:31
African otter family view three (*all otter conditions*)	:52
African otter family view three (*otter active*)	1:02
African otter family view three (*otter asleep*)	:25
Archerfish tank	:49
13 species: North American river otter slide	:48
African otter pair view one (*all otter conditions*)	:47
African otter pair view one (*otter active*)	1:01
African otter pair view one (*otter asleep*)	:28
Lake Chad tank	:46

Appendix C (cont.): Average time spent by visitors attending to each exhibit

Exhibit	Time attending to (min:sec)
African otter pair pop-down view (*all otter conditions*)	:40
African otter pair pop-down view (*otter active*)	:53
African otter pair pop-down view (*otter asleep*)	:17
13 species: Asian small-clawed otter interactive	:38
Asian frog tank	:38
13 species: African spotted-necked interactive	:35
13 species: Hairy-nosed otter interactive	:35
13 species: smooth-coated otter video	:34
Asian river tank	:33
13 species: Water conservation video	:33
Lake Victoria tank	:31
Lake Tanganyika tank	:28
Sea otter conservation video	:26
13 species: Giant otter interactive	:25
Asian otter view three (*all otter conditions*)	:25
Asian otter view three (*otter active*)	:26
Asian otter view three (*otter asleep*)	:07
Sea otter bronze sculpture/touchable model	:24
13 species: Cape/Congo otter interactive	:24
African otter pair pop-up view (*all otter conditions*)	:23
African otter pair pop-up view (*otter active*)	:27
African otter pair pop-up view (*otter asleep*)	:17
African otter pair pop-down view (*all otter conditions*)	:23
African otter pair pop-down view (*otter active*)	:24
African otter pair pop-down view (*otter asleep*)	:15
Asian otter water conservation video	:21
Sea otter introductory panel	:20
Southern sea otter panel	:19
John Cleese end video	:19
13 species: Southern river otter interactive	:19
13 species: Eurasian otter video	:15
13 species: Introductory panel	:14
Exhibition title wall	:14
13 species: Marine otter panel	:14
Asian otter introductory panel	:08
African otter family introductory panel	:06

Appendix D: Exhibits by type and visitor time proportions by exhibit type

Table D1: Exhibits by type

Exhibit type	Exhibit
Animal tank (19)	African otter family enclosure (four views) African otter pair enclosure (four views) Archerfish tank Asian otter enclosure (four views) Asian river tank Frog tank Lake Chad tank Lake Tanganyika tank Lake Victoria tank Vine snakes
Interactive (12)	Intro/Binocular bank Sea otter bronze statue/touchable model Sea otter/river otter difference 13 species: African spotted-necked otter 13 species: Cape/Congo otter 13 species: Giant otter 13 species: Hairy-nosed otter 13 species: Neotropical otter (feeding game) 13 species: North American river otter slide Otter art room 13 species: Asian small-clawed otter interactive 13 species: Southern river otter
Graphic panel (7)	African otter introductory Asian otter introductory Exhibition title wall Sea otter introductory Southern sea otter introductory 13 species: Introductory panel 13 species: Marine otter
Video (6)	Asian otter water conservation John Cleese reading (at end) Sea otter conservation 13 species: Eurasian otter 13 species: Smooth-coated otter 13 species: Water conservation

Table D2: Visitor time proportions by exhibit type

Type of exhibit	Proportion of total time
Animal tank	45%
All interpretive exhibits	19%
Interactive	16%
Video	2%
Graphic panel	1%
Down time	36%

Appendix E. Structured interview instrument

Date: _____ Interviewee Gender: F M Interviewer/Number:_____

Hi, the aquarium is trying to get some feedback about the *Wild About Otters* exhibit…Do you have a few minutes to answer some questions?

1. Is this your first visit to the aquarium? Yes No

[*If No to Q1*]: 1a. Is this your first visit to *Wild About Otters*? Yes No

[*If No to Q1a*]: 1b. How many times have you visited this exhibition before today? _____

2. Were any of the African otters, near the beginning of the exhibit, active when you went through?

Active Asleep Absent

2a. How about the Asian otters, near the end of the exhibit? Active Asleep Absent
[*Show photos if needed*]

3. In your own words, what do you think *Wild About Otters* is about?

4. Please complete the following sentence about *Wild About Otters*: "I never realized that…"

5. Do you remember seeing or hearing anything about conservation in *Wild About Otters*?
Yes No

[*If Yes*]: 5a. What about conservation do you remember? [Anything else?]

5b. Do you remember where you saw that information specifically?

6. Would you please tell me about a special moment you may have had as you were going through the exhibit?

[*Prompt*]: Did you have any emotional connections with any part of the exhibition?

7. Are you a member of the aquarium? Yes No

8. What year were you born? 19_____

9. How many in your group, including yourself, are over 18? _____

10. How many are under 18? _____

11. What is your zip code (or country of origin)? _____

Thank you very much for your time!

Appendix F: Structured interviews coding scheme with visitor quote examples

Q3: What do you think Wild About Otters is about?

Introducing/showing/educating about otters

General introducing/showing/educating about otters
"[The exhibition is about] education about otters."

Otter lifestyle
"[The exhibition is about] otters and seeing them in their own environment and hearing them talk; seeing them play in the wild."

Variety of otters in the world
"[The exhibition is about] talking about all the different types of otters and seeing the different sizes of otters and different claw types."

Otter characteristics
"Well, they are very close to humans with their hands. They are playful. The otters are so cute."

Other animals that share otter habitats
"Otters and showing the ecosystem required to support fresh water things in tropical areas; the snakes, fish and all the other critters including otters."

Comparison between fresh water and sea otters
[The exhibition is about] the differences between freshwater and sea otters.

Conservation/protection/preservation

Otters
"[The exhibition is about] teaching our children how to protect otters around the world."

Fresh/clean water
"Making or sending a message to everyone to keep water clean for otters. It is also a lot of fun!"

Human effects
"To show us that humans change the environment. We can destroy the otters' way of life. When otters are extinct it is a sign of alert to humans."

Habitats/environment
"Saving and protecting the environment for them [otters] and other things, too; also to appreciate nature up close."

General conservation/protection/preservation
"[The exhibition is about] information and conservation."

I don't know

Appendix F (cont.): Structured interviews coding scheme with visitor quote examples

Q4: Please complete the following, "I never realized that…"

Differences between otter types/species

General differences between otter types/species
"[I never realized that] there are so many different kinds of otters."

Comparison between fresh water otters and sea otters
"The paws of the river otters are smaller than the sea otter's paws and the size differences between sea and fresh water otters."

Geographic locations
"[I never realized that] otters were living in Africa."

Fresh water otters
"[I never realized that] there were different kinds of fresh water otters. I thought this was about fresh water otters versus sea otters"

Otter characteristics

Subjective physical description
"[I never realized that] they stank so much and that their hands were shaped like paddles; also how cuddly they are."

Comparisons to people, pets and other animals
"[I never realized that] cat skeletons are very similar to otter skeletons, with the flexible spine."

Biological description
"[I never realized that] some otters were clawless."

Otter behaviors
"[I never realized that] otters could go under water so long and they only go on land to sleep."

Conservation information

Endangered/threatened animals
"[I never realized that] there are so many otters that are threatened.

Human impacts on otters
"[I never realized that] they are so helpless and affected by what we do. Everything that we do will play a part in how we can save them."

Fresh water/water
"[I never realized that] fresh water was vital to survival and it's being threatened."

Information about animals other than otters
"[I never realized that] the tree frogs got so big, I thought they were all super tiny."

Nothing/unspecific

Appendix F (cont.): Structured interviews coding scheme with visitor quote examples

Q5a: What about conservation do you remember?

Species (otters, frogs. etc.) survival issues

Otters need clean water/habitat
"They [otters] need clean water to function; for them it [clean water] is paramount."

Endangered species/extinction issues
"They [otters] are endangered; I didn't know that it was an issue with them. I thought there were plenty of them."

General species survival issues
"The general importance [of otters] and that knowledge plays an important part [in protecting them]."

Water conservation

General water conservation
"[I remember hearing about] the importance of conserving water."

Limited fresh/clean water
"Clean water, reducing development and healthy rivers. We need clean water just like they need clean water."

Human impacts/effects on ecosystems

(Over) Development
"They [land developers] are building up homes and developments that take away habitat from otters. They [otters] are almost endangered because of that."

Pollution
"Otters are an indicator species, they are the first things to go when water get polluted."

General human impact/effects on ecosystems
"It seemed to me man is encroaching on the fresh water depleting their [otters] food and resources."

Runoff
"Being careful with what you do at home because everything runs off into the ocean."

Improper waste disposal
"Disposal of certain kinds of waste can harm them [otters], even if it is dumped in an area far away from the ocean or rivers.."

Ecosystem protection/preservation
"We need to save their [otters] habitat or they could disappear."

Appendix F (cont.): Structured interviews coding scheme with visitor quote examples

Q5a: What about conservation do you remember? (continued)

Habitat conservation/preservation

General habitat conservation/preservation
"Habitats are a good indicator that the area is doing well."

Wetlands
"The wetland habitats making sure water clean. They [otters] need lush vegetation."

Lakes
"[I remember seeing] the disappearing lake [Chad], also habitats and their destruction."

Rivers
*"[I remember seeing] t*hat even though a stream or river is fast-moving, it still needs protection."

Forests
"[I remember hearing about] conserving the forest for the Asian otters."

Cats/disposal of cat litter
"Oh, kitty poop, don't let them poop outside."

All water is connected
"Clean up water in your area, because it all flows together."

Human/otter ecosystem health connection
"[I remember hearing about the] connection with otters to the environment to us, to all of us."

Nothing/unspecific

Appendix F (cont.): Structured interviews coding scheme with visitor quote examples

Q5b: Do you remember where you saw conservation information?

Exhibit types
- Videos (unspecific)
- John Cleese videos
- Graphics

Specific exhibits
- Thirteen species area
- Asian otter exhibit
- African otter exhibit
- Frogs
- Lake Chad
- Craft room
- Vine snakes
- Lake Tanganyika

Unspecific exhibit area
- Throughout
- At the end
- At the beginning
- At the middle

Did not remember specifically

Appendix F (cont.): Structured interviews coding scheme with visitor quote examples

Q6: Tell me about a special moment that you may have had in the exhibit

Emotional connection directly with exhibition elements
(The exhibition element—animals, interactives, videos, etc. was the subject of the visitor statement.)

The otters on exhibit
"When the Asian otters were all together, one was licking another and they were all so sweet to one another."

"Two otters chewing a piece of ice together, it looked like they were kissing and it was very cute."

Non-animal exhibits
"Seeing all the categories for endangered and threatened; a lot of otters are in these categories and it is concerning to me."

Other exhibit animals
"I thought the frogs were really cute. I have never seen frogs that looked like that."

General emotional connection with the exhibition
"It's sad that our earth is a hard place for them [otters] to live, it makes you feel guilty."

Appendix F (cont.): Structured interviews coding scheme with visitor quote examples

Q6: Tell me about a special moment that you may have had in the exhibit (continued)

Emotional connection between someone or something and the exhibition elements
(A person or thing, usually a child or pet was the subject of the visitor statement.)

Children and otters on exhibit
"Watching them [otters] play reminded me of my grandkids, they are cuddly and close, but will mess around too, with boundless energy."

"We were here with four little kids, they just loved watching the otters, especially how they acted like brothers and even fought like our kids."

"It was fun to watch the kids learning about the otters. They learned a lot."

Children and non-animal exhibits
"[It was] funny watching kids slide where otters were sliding."

Pets and otters on exhibit
"There was one sleeping on its back; they remind me of my cat."

"The African otters were so playful, two were wrestling, one got mad and was pulling on the otter's cheek; they're like my dogs."

General connection between someone and the exhibition
"I related it [exhibition] back to a film I saw in London called, "Talk of Otter", which is about otter survival."

Pets and other animal exhibits
"One of the things was the beta fish; we put them in our aquarium at home, so it was nice getting to see it in its natural habitat."

No special moments

In addition to the above, if an emotion word (ex. cute, love, like, joy, etc.) was present in a visitor statement, it was coded as its root word (ex. loved = love) and compiled in a separate variable.

Appendix G. Bilingual graphic panels structured interview instrument

Note: All English text was translated into Spanish and Spanish text below was not translated into English.

Excuse me, I work here at the aquarium and we're interviewing Spanish-speaking visitors, do you speak Spanish…

[If no] Thank you, but we're focusing on Spanish speakers today. Enjoy the rest of your visit.

[If yes] Estamos hablando con los visitantes acerca de las exhibiciones en *Wild About Otters*, ¿tiene un minuto para ayudarnos? ***[If visitor doesn't understand, skip to 2]***

1. ¿Prefiere que le haga las siguientes preguntas en español o en inglés? ***[If English, flip page]***

2. How often do you speak Spanish at home? ***[Read options and circle chosen option]***

All of the time Most of the time Some of the time Never

[If don't speak at home] That's it, thank you and enjoy the rest of your visit.

3. Is this your first visit to the aquarium? Yes No

[If no] 3a. Is this your first visit to this exhibit about otters? Yes No

[If no] 3b. How many times have you visited this exhibit before today? _____

Please come over here to this exhibit and use it as if it were a normal part of your visit. I'll be over here ***[wait close by]*** and you can just let me know when you are finished…

4. While you were using this exhibit, did you read any part of this label ***[Point to focus panel]***? Yes No

[IF YES, hand copy of label and pen] 4a. Please mark the parts of this label that you read. ***[Skip to 5]***

[IF NO, show options list] 4b. From this list, please tell me the reasons that you did not read the label? **Any more?** _____ _____ _____ _____ _____ ***[other text]*** _____

[If picked more than one] 4c. Of the reasons you picked, which was the main reason? _____

5. ***[Show options list]*** From this list, what do you think about the amount of information on the label? ____

6. From these options, which one do you prefer in terms of the amount of information translated into Spanish?

[Show photos and explain options] Why did you choose that one?

7. Are you a member of the aquarium? Yes No

8. What year were you born? 19_____

9. How many in your group, including yourself, are over 18? _____

10. How many are under 18? _____

11. What is your zip code (or country of origin)? _____

Thank you for your time!

Appendix H: Coding scheme with visitor quote examples for graphic panel translation

More translation in Spanish provides more complete information that was easier to understand

"[I prefer the option with the most translation] because it gives more information. Having the whole thing translated is important for both enjoyment and education, learning experiences."

"[I prefer the option with the most translation] because I think it's important for those who read in Spanish that they learn everything, with things like what they eat, how they eat, where they live, etc."

"I understand more because it's in Spanish."

More translation was helpful for learning English and/or Spanish

"[The option with the most translation is] better for the children who don't know English or are learning it."

"I can learn new vocabulary; I'm from Fresno and I didn't know the word for otter in Spanish."

More translation made it easier to communicate with within visitor's group

"[I prefer the option with the most translation] because Spanish is the most common second language. Also, it's easier to explain [information] to the kids."

More translation provides equal opportunity for visitors who speak Spanish

"It's fair to have it [graphic panel] in both languages."