

WZAM³

Why Zoos & Aquariums Matter
Wave 3: STEM Matters

Method and Instrumentation COSI's Center for Research and Evaluation's WZAM 3 Studies

COSI, CRE
2021



This project was completed with support from the National Science Foundation (1612699)



CENTER FOR
RESEARCH &
EVALUATION

333 West Broad Street Columbus, OH 43215

Center for Research and Evaluation Team:

Joe E. Heimlich, PH.D., Project Lead

Mary Ann Wojton, Ph.D., Team Manager

Justin Meyer, Ph.D., Lead, Statistical Analysis

Gary Timko, Ph.D., Lead, Qualitative Analysis

Preethi Mony, Ph.D., Lead, Literature Analysis

Rebecca Nall, BA, Team Manager

About CRE:

As an interdisciplinary team of social scientists, COSI's Center for Research and Evaluation generates and shares knowledge about informal and nonformal learning experiences for learning communities throughout the nation and beyond, as well as for the good of our professional communities.

- We work closely with clients, partners, and stakeholders to formulate and answer research and evaluation questions in ways that usefully advance equitable learning opportunities.
- We creatively employ, refine, and implement established research and evaluation methods while seeking to develop new ones to best answer the questions posed.
- We contribute to both academic and practical knowledge-sharing in a variety of fields, offering resources and pathways for social scientists and other professionals to study these experiences systematically.

Contents

Overview	5
Background	6
Literature review (study component 1)	6
Exploratory study (study component 1)	7
National study of visitors (Study component 2)	7
Specific information on scales and measures (study component 2)	9
<i>Purpose Scale.</i>	9
<i>Source of Information scale</i>	9
<i>Nature Feelings scale.</i>	10
<i>Interest in Environment</i>	11
<i>Belief/Openness to Conservation Mission.</i>	12
Describe Zoo scale (DZ).....	14
<i>Perceptions about the institution.</i>	16
<i>Competence and Quality of the Institution.</i>	16
<i>Specific Zoo Experience scale</i>	18
<i>Learning Outcomes</i>	18
Additional Measures	19
Social Role	19
Life stage and career stage	19
<i>Spirituality.</i>	23
<i>Nature of the Visit.</i>	24
<i>Social Media.</i>	25
Final instrument development stage (study component 2)	26
Learning from Zoos and Aquariums (Study component 3)	27
Collaborating Zoos and Aquariums.....	28
References used in building the study.....	29
Appendix A: Factor Map	37
Appendix B: Protocol and interview schedules (study component 1)	47
Interview Protocol for Zoo Members and Visitors	Error! Bookmark not defined.
Appendix C: Codebook for preliminary interviews (study component 1)	57
Post-Visit Interview	78
Appendix D: Entry questionnaire (study component 2)	84

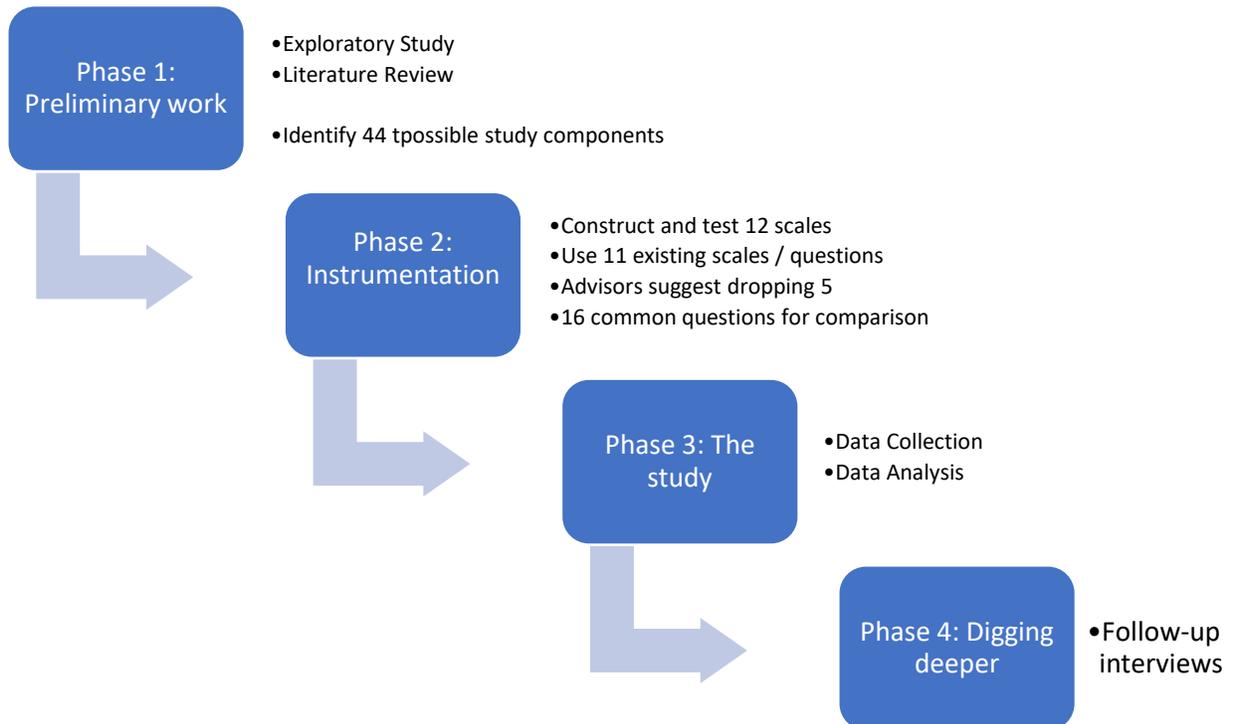
Appendix E: Entry measure, Spanish (study component 2) 91
Appendix F: Exit questionnaire (study component 2) 104
Appendix G: Exit questionnaire, Spanish (study component 2) 112
Appendix H: Interview schedule (study component 3) 128
Appendix I: Codebook (study component 3) 132

CRE Methods and Instrumentation: Why Zoos and Aquariums Matter 3

Overview

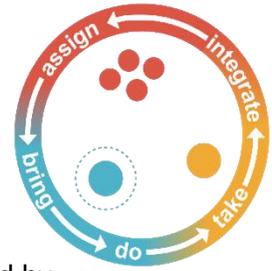
This paper describes the methodology and the development of the instruments for collecting and analyzing data to better understand 1) what people bring with them to their visit, 2) what people do during a visit, and 3) what people take away from a visit. Elements of what they bring intersect with Knology's work, and what they do and what they take away intersect with Oregon State University's work on WZAM3.

COSI's Center for Research and Evaluation (CRE) led a study was conducted in four phases with three study components. These phases serve to organize the remainder of this report:



Background

The *Why Zoos and Aquariums Matter 3, STEM Matters*, was designed to look at zoos and aquariums in the larger context of society and how that relates to an individual's lifespace. The study involved three research groups looking at the cycle of 1) the trust in, and role *assigned* zoos and aquariums in society, 2) what an individual *brings* to a visit (context of a visit in a person's life), what visitors *do* during visits, what visitors *take* away from a visit, and then how people *integrate* what happens during a visit which might influence the larger social assignment of trust and role (See diagram to the right). This cycle illustrates the flow that shaped the design of the larger study conducted by Knology, Oregon State University STEM Research Center, and COSI's Center for Research and Evaluation. This methodology captures the design of the research led by COSI's Center for Research and Evaluation (CRE).



CRE's study focused on bring, take, and do aspects of the cycle. The project was designed with intentional overlap for triangulation of findings. Therefore, some of CRE's study questions overlapped with the assigned and integrated work led by Knology, and strongly overlapped on the do and take studies led by Oregon State University.

Two research questions framed the three components of this study:

1. What is the individual condition of the visit? How is the visit contextualized in the life stage and learning ecology of the individual?
2. What are common entry themes and exit outcomes tied to those themes, and how dominant is each across the visiting population?

This white paper presents CRE's research design and instrumentation development process.

Literature review (study component 1)

We looked through the literature from the fields of visitor studies, leisure studies, museum studies, education, tourism, psychology, etc. to identify studies related to the themes identified in the exploratory study. CRE used the literature to identify relationships between visitor identity themes (44 themes emerged), visit experience and visitor outcomes from a visit. We then grouped the themes into eight proposed factor groups that influence visitor experience and outcomes.

- I. Perception v trust
- II. Source credibility
- III. Openness to conservation mission & relation to mission
- IV. (perception of) zoo mission
- V. Value
- VI. Connection to nature
- VII. Involvement (with zoos)
- VIII. Placeness

We also used the literature review to identify relevant scales and items that have been successfully used to measure these factors or components of these factors in different contexts. Most of the scales were very specific to the context of the study, or were not designed for a visitor to an institution and, in many cases, were about animals or nature in wild or natural areas and spaces. Thus, we were able to pull scales and items from scales from the literature to create an item bank. We also added new items where suitable items were not found in the research literature. Some of the scales we used include the revised New Environmental Paradigm scale (Dunlap et al., 2000) and part of Knology's (nee New Knowledge Organization) trust scales. We then organized themes into a factor map that was tied to sources of various scales and items (see Appendix A).

The WZAM3 project had a team of external advisors (from academia, zoos, aquariums, and research groups) to help think through the research. These research advisors were closely involved in making determinations of what would/would not be asked of visitors. The advisors were also invaluable in providing feedback on questions and scale structures. WZAM3 also had program advisors (zoo and aquarium educators and other professionals) also were important in providing insights into what would work for the study and in the information that would likely be of most value to education, marketing, administration, and other zoo/aquarium departments.

Exploratory study (study component 1)

In 2017, CRE used personal narratives to identify factors that visitors use to describe their current life stage and journey/pathway to current stage. We built these narratives through interviews of members at 4 zoos and 3 aquariums. These were 45 to 60-minute interviews conducted with a zoo or aquarium member before a visit to the institution, and a 15-minute post interview at the end of their visit. Ultimately, we had 60 matched pre and 60 matched post visit interviews, 36 entry only, and 27 exit-only for 158 interviews with 123 individuals. Appendix B includes the full protocol for the interviews.

From the interviews, we identified 33 themes and created a code book and a code checklist. The visitor responses were coded using these tools. See Appendix C.

National study of visitors (Study component 2)

For this study component, the sample included zoo/aquarium (z/a) members recruited by the membership office at each of the participating institutions. CRE conducted Interviews in a classroom or office usually near the entrance to the institution. CRE provided refreshments, as well as puzzles, games, and crafts for any children who might be visiting with a caretaker.

CRE tested the items from the item bank to make a survey instrument comprised of 12 questions with a total of 141 items. This following section describes the construction of scales using the item bank with the following items tested and items kept:

- Purpose – 5 items (kept all five)
- Source of information Interest – 12 items (reduced to 7)
- Nature feelings – 12 items (reduced to 6)
- Interest in environment – 10 items (reduced to 5)
- Belief (Openness to conservation mission) – 15 items (scale eliminated)
- Describe Zoo – 19 items (reduced to 11)
- General Zoo Experience – 15 items (reduced to 9)
- Specific zoo experience – 20 items (reduced to 9)

Four scales tested items that would measure visitor responses to questions asked by Knology in their national panel study:

- Competence of the institution/Value of zoo– 11 items (reduced to 8)
- Competence and quality of the institution – 9 items
- Responsibility to Inform – 7 items (tested and included in learning outcomes measure)
- Financial – 5 items (1 remained and included in outcomes measure)

Only items that measured psychometric factors were included in the instrument for item testing. Items related to descriptors such as visitor demographics, membership status, visit group composition, etc. were excluded from this testing. The scale development/item testing was conducted using an online research panel (N=502). A screening question was used to limit participants to those who had visited a zoo or aquarium within the previous year.

Additionally, some items were tested for response reaction with visitors to COSI. We did this to verify or identify appropriate and effective wording structures and ways of asking. These item tests were primarily to determine the structure of how to ask certain descriptives and demographics in ways that were culturally sensitive, inviting, and would obtain the desired data.

With the panel responses, confirmatory and exploratory factor analysis were used to reduce items and eliminate redundant scales resulting in a final 8 scales with 60 items. These scales were then used to create the entry and exit instruments. Descriptor items were included as relevant. Details on the scale reductions and the scale measures follow.

Note: for the online panel, we framed the questions only as “zoo.” For the instruments, we had separate instruments for zoo and aquariums and did not use either “zoos and aquariums” or “z/a.” While there are zoos that have aquariums, the visit is usually referred to as *the zoo*.

Specific information on scales and measures (study component 2)

Purpose Scale. The items for this scale were adapted from Zogsby's (2007) question about the mission of the Bronx Zoo. Four of the items are directly from the options provided, while the fifth "take care of its animals" was added based on the responses to the "Other" option on the question. During our item testing, all 5 items were found to hold together as a scale, and no items were dropped. Final scale Chronbach's Alpha = .847. The ANOVA found a statistically significant difference between items using a Friedman's Chi-Square ($F=185.235$, $p<.001$). Test panel Mean=5.905, range = .689.

The final items were following the prompt "To what extent do the following statements reflect your feelings toward nature?"

- Educate about, and connect people to wildlife
- Provide pleasure and enjoyment
- Provide economic and cultural benefits to the community
- Be actively involved in worldwide conservation efforts
- Take care of its animals

Source of Information scale. We started with the findings from Knology's source credibility work and asked items were about three areas in which zoos and aquariums can serve as sources for information with public credibility: environmental issues, animals and endangered species, and wildlife conservation. Each of these was asked using the key words 1) trustworthy, 2) accurate, 3) unbiased, and 4) reliable. The original scale of 12 items started with a reliability of Cronbach's Alpha = .941. To reduce the R slightly, and encourage greater variance in items, we began by isolating four items that seemed to cluster around the global mean (5.379) and had very similar standard deviations. These items were: trustworthy source on environmental issues; accurate source of information on environmental issues; reliable source of information on wildlife conservation; and unbiased source of information on animals, and their respective means of 5.27; 5.22; 5.52; and 5.54. Given their proximity to the global mean, we hoped these items would represent the full scale. However, these isolated items yielded a much lower reliability of 0.832. Thus, we started from the full set of items and one by one, dropped items with the least contribution to the full-scale reliability. The following table shows each item dropped, the full scale's reliability before it was dropped, and then the full scale's reliability (Cronbach's Alpha) after it was dropped.

Table 1. Scale reduction and reliability Source of Information scale

Step #	Item	Total N of items in scale before dropped	Full item scale reliability before dropped	Full item scale reliability after dropped
1	Reliable: environmental issues	12	0.941	0.938
2	Reliable: wildlife and conservation	11	0.938	0.934

3	Reliable: animals and endangered species	10	0.934	0.931
4	Unbiased: environmental issues	9	0.931	0.925
5	Unbiased: wildlife conservation	8	0.925	0.920

After item reduction we were left with 7 of the original 12 items. Note that all the items asking about reliable information were dropped. During scale testing, the 7 remaining items were found to hold together as a scale, and no additional items were dropped. Final scale Chronbach’s Alpha = .920. The ANOVA found a statistically significant difference between items using a Friedman’s Chi-Square ($F=187.718$, $p<.001$). Test panel Mean=5.53 with a range of .552.

Final scale items:

Zoos

- are a trustworthy source for information on environmental issues
- provide accurate information on environmental issues
- provide unbiased information about animals and endangered species
- are a trustworthy source for information on wildlife conservation
- provide accurate information about wildlife conservation
- are a trustworthy source for information on animals and endangered species
- provide accurate information about animals and endangered species

Nature Feelings scale. For this scale, we use most of the “Existing Connection to Wildlife” by Sibkins and Powell (2013), and one item from their “Conservation Caring” scale. The original items tested included all the items of the Existing Connection to Wildlife scale, 3 items from Sibkins and Powell’s Conservation Caring scale, and items from a couple of other studies (Ballantyne & Packer, 2016 and Fraser & Sickler). After item reduction we were left with 5 of the 6 items of the Existing Connection to Wildlife scale, and 1 item from the Conservation Caring scale (wildlife protection as a priority). The dropped item was “I enjoy watching all types of wildlife”.

The original Existing Connection to Nature scale was adapted from the Relatedness to Nature [Nisbet et al., 2009] and Emotional Affinity to Nature [Kals et al., 1999] scales. Existing Connection to Wildlife was a strong predictor of Conservation Caring (b 1/4 0.60, $P < 0.05$) and a weak predictor of biodiversity-oriented behaviors (b 1/4 0.070, $P < 0.05$). It was not a significant predictor of Species Oriented Behavior.

We used an exploratory factor analysis with varimax, orthogonal rotation to investigate whether full item list would cluster into more than one factor. All items explained 0.512 of the cumulative variance as one factor. The items appeared to best split into two factors, with all loadings greater than 0.436, explaining a combined 0.619 of the cumulative variance, and only two crossover loadings that were greater than 0.400. Splitting into more than two factors did not yield any loading on more than two factors.

Table 2. The two factor loadings with final items in boldface

	Factor 1	Factor 2
I appreciate living things		0.811
Nature experience are an important part of childhood		0.772
I would feel that an important part of a child's life was missing if s/he were not able to get out and enjoy nature from time to time		0.802
I would protest this site if I learned of the mistreatment of animals here		0.436
I actively seek opportunities to view wildlife	0.745	
I feel a deep connection to wildlife	0.794	
I am highly motivated by the need to interact with wildlife	0.829	
Wildlife protection must be society's highest priority	0.679	
I enjoy viewing all types of wildlife	0.466	0.582
I spend a lot of time learning about wildlife	0.829	
I have a responsibility to do all I can to protect wildlife	0.640	0.472
I seek out programs about animals and conservation on TV	0.581	

Having split the items into two factors, factor 1 had an overall reliability of .91 (Chronbach's Alpha), though we removed "I seek out programs about animals and conservation on TV as it read as inconsistent with the other items, and doing so only decreased the reliability to 0.917 thus resulting in the five items with a range of 6.53. The Anova revealed a $F=135.7578$, $p<.001$ and a Mean of 5.21 on the summated scale.

Factor 2 yielded a reliability of 0.849. However, deleting the item "I would protest this site if I learned of the mistreatment of animals here" further improved the scale reliability to 0.867. "I enjoy viewing all types of wildlife" contributed little to the reliability (0.865 if removed), so it was removed. The resulting scale had an $F=9.035$ with $p=.011$. The researchers made the decision to use the scale created from six items loading into factor 1 (bold items in Table 2).

Interest in Environment. In order to understand visitors' interest in wildlife and the environment, items from Ballantyne, Packer, and Hughes' 2009, engagement in conservation activities scale, Ballantyne & Packer's 2016 wildlife related interests scale were tested. We also tested items from Dunlap et al.'s (2000) New Ecological Paradigm scale. When combined, we found that we could drop all of the NEP items, and 2 of the 3 engagement in conservation items. The final scale contains 4 of the 5 wildlife related interest items and the purchasing and talking to others about conservation item from the conservation activities scale.

A scree plot and exploratory factor analysis showed that a one factor solution for these items yielded the best results. A two-factor solution explained only minimally more of the cumulative variance (0.683 versus 0.623), and did not cleanly separate the items into two factors, with the second factor sharing three out of four loadings above 0.400 with the first.

We then ran an iterative reliability analysis, removing items one-by-one that had less than a 0.005 difference in the total reliability measure. The following table describes this process:

Step #	Item to drop	N items in scale	Scale reliability before dropped	Scale reliability after dropped
1	I often volunteer with groups that help the environment or donate to nature or conservancy organizations	10	0.940	0.942
2	I often engage in conservation activities like recycling, conserving water, and conserving energy	9	0.942	0.942
3	I actively search for information about wildlife conservation	8	0.942	0.937
4	I often think about whether my actions harm the natural world	7	0.937	0.934
5	I am interested in environmental issues - drop	6		
5	I am interested in learning about environmental issues - drop	5		

As shown in the table, reliability analysis revealed one item that actually held down the reliability of the scale “I often volunteer with groups that help the environment or donate to nature or conservancy organizations.” After removing this item, reliability was 0.942. When re-run, analysis revealed another item, “I often engage in conservation activities like recycling, conserving water, and conserving energy”, to then have zero contribution to the overall reliability. In the next step, two items were removed that were shown to have less than 0.005 contribution each to the overall reliability. The final five item scale included the items:

I often think about whether my actions harm the environment.

I am interested in learning more about the environment.

I actively search for information about conservation.

I often think about whether my actions harm the natural world.

I often engage in conservation activities like buying environmentally-friendly products and talking to others about the environment

The scale in the national application emerged resulted with the following characteristics: mean = 9.40, Alpha = .907, range .771 F=230.950, p<.001.

Belief/Openness to Conservation Mission. We developed a tested a Belief/Openness to Conservation Mission scale using Dunlap et al., and a variety of other concern about the

environment measures in the literature. The wording of the items in the initial Belief scale suggested that the scale can be split into two factors. A scree plot of the Belief scale items supported this supposition. Using exploratory factor analysis with varimax rotation, we determined that a two-factor solution was best, explaining 0.429 of the cumulative variance and not having any cross loadings above 0.400. However, the item 'The Earth has plenty of natural resources if we just learn how to develop them' did not load on either factor at a minimum of 0.400, so it was dropped. See table below for results of the two factor loadings.

Table 3. Two factor loadings on Belief/openness to conservation mission

	BE1	BE2
We are approaching the limit of the number of people the Earth can support	0.503	
Humans have the right to modify the natural environment to suit their needs		0.728
When humans interfere with nature it often produces disastrous consequences	0.719	
Human ingenuity will insure that we do NOT make the Earth unlivable		0.521
Humans are severely abusing the environment	0.730	
The Earth has plenty of natural resources if we just learn how to develop them. DROP		
Plants and animals have as much right as humans to exist	0.616	
The balance of nature is strong enough to cope with the impacts of modern industrial nations		0.820
Despite our special abilities humans are still subject to the laws of nature	0.599	
The so-called ecological crisis facing humankind has been greatly exaggerated		0.728
The Earth is like a spaceship with very limited room and resources	0.475	
Humans were meant to rule over the rest of nature		0.652
The balance of nature is very delicate and easily upset	0.636	
Humans will eventually learn enough about how nature works to be able to control it		0.579
If things continue on their present course, we will soon experience a major ecological catastrophe	0.758	

The two factors were related to 1) environment positive; and 2) human positive. After reduction, the Human positive scale (Humans have the right to modify the natural environment to suit their needs; The balance of nature is strong enough to cope with the impacts of modern industrial nations; The so-called ecological crisis facing humankind has been greatly exaggerated; and Humans were meant to rule over the rest of nature) had a mean of 3.86, Cronbach's Alpha = .839, range .3778, F=29.087, p<.001.

After reduction, the Environment positive scale (When humans interfere with nature it often produces disastrous consequences; Humans are severely abusing the environment; Plants and animals have as much right as a human to exist; Despite our special abilities, humans are still subject to the laws of nature; The balance of nature is very delicate and easily upset; If things continue on their present course, we will soon experience a major ecological catastrophe) had a mean = 5.544 with a Cronbach's Alpha of 0.837, range .570. Friedman's Test resulted in a $F=104.806$, $p<.001$. I

n reviewing the scale and in discussion with our advisors, we felt the scale had a very negative framing of environment, and contained many messages that zoos and aquariums would not want shared, especially if guests would think these are positions the institution holds. We also felt the scale was moving too far into environmental/nature concerns and away from the conservation and wildlife conservation missions of these institutions. **Therefore, the scale was eliminated from the study.**

Describe Zoo scale (DZ). The original number of items in the bank for this scale was 34. We determined it was too bulky and divided it into two scales, one which we called "Describe zoo" (19 items) and another which included the items that were about Perceptions of the institution (15 items – see following scale description). For the Describe zoo, we tested all 4 items of Zogsby's (2007) mission of modern zoos scale, (valuable cultural institutions, changed over the years, inhumane, only entertainment for children), and these were all included in the final scale. We tested 3 items from Ballantyne & Packers's (2016) role of zoos and aquariums scale (can relax and enjoy nature, fun, see rare animals), most of the other items in the original scale related to themes that had already been included in the scale. After testing, we dropped the third item (rare animals) and included the first 2 items in the final scale.

Scree plotting of the full item scale suggested that it might decompose into two factors. Exploratory Factor Analysis using varimax rotation further supported this suggestion, yielding a well separated two factor solution. The two-factor solution explains 0.572 of the cumulative variance, compared to only 0.441 in the one factor solution. The two factors result in no shared loadings above 0.400. Moving to a three-factor solution yields no loading above 0.400 on the third factor. The table below shows the two factor solution loadings above 0.400.

Table 4. Two factor loadings on Describe Zoo scale

Item	F1	F2
Are valuable cultural institutions	0.796	
Have changed over the years and are now significant players in worldwide conservation efforts to preserve species and protect habitats.	0.668	
Are inhumane and have no place in a modern society.		0.756
Are only useful as entertainment for children.		0.719
Are places to relax and enjoy the beauty of nature.	0.775	

Are fun.	0.721	
Exhibit rare, endangered, and exotic animals that would be difficult to see anywhere else	0.625	
Allow me to contribute to conservation projects	0.630	
Are important to others in my group.	0.754	
Provide me with opportunities for bonding with family	0.763	
Provide me with opportunities for bonding with friends	0.666	
Educate people about animals and habitats	0.731	
Help children learn about the natural world	0.787	
Important for teaching children in our community		
Provide a valuable space for us to learn or discover new things together	0.811	
Are useful for entertainment purposes only and do not have any educational value		0.840
Are an important institution in our community	0.820	
Are not designed for people like me.		0.768
Are a safe space to visit	0.712	

We examined the factors and felt factor 2 were all related by disagreement (not being for me, entertainment only, only good for children’s entertainment, and inhumane). Therefore we decided to use items in factor 1 only with the inclusion of the item “useful for entertainment purposes” to include two different framings of entertainment, and performed reliability analysis on the new factor with step-by-step removal of items that impacted the reliability measure by less than 0.005. Reliability analysis showed that the items have a reliability of 0.856, and that any deletion of an item from the scale would result in a decrease of at least 0.017 on the reliability score. Thus, the decision was to use factor 1 as an intact scale.

We wanted to see if the negative items performed as well as the positive items. All negatively framed items had modes of 1 (strongly disagree) and means of 2.75 – 3.39. All four items had inflated standard deviations over 2.0 and 3 were over 2.220. Table 4 reveals that the while the reliability for overall scale was just under the reliability for the negative items, both were .6 below the positive items, which is not unusual when negative items are on an agreement scale and the proximity of the alpha of the negative items and the full scale suggest that is what happened. Mean scores were consistent, and the Friedman’s Tests suggest the items were independent.

Table 5. Overall, positive, and negative statement scale characteristics

	Mean	Cronbach’s Alpha	Range	F-score	Significance
Full scale	5.128	0.850	3.390	2884.564	<.001
15 Positive items (reduced)	5.581	0.916	.639	554.20	<.001
4 Negative items (reduced)	3.097	0.856	.639	54.736	<.001

Perceptions about the institution. This measure emerged during the development of the Describe Zoo scale. The items came from a number of different scales and also included items that represented themes that were missing, based on literature and our experiences with studies in this area.

We looked at Fraser and Sickler’s (2009) report on “Why Zoos and Aquariums Matter?” which had a detailed questionnaire with scales addressing various aspects of the value of zoos and aquariums to the general public, parents, and educators. We used 15 items from the different scales that were most relevant to our study. After testing, we found that 6 of these items did not perform appropriately (multimodal, polymodal, or extreme kurtosis or skew):

- I can think about my spiritual beliefs at zoos
- I feel like I belong, when I visit zoos
- I can get within close proximity of animals at zoos
- I can see animals being fed at zoos.
- I discover or learn new things about animals and conservation, when I visit
- I love going to the zoo.

The final scale therefore included the items:

- I can get away from the everyday stresses of life when I visit zoos
- I can find a spiritual connection with nature when I visit the zoos
- I feel like I belong, when I visit zoos
- I can exercise or be active at zoos
- I have traditions, such as family traditions around going to the zoo
- At the zoo, I can restore my connection with the natural world
- I have fond memories of good times at the zoo, with family and friends
- I see myself as a zoo-goer
- I feel comfortable at the zoo.

The scale had a Chronbach’s Alpha of 0.914 and no item removed would improve the R value.

Competence and Quality of the Institution. Based on Knology’s measures of competence and quality. For the measure of competence which also indicates perceived value, we tested 11 items. Following a scale reduction to increase reliability, three items were dropped: The zoo is knowledgeable about keeping/caring for animals, Animals are provided with appropriate diets, and The zoo has the space to meet the physical needs of the animals in their care (bolded in Table 6).

Table 6. Agreement scale items for competence and quality of the 16institution

Tested	Final
--------	-------

Animals are provided with proper medical care	Offer direction about how to conserve energy
The zoo is knowledgeable about keeping/caring for animals	Offer direction about how to conserve water
Animals are provided with appropriate diets	Zoos/aquariums collaborate well with other conservation organizations
The zoo has the facilities to meet the needs of the animals in their care	Zoos collaborate well with animal advocacy organizations
The zoo has the expertise to meet the emotional needs of the animals they keep	The zoo/aquarium cares about their animals' well-being
The zoo has the space to meet the physical needs of the animals in their care	Animals are provided with proper medical care
The zoo cares about their animals' well-being	The zoo/aquarium has the facilities to meet the needs of the animals in their care
Offer direction about how to conserve energy	The zoo has the expertise to meet the emotional needs of the animals they keep
Offer direction about how to conserve water	
Zoos collaborate well with other conservation organizations	
Zoos collaborate well with animal advocacy organizations	

The final scale had a mean of 5.53, reliability of 90.9 (Chronbach's Alpha) with a range of 1.187, and an F score of 672.956, significant at the $p < .001$ level.

Using Kroggy's quality measure, we built measure about the institutions. This was a 7-point rank-item agreement scale measuring the perceptions of zoos and aquariums in terms of conservation and advocacy. We also added one item regarding conservation of species in the wild as that is an important message many z/a want visitors to know about them. The ask was how much they agree or disagree with each of the following 9 statements about zoos.

- Offer direction about how to conserve energy
- Offer direction about how to conserve water
- Collaborate well with other conservation organizations
- Collaborate well with animal advocacy organizations
- Provide animals with proper medical care
- Care about their animals' well-being
- Have the facilities to meet the needs of the animals in their care
- Have the expertise to meet the emotional needs of the animals they keep
- Are an important part of conserving species in the wild

The intact scale had a mean of 5.530, Cronbach's Alpha = 0.909, range = .87, ANOVA using Friedman's Test = 672.956 with significance of $< .001$.

Specific Zoo Experience scale. (placeness scale) We tested 20 items that relate to participants' perceptions of the zoo they were visiting (for the sake of testing, we asked the panel participants to think of a zoo they had recently visited). The items were taken from 4 different place attachment studies. In addition, we added a few items that represented themes that seemed to be missing from the list. During item testing we found that there was not much variance between items. As a result, we picked 3 items that fell above the mean and 3 that fell below. We then added 3 items from the original list, that seemed important but were not represented in the final list.

Our final scale thus contained 9 items, with 4 items from Kyle et al (2004) (sense of belonging, family/friends disappointed, prefer this zoo, lose contact), 1 item from Vaske & Kobrin (2001) (attached to animals), 1 item that was in both Kyle et al.'s study and Vaske & Kobrin's study (very attached), and 3 items that we had created. None of the Ramkisoorn et al (2013), and Yuskel et al. (2010) items were included in the final list.

- I often talk to people about this zoo/aquarium
- I often bring people to visit this zoo/aquarium because I think they should see it
- I am very attached to this place
- I feel a strong sense of belonging to this zoo/aquarium
- My family/friends would be disappointed if we were to stop visiting this zoo/aquarium
- I prefer this zoo/aquarium over other settings/facilities for the recreational activities that I enjoy most.
- If I were to stop visiting this zoo/aquarium, I would lose contact with a number of my friends
- I am very attached to some of the animals at this place
- I have special memories associated with this place

Learning Outcomes. Data on Learning at the zoo/aquarium was collected in three different ways. The first was on the questionnaire in a scale built from Knology's responsibility to inform scale, and 1 item from financial scales. The scale was a 10 item, 7-point agreement scale with the stem: We realize you may know a great deal about this zoo and the animals. We want to know what, if anything, you learned about during your visit today. Today I learned about...

- How this zoo takes care of its animals
- Animal habitats
- Where this zoo's animals were born
- How to decrease my use of plastics
- Global climate change
- How to practice water conservation
- How to practice energy conservation
- That zoos give money to support and protect species conservation
- The conservation efforts of this zoo
- Sustainable shopping practices (i.e. sustainable seafood, palm oil, etc.)

The second component was an open-ended prompt following the scale that asked: Can you share with us 2 or 3 things you learned today?

These data were coded using the same structure as for the interview questions and then adapted to match the code book in component 3.

Additional one question survey. To increase our understanding of what people learn and how, and with the intention of getting more specific information about learning, we developed three questions that were put on half-sheets of paper. At the institutions, data collectors would ask adults in a group where one individual was completing the questionnaire if they would be willing to take a couple minutes to answer one question. The three questions in rotation were:

1. English: Five years from now, what do you think you will remember from today's visit?
1. Spanish: Dentro de cinco años, ¿qué creen que recordarán de la visita de hoy?

2. English: Will you do anything differently as a result of today's visit?
3. Spanish: ¿Harás algo diferente como resultado de la visita de hoy?

3. English: What was most meaningful to you about today's visit?
3. Spanish: ¿Qué fue lo más significativo para usted sobre la visita de hoy?

Additional Measures.

To better understand the context of the visit, we also asked a series of questions about the individuals' and their lives. Some of these asks were tested at COSI with visitors to determine the best way to obtain the data.

Social Role. A premise of the study was that social role may provide better insights into a visitor's life context they bring to a visit than the usual suite of demographics. An important component of the study was to explore what people really did learn across a visit and across multiple visits.

Life stage and career stage. The literature suggests an important aspect of how someone engages in the presenting social role is tied to both life stage and career stage. Life stage includes such components as social role within family, education, and age (cf. Super, 1980). Career stage includes education and where one is in employment. The following items were asked, but not necessarily in this sequence or connected.

Today, as you visit the zoo, which of the following do you identify as? (Check all that apply)

- Parent
- Grandparent
- Spouse/Partner/Date

- Adult by myself
- Friend
- Child

Who are you visiting the zoo with today? (Please check all that apply)

- Alone
- Date
- Family
- Friends
- Organized Group (i.e., Scouts, Church, School, etc.)

Including yourself, how many are in your group?

- 1
- 2 - 3
- 4 - 6
- 7 - 10
- 11+

How many in your group are children (under 18 years of age)?

- 1
- 2-3
- 4-6
- 7-10
- 11+

If you are a parent, how many hours do you spend ensuring that your children attend/participate in different organized recreational activities (i.e., swimming lessons, karate, dance, soccer, etc.)?

- Not applicable
- 1 hour or less/week
- 1.5 – 5 hours/week
- 5.5 – 10 hours/week
- 10.5 – 15 hours/week
- 15+ hours/week

Career stage. We looked at various ways different studies asked about career or employment and used the approach many others have used which is to examine employment, and then having asking about career stage referring to tenure in the work. We did this with the knowledge someone may be disabled, a parent or caregiver, or unemployed and still have a career to which they may return. We also included year of birth to be able to look at age as another potential indicator of career stage and level of education to possibly use that in the career description as well.

Which of the following best describes your work situation? (Check only one)

- Employed full-time
- Employed part-time
- Disabled

- Retired
- Stay at home parent, grandparent, caregiver
- Unemployed

Which one of these statements best describes you? (Check only one)

- I am exploring many career possibilities; I am developing personal and professional goals.
- I am early in my career; I am working to achieve my personal and professional goals
- I am established in my career; I have achieved many of my professional goals
- I am retired from my career; I am focused on personal goals
- I am staying at home to take care of my child/grandchild and/or adult relative

In what year were you born? _____

Please select the highest level of education you have completed:

- Less than high school (kindergarten-11th grade)
- High school degree (completed 12th grade)
- Some college (1-3 yrs)
- Associates degree (2 yrs)
- College graduate (4 yrs)
- Some post graduate
- Post graduate/ Professional Degree (Masters, PhD, JD, MD, etc.)
- Prefer not to answer

Other elements of social role. To broaden social role, we pulled in measures of other identities as we felt appropriate including gender, political, conservation, cultural/arts, hobbieist, physical, and spiritual identities, and geographic residency.

We used a very simple gender identity statement that is increasingly common in social-science. How would you describe your gender identity?

- Male
- Female
- Non-binary
- Prefer to self-describe _____
- Prefer not to answer

For political leaning, we used a scale offered by ????? that asks: On political matters, do you generally consider yourself to be (Choose only one):

- Libertarian
- Prefer not to answer
- Very Liberal/Progressive
- Liberal
- Moderate

- Conservative
- Very Conservative
- Libertarian
- Prefer not to answer

For conservation identity, we used the proxy of donating/membership in conservation or nature organizations, membership and frequency of visit to the zoo/aquarium, visit patterns to parks, and

Do you donate money to or are you a member of a nature or animal conservation group (i.e., World Wildlife Fund, Nature Conservancy, the Sierra Club)?

- Yes
- No

Are you a member of this zoo/aquarium?

- Yes
- No

About how often do you visit this zoo/aquarium? (Select the one best answer)

- Today is my first visit
- I haven't visited for many years
- Once every few years
- About once a year
- 2-4 times per year
- 5+ times per year

Do you (or your family members) participate in programs (e.g. camps, lectures, workshops, ticketed special events) at this zoo/aquarium?

- Yes
- No

How often do you visit a national or state park?

- Less than 1x a year
- At least 1x a year
- 2 – 3 x a year
- 4 – 6 x a year
- 7+x a year

For Cultural /arts identity we asked a simple matrix question about frequency of visits to various cultural institutions. The responses were less than 1 time/year, 1 time/year, 2-4 times a year, and 5+ times a year. The types of institutions were categorized as:

- Museums (Art, Natural History, Science, etc.)
- Theatre performance and/or acting class

- Music performance and/or music lesson
- Dance performance and/or dance classGardens (Botanical, Conservatories, Horticulture, etc.)
- Historical Sites (Gettysburg, Alamo, Paul Revere’s house, etc.)

To determine any advocational or hobbyist identities, we asked:
Which of the following types of hobbies/activities do you enjoy?

- | | |
|---|--|
| <input type="checkbox"/> Animals (show dogs, ride horses, etc.) | <input type="checkbox"/> Exercise |
| <input type="checkbox"/> Nature | <input type="checkbox"/> Food |
| <input type="checkbox"/> Active outdoors | <input type="checkbox"/> Social - general |
| <input type="checkbox"/> Visual arts | <input type="checkbox"/> Social - family |
| <input type="checkbox"/> Theater | <input type="checkbox"/> Garden |
| <input type="checkbox"/> Music | <input type="checkbox"/> Crafts |
| <input type="checkbox"/> Gaming (Video, Board, Arcade, etc.) | <input type="checkbox"/> Reading |
| <input type="checkbox"/> Travel | <input type="checkbox"/> Local events |
| <input type="checkbox"/> Sports | <input type="checkbox"/> Tinkering (electronics, carpentry, small engines, etc.) |

Exercise. From hobbies, we pulled exercise to allow it to be examined ordinally. For this we asked:

Approximately how many hours each week do you exercise alone and/or participate in organized recreation activities (i.e., swim class, dance class, pickleball leagues, etc.)?

- 1 hour or less/week
- 1.5 – 5 hours/week
- 5.5 – 10 hours/week
- 10.5 – 15 hours/week
- 15+ hours/week

Spirituality. From the interviews, we heard how people feel a visit to a zoo/aquarium can engage them in different ways. Some individuals had very clear spiritual experiences and even discussed their coming to the zoo/aquarium specifically for that experience. We built a simple question approach and tested different asking routes at COSI to determine the most effective wording. The resulting two items were used:

My visit to the zoo/aquarium engaged me (check all that apply)

- Spiritually
- Physically
- Mentally

The second measure of spirituality was the result of testing several different structures for asking about religion and spirituality. What resonated most with visitors was the following structure that we ended up using:

Which of the following statements is closest to your personal view of nature? (Choose only one)

- Nature is sacred because it is created by a Higher Power
- Nature is spiritual or sacred in itself
- Nature is important, but not spiritual or sacred
- Cannot choose

Geographic residence.

Which of the following terms best describes where you live (Choose only one)

- Rural
- Suburban
- Urban

Nature of the Visit. It was important for making meaning about the visit to ask specifically about the visit characteristics and activities:

- On entry, we asked about decision-making for the visit and repeated at the exit for comparison. This was to be able to triangulate with Oregon State University’s qualitative study for the purpose of being able to generalize their findings:

	Primarily children		Mix			Primarily adults	
	1	2	3	4	5	6	7
In moving through the zoo/aquarium today, do you think it will be primarily children, adults or a mix of both who make decisions about where you go and what you see during your visit?	1	2	3	4	5	6	7
In moving through the zoo/aquarium today, was it primarily children, adults or a mix of both who made decisions about where you went and what you saw during today’s visit?	1	2	3	4	5	6	7

- Intentions for time budget in order to better understand consistency between entry intention and action:

How much time are you planning to spend at the zoo today?

- An hour or two
- About half a day (3 – 4 hours)
- Most of my day (5 - 6 hours)

- The entire day (7+ hours)

And then, time spent on exit:

How much time did you spend at the zoo today?

- Approximately 1 – 2 hours
 - Approximately 3 – 4 hours
 - Approximately 5 – 6 hours
 - Approximately 7 + hours
- and general questions about what the visitors *planned* to do (entry) and then what they *did* during the visit. Entry was asked as Primary reason, and then with that reason removed, asked again for general intentions during a visit. Exit was asked as a measure of outcomes (7-point agreement scale)

Entry	Exit
Get outside	Was in a beautiful setting
It's something to do	Learned some scientific information
Spend time with friends and/or family	Discovered things I can do for the environment
See animals/fish	Affirmed my care for the environment
Relax/rejuvenate	Got deeper insights into my family/friends
Educational/Learn something new	Saw animals I don't usually see
Special Event	Had the type of experience I wanted
See the new/featured exhibit	Realized I want to do more to help the environment
Do something different	felt my love for animals reinforced
Buy something in the gift shop	Learned about the zoo/aquarium itself
Exercise	Deepened my bond with family and friends
Reconnect with the natural environment	Enjoyed watching other people explore the zoo/aquarium
Support my zoo/aquarium	

Social Media. On entry, visitors were asked the likelihood of sharing photos of themselves and their group at the z/a online through e-mail, Facebook, Twitter, Snapchat, etc. (7-point likelihood measure)

On exit, they were asked if they *had* shared any photos and were given yes, no, and maybe response opportunities. They were then asked if they used any of this zoo/aquarium’s social media platforms:

Did you use during today’s visit

Do you plan to use in the next 2 weeks

Website	<input type="checkbox"/>	<input type="checkbox"/>
Facebook page	<input type="checkbox"/>	<input type="checkbox"/>
Twitter	<input type="checkbox"/>	<input type="checkbox"/>
Instagram	<input type="checkbox"/>	<input type="checkbox"/>
Snapchat	<input type="checkbox"/>	<input type="checkbox"/>
Yelp	<input type="checkbox"/>	<input type="checkbox"/>
Zoo/Aquarium App	<input type="checkbox"/>	<input type="checkbox"/>

Final instrument development stage (study component 2)

From the onset, CRE assumed we would be doing either pre/post or an entry/exit measures. The research team determined that a single measure would indeed be overwhelming and that there were some questions that would best be asked before a visit, and others that necessarily would come after a visit. The research team also made decisions about each scale, and each section of the instrument into the two measures. We chose to ask perceptions and understandings of zoos and aquariums as entry measure, and reactions and perceptions of the visit on the exit. Demographics and measures that would not be affected by a visit were divided between the two instruments. There were 19 questions on the Entry measure, and 25 on the post.

The resulting instruments can be found in Appendix D (Entry measure) and Appendix E (Exit measure). Both instruments were also translated into Spanish by a native speaker, and then translated back into English by a native speaker to look for translation issues. The native Spanish speaker also read the instruments for culturally challenging or problematic items or words. Edits were made based on the translation analysis and final translation was completed (Appendix F).

The two instruments were loaded onto Qualtrics, an online survey platform. Tablets were sent to the 25 participating zoos and aquariums across the country. Each institution was to gather data during specified times during their busiest season and the two bookend seasons. Data were gathered from visitors who came during regular hours and experiences; any special event or program days were excluded from the data collection. Staff from the participating institutions received web-based training into the protocol for the study.

- The instrument was used to collect data at 25 zoos and aquariums throughout the country. Synchronized data collection each season – busy season – 4 each zoo collected 3 out of 4. Spring and fall everyone ...pick summer or winter
- Zoos were assigned one of 4 different data collection periods throughout the year to account for location/climate related visitor seasons.

Learning from Zoos and Aquariums (Study component 3)

In 2018, the Center for Research and Evaluation (CRE) at the Center of Science and Industry (COSI) coordinated efforts at 17 zoos and aquariums across the United States to collect data from visitors using a paper and pencil questionnaire with three open-ended questions: 1) Would you do anything differently as a result of today's visit? 2) What was most meaningful about today's visit? 3) Five years from now, what do you think you will remember from today's visit? This study was done in conjunction with the completion of the questionnaires in study component 2. The data collection resulted in 368 visitor responses.

In 2019, CRE repeated the study with some variations to try to get deeper insights into learning across visits. CRE conducted face-to-face interviews with a total of 50 zoo and aquarium members at five geographically diverse sites in the United States: Portland Zoo, Dallas Zoo, Cincinnati Zoo, The Florida Aquarium in Tampa, and the National Aquarium in Baltimore, Maryland. These individual sites recruited 10 to 12 members each to participate in a 30-45 minute interview. Members were asked to comment on: 1) Their motivation to visit the zoo or aquarium, 2) New things they learned, either during the day's visit or in the past, 3) How they learned new information, 4) What made their visit memorable and meaningful, and 4) Any changes they will or have made in their daily lives as a result the day's or past visits to the zoo or aquarium.

CRE digitally, recorded these interviews with each member's permission, had the recordings transcribed, and analyzed the interview data using NVivo qualitative computer software. The coding that CRE used to analyze the interview data using NVivo is included in Appendix I.

Collaborating Zoos and Aquariums

We very much thank the 30 zoos and aquariums that participated in the three components of the CRE part of WZAM3 study. Their willingness, excitement, and contributions were tremendous and allowed for a much richer study.

They are, in alphabetical order:

Arizona Sonora Desert Museum	Buffalo Zoo
Blank Park Zoo	Center for Aquatic Sciences at Adventure Aquarium
Chattanooga Zoo	Cleveland Metro Parks Zoo
Cincinnati Zoo & Botanical Garden	Columbus Zoo & Aquarium
Dallas Zoo	Denver Zoo
Indianapolis Zoo	Lincoln Park Zoo
Mystic Aquarium	Naples Zoo at Caribbean Gardens
NC Aquarium at Ft. Fisher	NC Aquarium on Roanoke Island
Omaha Zoo	Oregon Coast Aquarium
Phoenix Zoo	Roger Williams Park Zoo
San Diego Zoo	Shedd Aquarium
St. Louis Zoo	Tracy Aviary
Tulsa Zoo	Utah's Hogle Zoo
Virginia Zoo Norfolk	Woodland Park Zoo
Zoo Atlanta	Zoo Tampa at Lowery Park

References used in building the study

- Allen, S., Campbell, P. B., Dierking, L. D., Flagg, B. N., Friedman, A. J., Garibay, C., & Ucko, D. A. (2008, February). Framework for evaluating impacts of informal science education projects. In *Report from a National Science Foundation Workshop*. The National Science Foundation, Division of Research on Learning in Formal and Informal Settings.
- Archer, L., Dawson, E., Seakins, A. and Wong, B. (2016). Disorientating, fun or meaningful? Disadvantaged families' experiences of a science museum visit. *Cultural Studies of Science Education*, 11(4), 917-939.
- Archer, L., DeWitt, J., Osborne, J., Dillon, J., Willis, B., & Wong, B. (2012). Science aspirations, capital and family habitus: How families shape children's engagement and identification with science. *American Educational Research Journal*, 49(5), 881 - 908.
- Ballantyne, R. & Packer, J. (2016) Visitors' perceptions of the conservation education role of zoos and aquariums: Implications for the provision of learning experiences. *Visitor Studies*, 19(2): 193 - 210.
- Ballantyne, R., & Packer, J. (2011). Using tourism free-choice learning experiences to promote environmentally sustainable behaviour: the role of post-visit 'action resources'. *Environmental Education Research*, 17(2), 201-215.
- Ballantyne, R., Packer, J. & Falk, J. (2011). Visitors' learning for environmental sustainability: Testing short- and long-term impacts of wildlife tourism experiences using structural equation modelling. *Tourism Management*, 32(6), 1243-1252.
- Ballantyne, R., Packer, J., & Hughes, K. (2009). Tourists' support for conservation messages and sustainable management practices in wildlife tourism experiences. *Tourism Management*, 30(5), 658-664.
- Ballantyne, R., Packer, J., & Hughes, K. (2007). Conservation learning in wildlife tourism settings: Lessons from research in zoos and aquariums. *Environmental Education Research*, 13(3), 367-383.
- Ballantyne, R., Packer, J., & Sutherland, L.A. (2011). Visitors' memories of wildlife tourism: Implications for the design of powerful interpretive experiences. *Tourism Management*, 32(4), 770-779.
- Bamberger, Y., & Tal, T. (2008). An experience for the lifelong journey: The long-term effect of a class visit to a science center. *Visitor Studies*, 11(2), 198-212

Beard, J.G. & Ragheb, M.G. (1980). Measuring leisure satisfaction. *Journal of Leisure Research*, 12(1). 20-33.

Bengtson, V. L., & Allen, K. R. (1993). The life course perspective applied to families over time. In Boss, P., Doherty, W. J., LaRossa, R., Schumm, W. R., & Steinmetz, S. K. (Eds.) *Sourcebook of family theories and methods: A contextual approach*. Springer Science & Business Media. pp. 469-504.

Brandenburg, A. M., & Carroll, M. S. (1995). Your place or mine? The effect of place creation on environmental values and landscape meanings. *Society and Natural Resources*, 8, 381-398.

Caltabiano, M.L. (2006) Measuring the similarity among leisure activities based on a perceived stress-reduction benefit. *Leisure Studies*, 13(1). 17-31.

Carter, J., Dyer, P., & Sharma, B. (2007). Dis-placed voices: sense of place and place-identity on the Sunshine Coast. *Social & Cultural Geography*, 8(5), 755-773.

Coe, J.C. (1985). Design and perception: making the zoo experience real. *Zoo Biology*, 4, 197-208.

Coghlan, A., Buckley, R. & Weaver, D. (2012). *A framework for analysing awe in tourism experiences*, *Annals of Tourism Research*, 39(3), 1710-1714.

Cresswell, T. (2005) *Place: A short introduction*. Blackwell Publishers.

Dawson, E. (2014). Equity in informal science education: developing an access and equity framework for science museums and science centres. *Studies in Science Education*, 50(2), 209-247.

Dawson, E. (2014). "Not designed for us": How science museums and science centers socially exclude low-income, minority ethnic groups. *Science Education*, 98(6), 981-1008.

Dawson, E. (2014). Reframing social exclusion from science communication: Moving away from barriers towards a more complex perspective. *Journal of Science Communication*, 13(2), 1-5.

Dawson, E. & Jensen, E. (2011). Towards a contextual turn in visitor studies: Evaluating visitor segmentation and identity-related motivations. *Visitor Studies*, 14(2), 127-140

de Oliveira Rancura, K. G., Martins, C., Amaro, A., Tadeu, W., de Araújo-Bissa, C. H., Formenton, N., & Zanetti, R. (2017). How to evaluate environmental education actions at the zoo? The experience of São Paulo Zoo (Brazil). *IZE Journal*, 54, 15-28.

Doering, Z. D., & Pekarik, A. (1996). Questioning the entrance narrative. *Journal of Museum Education*, 21(3), pp 20-25.

Domino, G. & Affonso, D.D. (1990). A personality measure of Erikson's life stages: The inventory of psychosocial balance. *Journal of Personality Assessment*, 54(2&4), 576-588.

Driver, B.L. & Tocher, S.R. (1975). Toward a behavioral interpretation of recreational engagements, with implications for planning. In Driver, B.L. (Ed) *Elements of Outdoor Recreation Planning*, University of Michigan Press. 9-28.

Dunlap, R.E., Van Liere, K.D., Mertig, A.G., & Jones, R.E. (2000). Measuring endorsement of the New Ecological Paradigm: A revised NEP scale. *Journal of Social Issues*, 66(3), 425-442.

Falk, J.H. (2013). Museum visitors' motivations and learning. In I.B. Lundgaard (Ed.) *Museums as Social Learning Spaces* (pp. 188-208). Kulture Styrelsen.

Falk, J., Bronnenkant, K., Vernon, C. & Heimlich, J. (2008). Visitor evaluation toolbox: A component of the multi-institutional research program. Companion document to the report: *Why zoos and aquariums matter: Assessing the Impact of a Visit to a Zoo or Aquarium*. Association of Zoos & Aquariums.

Falk, J. H., Heimlich, J.E. & Bronnenkant, K. (2008). Using identity-related visit motivations as a tool for understanding adult zoo and aquarium visitors' meaning-making. *Curator*, 51(1), 55-79.

Falk, J. H., Reinhard, E. M., Vernon, C., Bronnenkant, K., Heimlich, J. E., & Deans, N. L. (2007). *Why zoos & aquariums matter: Assessing the impact of a visit to a zoo or aquarium* (p. 24). Silver Spring, MD: Association of Zoos & Aquariums.

Farrell, J. (2011). Environmental activism and moral schemas: Cultural components of differential participation. *Environment and Behavior*, 45(3), 399-423.

Fauville, G., Dupont, S., von Thun, S. & Lundin, J. (2015). Can Facebook be used to increase scientific literacy? A case study of the Monterey Bay Aquarium Research Institute Facebook page and ocean literacy. *Computers & Education*, 82, 60-73.

Feinstein, N.W., Meshoulm, D. (2014). Science for what public? Addressing equity in American science museums and science centers. *Journal of Research in Science Teaching*, 51(3), 368 – 394.

Fraser, J., & Sickler, J. (2009). *Why zoos and aquariums matter: Handbook of research key findings and results from national audience survey*. Association of Zoos and Aquariums.

Garner, J.K., Pugh, K. & Kaplan, A. (2016). Museum visitor identification and engagement with science (VINES): A theory-driven process for designing transformational experiences. Paper presented at the Annual Meeting of the American Educational Research Association.

Gibson, H., & Yiannakis, A. (2002). Tourist roles: Needs and the lifecourse. *Annals of tourism research, 29*(2), 358-383.

Grajal, A. (2013). Zoos as ecotourism experiences. In Ballantyne, R. & Packer, J. (Eds.) *International Handbook on Ecotourism* Edward Elgar Publishing, Inc. 464-469.

Hidi, S. (1990). Interest and its contribution as a mental resource for learning. *Review of Educational Research, 60*(4), 549-571.

Hidi, S., & Renninger, K. A. (2006). The four-phase model of interest development. *Educational psychologist, 41*(2), 111-127.

Higgenbottom, K., (Ed). (2004). *Wildlife tourism: Impacts, management and planning*. Common Ground Publishing.

Holzer, D., Scott, D., Bixler, R.D. (1998). Socialization influences on adult zoo visitation. *Journal of Applied Recreation Research, 23*(1), 43-62.

Horne, C. S. (n.d.). *Connecting Tennessee to the World Ocean: Summative Evaluation Report*. InformalScience.org. Last retrieved April 23, 2021 from <http://informalscience.org/connecting-tennessee-world-ocean-summative-evaluation-report>

Iso-Ahola, S. E., Jackson, E., & Dunn, E. (1994). Starting, ceasing, and replacing leisure activities over the life-span. *Journal of leisure research, 26*(3), 227-249. Konecni, V.J. (2005). The aesthetic trinity: Awe, being moved, thrills. *Bulletin of Psychology and the Arts, 5*(2), 27-44.

James, W.B., Witte, J.E., & Galbraith, M.W. (2006). Havighurst's social roles revisited. *Journal of Adult Development, 13*(1), 52-60.

Jordaan, Y., & Du Plessis, G. M. (2014). Motivators to visit the national zoological gardens of South Africa. *African Journal of Hospitality, Tourism and Leisure, 3*(1), 1-5.

Jun, J., Kyle, G., Graefe, A., & Manning, R. (2015). An identity-based conceptualization of recreation specialization. *Journal of Leisure Research, 47*(4), 425-443.

Kals, E., Schumacher, D. & Montada, L. (1999). Emotional affinity toward nature as a motivational basis to protect nature. *Environment and Behavior, 31*(2), 178-202.

Kirchgessner, M.L. & Brent J. Sewall, B.J. (2015). The Impact of environmental, social, and animal factors on visitor stay times at big cat exhibits. *Visitor Studies, 18*(2), 150-167.

Kneafsey, M. (2000) Tourism, place-identities and social relations in the European rural periphery. *European Urban and Regional Studies 7*(1), 35-50.

- Krapp, A. (2000). Interest and human development during adolescence: An educational-psychological approach. In J. Heckhausen (Ed.), *Advances in psychology*, 131. *Motivational psychology of human development: Developing motivation and motivating development* (p. 109–129). Elsevier Science.
- Kyle, G., Absher, J., Norman, W., Hammitt, W., & Jodice, L. (2007). A modified involvement scale. *Leisure Studies*, 26(4), 399 – 427.
- Kyle, G.T., Mowen, A.J. & Tarrant, M. (2004) Linking place preference with place meaning: An examination of the relationship between place motivation and place attachment. *Journal of Environmental Psychology*, 24(4) 439 - 454
- Lee, T.H. (2011). How recreation involvement, place attachment and conservation commitment affect environmentally responsible behavior. *Journal of Sustainable Tourism*, 19(7), 895-915.
- Lee, T.H., & Shen, Y.L. (2013). The influence of leisure involvement and place attachment on destination loyalty. *Journal of Environmental Psychology*, 33, 76-85.
- Lin, H. S., Hong, Z. R., & Huang, T. C. (2012). The role of emotional factors in building public scientific literacy and engagement with science. *International Journal of Science Education*, 34(1), 25-42.
- Leinhardt, G., Crowley, K. & Knutson, K. (Eds.). (2002). *Learning Conversations in Museums*. Routledge.
- Manfredo, M.J., Driver, B.L., & Tarrant, M.A. (1996). Measuring leisure motivation: A meta-analysis of the Recreation Experience Preference Scales. *Journal of Leisure Research*, 28(3), 188-213.
- Mann, J. (2015). Conservation behavior: Change begins at home. *IZE Journal*. 62-64.
- Marty, P. F. (2007). Museum websites and museum visitors: Before and after the museum visit. *Museum Management and Curatorship*, 22(4), 337–360.
- Morell, K., (2016). Measuring visitor impact: Quantifying the impact on a guest of the visit to the zoo or aquarium. *AZA Connect*. April, 40-45.
- Moore, M.G. (1989). Editorial: Three types of interaction. *The American Journal of Distance Education*, 3(2), 1-7.
- Moss, A., Jensen, E. & Gusset, M. (2017). Impact of a global biodiversity education campaign on zoo and aquarium visitors. *Frontiers in Ecology*, 15(5), 243-247.

Nisbet, E.K., Zelenski, J.M., & Murphy, S.A. (2009). The nature relatedness scale linking individuals' connection with nature to environmental concern and behavior. *Environment and Behavior*, 41(5), 715–740.

Packer, J., & Ballantyne, R. (2002). Motivational factors and the visitor experience: A comparison of three sites. *Curator*, 45, 183-198.

PCAV Destinations (2017). Communicating conservation: Strengthening the public's trust. *Destinology*, 14(2) 1-8.

Powell, D. M., & Bullock, E. V. (2014). Evaluation of factors affecting emotional responses in zoo visitors and the impact of emotion on conservation mindedness. *Anthrozoös*, 27(3), 389-405.

Ramkissoon, H., Smith, L. D. G., & Weiler, B. (2013). Relationships between place attachment, place satisfaction and pro-environmental behaviour in an Australian national park. *Journal of Sustainable Tourism*, 21(3), 434-457.

Ramkissoon, H, Smith, L.D.G., & Weiler, B. (2013). Testing the dimensionality of place attachment and its relationships with place satisfaction and pro-environmental behavior: A structural equation modelling approach. *Tourism Management* 36, 552-566.

Renninger, K. A., Ewen, L., & Lasher, A. K. (2002). Individual interest as context in expository text and mathematical word problems. *Learning and Instruction*, 12(4), 467-490.

Reynolds, P. C., & Braithwaite, D. (2001). Towards a conceptual framework for wildlife tourism. *Tourism Management*, 22(1), 31-42.

Rose, G. (1995). Place and identity: A sense of place, in Massey, D. and Jess, P. (Eds.) *A Place in the World? Places, Cultures and Globalisation*. Oxford: The Open University. 87-132.

Rossi, A. S. (1980). Life-span theories and women's lives. *Signs: Journal of Women in Culture and Society*, 6(1), 4–32.

Russo, A., Watkins, J., Kelly, L., & Chan, S. (2008). Participatory communication with social media. *Curator: The Museum Journal*, 51(1), 21–31.

Rush, J. C., Peacock, A. C., & Milkovich, G. T. (1980). Career stages: A partial test of Levinson's model of life/career stages. *Journal of vocational behavior*, 16(3), 347-359.

Schram, H. (2011). *Looking at people looking at animals—version 0.3. An international bibliography on visitor experience studies and exhibit evaluation in zoos and aquariums*. EAZA Education Committee.

- Schraw, G., & Lehman, S. (2001). Situational interest: A review of the literature and directions for future research. *Educational psychology review*, 13(1), 23-52.
- Schultz, P. W. (2011). Conservation means behavior. *Conservation biology*, 25(6), 1080-1083.
- Schultz, P.W. (2001). The structure of environmental concern: Concern for self, other people, and the biosphere. *Journal of Environmental Psychology*, 21(4), 327-339.
- Schultz, P.W., Shriver, C., Tabanico, J.J. & Khazian, A.M. (2004). Implicit connections with nature. *Journal of Environmental Psychology*, 24, 31-42.
- Schultz, P.W. & Tabanico, J. (2007). Self, identity, and the natural environment: Exploring implicit connections with nature. *Journal of Applied Social Psychology*, 37(6), 1219-1247.
- Sibkins, J.C., & Powell, R.B. (2013) Conservation caring: Measuring the influence of zoo visitors' connection to wildlife on pro-conservation behaviors. *Zoo Biology*, 32(5), 528-540.
- Sickler, J. & Fraser, J. (2009). Enjoyment in zoos. *Leisure Studies*, 28(3), 313-331.
- Serrell, B. (1996). In search of generalizability: New tools for visitor studies. *The Journal of Museum Education*, 21(3), 11-18.
- Sevillano, V., & Fiske, S. T. (2016). Warmth and competence in animals. *Journal of Applied Social Psychology*, 46(5), 276–293.
- Solop, FL, Hagen, K.K., & Ostergren, D. (2003, December). Ethnic and racial diversity of national park system visitors and non-visitors technical report. Online: <http://npshistory.com/publications/social-science/comprehensive-survey/ethnic-racial-diversity.pdf>
- Stedman, R.C. (2002). Toward a social psychology of place: Predicting behavior from place-based cognitions, attitude, and identity. *Environment and behavior*, 34(5), 561-581.
- Super, D.E. (1980). A life-span, life-space approach to career development. *Journal of Vocational Behavior*, 16(3), 282-298.
- Tang, Y, Geng, L., Schultz, P.W. Zhou, K. & Xiang, P. (2017). The effects of mindful learning on pro-environmental behavior: A self-expansion perspective. *Consciousness and Cognition*, 51, 140-148.
- Thrash, T.M. & Elliot, A.J. (2003). Inspiration as a psychological construct. *Journal of Personality and Social Psychology*, 84(4), 871-889.

Tinsley, H.E.A. & Tinsley, D.J. (1986). A theory of the attributes, benefits and causes of leisure experience. *Leisure Sciences*, 8(1) 1-45.

Vaske, J.J. & Kobrin, K.C. (2001) Place attachment and environmentally responsible behavior. *The Journal of Environmental Education*, 32(4): 16-21

Wagoner, B. & Jensen, E. (2010). Science learning at the zoo: Evaluating children's developing understanding of animals and their habitats. *Psychology & Society*, 3(1), 65-76.

Walker, G.J., Deng, J., & Dieser, R.B. (2001) Ethnicity, acculturation, self-construal, and motivations for outdoor recreation. *Leisure Science*, 23(4), 263 - 283.

Westover, T. N. (1989). Perceived crowding in recreational settings: an environment-behavior model. *Environment and Behavior*, 21(3), 258-276.

Yocco, V., Danter, E. H., Heimlich, J. E., Dunckel, B. A., & Myers, C. (2011). Exploring use of new media in environmental education contexts: Introducing visitors' technology use in zoos model. *Environmental Education Research*, 17(6), 801-814.

Yuskel, A., Yuskel, F., & Blilim, Y. (2010). Destination attachment: Effects on customer satisfaction and cognitive, affective and conative loyalty. *Tourism Management* 31, 274-284

Zimmerman, H. T., Reeve, S., and Bell, P. (2010). Family sense-making practices in science center conversations. *Science Education*, 94(3), 478-505.

Zogby, J. (2007). *Brand Awareness of Bronx Zoo and the Wildlife Conservation Society in and around New York City*. Report submitted to the Wildlife Conservation Society, May 2007.

Appendix A: Factor Map

Factor Map

Language q: "wildlife" in aquarium settings

Factor to test	notes	Source	items
1. Perceptions v trust	correlates with favorability, contributes to level of satisfaction	NKO	To what extent do you agree with the following statements The costs are worth the value I visit because it is a good way for my family and friends to share quality time
	correlates with favorability	NKO	
	correlates with favorability, contributes to satisf	NKO, B&P 2016	I come to learn or discover something new
	correlates with favorability	NKO	I come because I enjoy seeing wildlife
	correlates with favorability	NKO	It is important to me that signage identifies animal species
	correlates with favorability	NKO	It is important to me that I am able to observe wildlife / species I have never

NKO report: in general, rates higher when framed as importance of trust rather than perception of current practice

		seen before/ see a variety of species	
correlates with favorability and age	NKO	It is important to me that the Z/A provides information about animals It is important to me that the Z/A is knowledgeable about keeping/caring for animals	should this simply look at level of agreement that the z/a provides sufficient info on animals? should this simply look at level of agreement that the z/a is knowledgeable about...
correlates with favorability and age	NKO	It is important to me that visitor areas are clean (safe?) I come because my child likes to visit	should this simply look at level of agreement that visitor areas are clean?
Correlates with age	NKO		
correlates with favorability and age	NKO	It is important to me that signage provides information about an animal's behavior	should this simply look at level of agreement that the z/a provides sufficient info on...
correlates with favorability and age, contributes to level of satisfaction	NKO	It is important to me that signage provides information about an animal's role in the ecosystem	should this simply look at level of agreement that the z/a provides

correlates with favorability

NKO

The facility is easy to navigate
It is important to

contributors to satisfaction

Ballantyne & Packer (2016)

me that animals seem to be well cared for

contributors to satisfaction

Ballantyne & Packer (2016)

It is important to me to see animals in enclosure that simulate their natural setting

contributors to satisfaction

Ballantyne & Packer (2016)

It is important that the animals I see are active/observe behavior

contributors to satisfaction

Ballantyne & Packer (2016)

It is important to me to know that the z/a contributes to animal conservation projects

contributors to satisfaction

Ballantyne & Packer (2016)

to learn something new about animals

contributors to satisfaction

Ballantyne & Packer (2016)

It is important to me to be able to learn something new about conservation or environmental issues

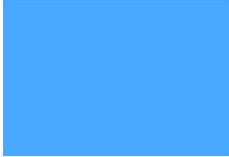
2. Source credibility

NKO

I rely on the z/a to provide

sufficient info on...

rely



NKO	information on animals and endangered species I rely on the z/a to provide information on wildlife conservation
NKO	I rely on the z/a to provide information on environmental issues The z/a provides unbiased information about animals and endangered species
NKO	The z/a provides unbiased information about wildlife conservation The z/a provides unbiased information about environmental issues
NKO	The z/a is a trustworthy source for information on animals and endangered species The z/a is a trustworthy source for information on wildlife conservation

bias

trust

3. Openness to conservation mission

4. Zoo mission

NKO	The z/a is a trustworthy source for information on environmental issues
NKO	The z/a provides accurate information about animals and endangered species
NKO	The z/a provides accurate information about wildlife conservation
NKO	The z/a provides accurate information environmental issues
Ballantyne & Packer (2016)	I often think about whether my actions harm the environment
Ballantyne & Packer (2016)	I am interested in learning more about the environment
Ballantyne & Packer (2016)	I actively search for information about conservation
Zogsby (NKO)	The mission of this z/a is to educate about and connect people to wildlife
Zogsby (NKO)	The mission of this z/a is to provide pleasure and enjoyment

accuracy

5. Value

Zogsby (NKO)	The mission of this z/a is to provide economic and cultural benefits to the community
Zogsby (NKO)	The mission of this z/a is to be actively involved in worldwide conservation efforts
Zogsby (NKO)	I believe that Z/a have changed over the years and are now significant players in worldwide conservation efforts to preserve species and protect habitats
Zogsby (NKO)	I believe that z/a are valuable cultural institutions
Zogsby (NKO)	I believe that z/a are inhumane and have no place in a modern society
Zogsby (NKO)	I believe that zoos are only useful as entertainment for children
Ballantyne & Packer (2016)	Z/A should be places were you can relax and enjoy the beauty of nature

or delete "useful as entertainment"

Ballantyne & Packer (2016)	Z/A should be places you can go for a fun experience Z/A should exhibit rare, endangered and exotic animals
Ballantyne & Packer (2016)	that would be difficult to see anywhere else
email list	I value the z/a because it is important to others in my group
email list	I value the z/a because it provides me with opportunities for bonding with family
email list	I value the z/a because it provides me with opportunities for bonding with friends
email list	I value the z/a because it allows me to get within close proximity of animals
email list	I value the z/a because it allows me to contribute to conservation projects
Fraser & Sickler, Zogsby	Z/A are valuable for educating people about

	animals and habitat I value z/a because they help my child/children learn about the natural world The z/a is important for teaching
Fraser & Sickler	children in our community I value the z/a because I discover or learn new things here The z/a provides a valuable space for us to learn or discover new things together
Fraser & Sickler	Z/a are useful for entertainment purposes only and do not have any educational value
email list	
Fraser & Sickler	

6. Connection to nature

7. Relation to mission

	I often engage in conservation activities like recycling, conserving water and conserving energy
Ballantyne & Packer (2016)	

	I often engage in conservation activities like buying environmentally-friendly products
Ballantyne & Packer (2016)	and talking to others about the environment
Ballantyne & Packer (2016)	I often volunteer with groups that help the environment or donate to nature or conservancy organizations

8. Involvement

new

How important is this trip to your family visit?
 commitment to the day
 Is this your stay-cation

9. Hobbies

10. placeness

Appendix B: Protocol and interview schedules (study component 1)

Association of Zoos and Aquariums STEM Matters: Investigating the Confluence of Visitor and Institutional Agendas Year One Zoo Visitor Agenda Interview Protocol

February 8, 2017

Introduction

Three research organizations and the Association of Zoos and Aquariums (AZA) on behalf of its 232 informal science learning institutional members, received NSF funding for Collaborative Research: STEM Matters: Investigating the Confluence of Visitor and Institutional Agendas. As a new national research collaborative, New Knowledge Organization Ltd., the Lifelong Learning Group at COSI, Oregon State University's Center for Research on Lifelong STEM Learning, and AZA will seek to advance the research priorities identified by AZA's Conservation Education Committee (CEC) and Research & Technology Committee (RTC). It organizes the priorities under three categories:

1. What are the public perceptions of zoos and aquariums within the national informal STEM learning ecology? and How does the public institutional voice of zoos and aquariums outside of their walls advance STEM learning objectives?
2. What are the conditions of the visit within the life stage and learning ecology of the individual? How are entry themes reconciled with institutional mission?
3. What are the entry characteristics of visitors and how do those characteristics play out in behaviors during a visit?

The project team will advance the coordinated individual efforts at zoos and aquariums around the country in alignment with the research agendas, and a linked series of professional dissemination tools and tactics, briefings, overviews, and instruments to be shared through existing AZA professional training networks.

The Lifelong Learning Group (part of COSI) will explore individual entry and exit narratives and outcomes to situate the visit in the life-course. It will develop refined constructs or learning frames through which individuals interpret the experience in zoos/aquariums by uncovering the life-related influences that shape interpretation of the zoo/aquarium experience. Specifically, this effort will focus on the pre-existing conative framework the individual brings per Piaget's (1976) labels of assimilation, accommodation, and equilibrium. Building on Vosniadou and Brewer (1987), other conditions of learning include changing core concepts, structure, or the

phenomena being explained, the mental model differences between those providing the educational experiences and the learner's prior knowledge experience. This study will focus on the experience as 1) amplifying existing understanding (fitting an existing frame); 2) creating new understanding (dissonance leading to recall); 3) modifying a frame (challenging an existing frame); or 4) ignoring the information (excessive dissonance).

In year one of this study, LLG will interview zoo members and visitors, focusing on narratives related to life stage social role, and expectations. To ensure the safety and welfare of participants, as well as support the dissemination and publication of any stage of this work, a comprehensive IRB was obtained through our partner, Oregon State University, prior to contact with human subjects.

Study Participants

For the first year of the Visitor Agenda component of this research study, our data source will be interviews of adult members and visitors to select zoos and aquariums. LLG will interview:

- 11 participants who will participate in 45 minute pre-visit interview and a 15 minute post - visit interview
- 11 participants who complete a pre-visit interview
- 11 participants who complete a post-visit interview

The majority of participants will be recruited through the zoo/aquarium membership office of the zoo/aquarium where the data will be collected. A sample e-mail will be provided to the membership staff to distribute to all members. Members wishing to participate in the study will call the zoo membership office to schedule their interview time. Members will be signed up on a first-come, first-served basis. Additional visitors will be recruited as needed. These participants will be done on a continuous-ask basis.

Methodology

To better understand visitors and members narratives related to life-stage, social role, and expectations of their zoo/aquarium visit, participants will be asked to complete semi-structured interviews, comprised of open-ended questions at the seven zoo/aquarium partner sites. These interviews will be recorded and transcribed verbatim. Two interview scripts are presented here. The goal of the study is to better understand the visitor's narrative regarding their visitation; however different visitors respond to different questioning techniques. Therefore we are submitting two different pre-visit interview schedules; one which begins with allowing the visitor opportunities to share their narrative, a second, focused on the entry characteristics of the group. We intend to test these with a small sample before deciding on which to use for this study.

Analysis

Verbatim transcripts will be analyzed using NVivo software for themes, patterns, word usage, and structure using life stage, social role, values toward museums, and expectancy theories.

Findings from year one will be used to develop an item bank based on each perceived factor emerging from the analysis and tied to the literature.

Interview Protocol for Zoo Members and Visitors

Interview Recruitment

Visitors to zoos/aquariums typically expect to wander the grounds and look at animals with others in their group, they typically don't have time to complete interviews; therefore LLG is asking our zoo/aquarium partners to assist with this study by recruiting adult members to participate in these interviews. Members interviewed may be part of either an adult-only or adult-child groups.

Sample Invitation Zoos/Aquariums can send to members:

Greetings,

The [NAME of Zoo/Aquarium] is looking for adult members (18 years old +) to participate in a study to better understand the reasons in which people visit zoos and aquariums. This is part of a larger study that involves zoos and aquariums throughout the country.

Study participants would need to visit the [zoo or aquarium] one day, either [DATES of STUDY]. Participants will be randomly chosen to participate in one of three ways:

- A 45 minute pre-visit interview.
- A 15 minute post-visit interview.
- Both a 45 minute pre-visit interview and 15 minute post-visit interview.

If you plan to visit with other adults and children, the others in your group may begin their visit while you are interviewed. If you are the only adult in a group with children, we will have coloring books/activity sheets for your children to complete while you are interviewed. Also, we will have snacks and water available for you.

If you are interested in participating, please contact [NAME of STAFF] at [PHONE or E-MAIL] by [DATE]} to schedule your time slot.

Title of the Study:

STEM Matters: Investigating the Confluence of Visitor and Institutional Learning Agendas

Joe E. Heimlich, Principal Investigator

Interview Consent Statement for All Interviews (Pre or Post)

Thank you for taking time to talk with me. My goal for our time together is to better understand why you visit zoos and aquariums. I believe this discussion will last @ 30 - 45

minutes. Your participation is voluntary, you can skip any question or stop this interview at any time. Know that this discussion will be kept confidential, we will not include names or any identifying details with comments in reports.

I would also like to audio record our conversation, if that's OK with you. The recording will be transcribed verbatim. Your name will not be connected to the transcription.

Before we begin, do you have any additional questions? [answer any questions]

Do you agree to continue with the interview and allow audio recording? [if no, interviewer will take notes instead]

Pre-Interview One—Narrative

1. Tell me about yourself. Whatever you think I should know
(Prompts: What do you do for enjoyment? Do you have any hobbies? What do you do just for yourself? Talk about your family for a minute. Tell me about your educational background. How does that relate to your career? What was your career path? Probe for different careers, check for military if not mentioned. Do you belong to a church, temple, synagogue, or participate in a spiritual practice of any sort? How important is this in your life?)

Great! So in what you said, I heard you are (capture and repeat social role indicators: profession, life stage, familial role, friend, hobbies, etc.)

2. Who did you come visit with today?

- a. How many people are in your group?
- b. How many:
 - i. Adults, Children under 16, Children under 5
 - ii. If you don't mind, can you tell us what the ages of the adults over 16 are?
- c. How many:
 - i. Males/Females
- d. We would also like to know the ethnic/racial background of your group, if you don't mind. If you feel comfortable telling us, how many in your group would you consider to be White? Asian American?
- e. Are these the people with whom you usually visit?
Why do you visit with these people? What typically prompts these visits?
- f. Do you sometimes visit with other people? Who?
Why do you visit with these people? What prompts these visits?
- g. Do you ever come visit by yourself?
Why do you visit the zoo/aquarium by yourself? What prompts these visits?

3. Are you a member of the zoo/aquarium? Yes/No (Ask this question if an intercept interview)

- a. How long have you been a member of this zoo or aquarium?

- b. How long do you plan to stay a member?
- 4. How often do you go to zoos and aquariums?
 - a. What do you want to get from the different visits?
- 5. Do you have memberships or subscriptions to any other museums, theatres, musical or dance companies, national or state parks, etc.?
 - a. Which ones?
 - b. Why do you belong to them? What do you get from them?
- 6. Do you have season tickets or attend any professional sports events?
 - a. Which ones?
 - b. What do you get from those?
- 7. If you had more time in the day, what would you like to do with that time?
- 8. What are the different reasons you go to a zoo or aquarium? (go deep – NOTE: seeking richness on the reasons and the conditions surrounding different visits – e.g. friends, teacher, parent, grandparent, hobby—the following are possible prompts)
- 9. What is the mission of the zoo? Does the mission of zoos and aquariums matter to you and your support?
- 10. How long have you been a member of this zoo or aquarium? How many years ahead do you see yourself as a member?
 - a. How often do you go to other zoos and aquariums?
 - b. If you go to other zoos and aquariums X times/year, why do you visit those? What do you want to get from the different visits?

For each of the reasons: repeat the reason, then ask: through that lens, what do you expect to do during your visit? And what do you think you'll pay attention to?

- 11. Overall, what do you think you'll get from your visit today? How do you think you'll get it?

Pre-Interview Two—Entry

- 1. Who did you come visit with today?
 - a. How many people are in your group?
 - b. How many:
 - i. Adults, Children under 16, Children under 5
 - ii. If you don't mind, can you tell us what the ages of the adults over 16 are?
 - c. How many:
 - i. Males/Females

- d. We would also like to know the ethnic/racial background of your group, if you don't mind. If you feel comfortable telling us, how many in your group would you consider to be White? Asian American?
 - e. Are these the people with whom you usually visit?
Why do you visit with these people? What typically prompts these visits?
 - f. Do you sometimes visit with other people? Who?
Why do you visit with these people? What prompts these visits?
 - g. Do you ever come visit by yourself?
Why do you visit the zoo/aquarium by yourself? What prompts these visits?
2. Are you a member of the zoo/aquarium? Yes/No (Ask this question if an intercept interview)
 - a. How long have you been a member of this zoo or aquarium?
 - b. How long do you plan to stay a member?
 3. How often do you go to zoos and aquariums?
 - a. If you go to zoos and aquariums X times/year, why do you visit those other times
 - b. What do you want to get from the different visits?
 4. Do you have memberships or subscriptions to any other museums, theatres, musical or dance companies, national or state parks, etc.?
 - a. Why do you belong to them? What do you get from them?
 5. Do you have season tickets or attend any professional sports events? Which ones? What do you get from those?
 6. What are things you do when you have free time or down time?
 7. You talked before about why you visit this zoo/aquarium, tell me a little more about other reasons that people (you & others) visit zoos/aquarium? What are the different reasons you go to a zoo or aquarium? (go deep – NOTE: seeking richness on the reasons and the conditions surrounding different visits – e.g. friends, teacher, parent, grandparent, hobby—the following are possible prompts)
 8. What do you think is the mission of zoos/aquariums (broadly)? Does the mission of zoos and aquariums matter to you for your visit and does it matter for you to support that mission?
 9. In terms of supporting zoos/aquariums, how long have you been a member of this zoo or aquarium? How many years ahead do you see yourself as a member?
 - a. How often do you go to other zoos and aquariums?
 - b. If you go to other zoos and aquariums X times/year, why do you visit those? What do you want to get from the different visits?

For each of the reasons: repeat the reason, then ask: through that lens, what do you expect to do during your visit? And what do you think you'll pay attention to?

10. Overall, what do you think you'll get from your visit today? How do you think you'll get it?
11. I learned a lot about you and your plans for the zoo/aquarium visit today, in order to get a better sense of what you told me, would you mind to tell me a little bit more about yourself? I want you to tell me anything about yourself that helps me understand your relationship to zoos/aquariums.

(Prompts: What do you do for enjoyment? Do you have any hobbies? What do you do just for yourself? Talk about your family for a minute. Tell me about your educational background. How does that relate to your career? What was your career path? Probe for different careers, check for military if not mentioned. Do you belong to a church, temple, synagogue, or participate in a spiritual practice of any sort? How important is this in your life?)

Post-Visit Interview - Matched

Matched: refer back to entry notes:

1. Welcome back! How was your visit?
2. When you started, you mentioned you came with XXXXXX and were expecting to do YYYYY. Did you do those things? Did you learn anything about XXXX today?
3. How was that? What did you notice while doing them? (prompts: tell me about how you felt; tell me about what happened next)
4. Did you do anything unusual or that you didn't think you would do? And how was that?
5. What insights did you get:
 - a. About [who they're with, i.e., family, date, etc.]?
 - b. About yourself?
 - c. About the zoo/aquarium? (probe deeper than the animals)Did you learn anything new or interesting about somebody you were with? About yourself?
6. Thinking about the mission of the zoo/aquarium, what did you learn today?
7. What is one thing you think you'll remember about today's visit? Why is that?

Post-Visit Interview – Unmatched

1. Welcome! How was your visit?
2. When you came here today, what were you expecting to do?
3. Did you do NAME THEM (what you were expecting to do)?
4. What did you notice while doing them? (prompts: tell me about how you felt; tell me about what happened next)
5. Did you do anything unusual or that you didn't think you would do? How was that?

6. What insights did you get:
 - a. About [who they're with, i.e., family, date, etc.]?
 - b. About yourself?
 - c. About the zoo/aquarium? (probe deeper than the animals)Did you learn anything new or interesting about somebody you were with? About yourself?

Thinking about the mission of the zoo/aquarium, what did you learn today?
What is one thing you think you'll remember about today's visit? Why is that?

Closing for All Interviews

Thank you so much for answering my questions. Please accept this small token of our appreciation. Have a great day!

Appendix C: Codebook for preliminary interviews (study component 1)

STEM Matters Code Book

Entry-Visit Interview

Tell me about yourself

Family Role

Description: Interviewee describes the roles they play within their family, including parent, grandparent, aunt, child, etc.

Parent

- *mother with two children, ages five and four*
- *We have no children*
- *We have three young men now, and two of them have their own families.*
- *I'm a stay at home mom now*

Grandparent

- *with my great-grandchildren*
- *I have a granddaughter.*
- *The middle daughter has four children and our son has one daughter the oldest and then the youngest daughter all married doesn't have any children i*

Child

- *I'm an only child [laughs]. My parents worked and retired to rural North Carolina*
- *My parents are 62 and 53,*
- *Interviewer: You talked about your mom and dad.*
- *Interviewee: Yeah, I lost him — I lost him at an early age, but my mom, she's still around*
- *And my mother lives with us, I moved my mom in with us who's 72*

Spouse/partner

- *My husband's a criminal defense attorney.*
- *I come to the zoo primarily because the girlfriend and I enjoy animals. T*
- *I am married.*
- *was married at that time*
- *Doug and I have five children,*

Other Family (siblings, nieces/nephews, aunts/uncles)

- *My sister is younger than I am*
- *have a brother in England.*
- *I don't have brothers and sisters and I don't know,*

Age

Description: Participant gives us their chronological age

- *I'm going to be 78 pretty soon*
- *So my wife is three years younger, so she'll be 75 pretty soon*

Stage in Life

Description: Interviewee shares their stage in life, retired, early career, stay at home, etc.

Retired

- *I'm retired,*
- *Semi-retired*

Stay at home

- *I've been at home five and a half years.*
- *I'm a stay at home mom now*
- *I am disabled. I haven't worked since 2006.*

Working

- *Semi-retired*
- *I currently have my own business. I have a travel business and I've had that since we decided to leave Massachusetts.*
- *work part time as a registered nurse*
- *I work at the local newspaper, the Star News,*

Near retirement

Description: within a year or two of retirement

- Interviewer: *Are you close to retiring or —*
Interviewee: *Yes, probably in a couple months*

Starting career (0 – 3 years)

Mid-career (4 – 15 years)

- Interviewee: *work at Arizona State University*
Interviewer: *Would you say you're near retirement at this point, or mid-career?*
Interviewee: *I probably have 15 more years to go, in theory.*

Late Career (Over 15 years)

Student

- *I'm working on my master's in nursing right now.*
- *my husband and I both work and go to school*
- *I haven't finished because – so I go to ASU but I work at ASU.*

Work

Description: Interviewee describes where they work, volunteer, or retired from. A job is something you do, a career is indicated by the phrase "I am, I was".

Volunteer

- *I also volunteer at a cat shelter.*
- *I had thought of volunteering for bird sanctuary. T*
- *I've been president of several organizations. Done that been there, raised a lot of money in the past.*
- *I'm involved also with the OCEARCH Organization that tags great white sharks off the coast and other sharks*

Job (This is what I do, I did this—not I am, I was)

- *I shuttle cars for a few automotive dealerships, car dealerships.*
- *I worked at human resources for Kepper Insurance. Kepper Insurance was closed down. They didn't have enough reserves to sell any more policies.*
- *it was always human resources with administrative management.*
- *I did 22 years of steel work. I worked in steel fabrication*
- *Went and had a dump truck service and so I ran a dump truck for 22 years.*

Extended family work (my daughter is a zoo keeper, my dad was an engineer)

- *our daughter in law worked here for 13 years*
- *One of my friends is a veterinary surgeon and she worked on one of the monkey*
- *he was in the military,*
- *Our neighbor works here.*

Military (Includes interviewee or immediate family, i.e., spouse, mother, etc.)

- *he was in the military,*
- *Back in the Vietnam era, yeah. I was in the Army for two years.*
- *My dad was in the military, so... He was in the military. He was in the Navy for 26 years, so we moved all the time*

STEM (Work(ed) or volunteer (ed) in STEM field or for a STEM organization)

- *I'm a chemical engineer by trade*
- *Prior to being an engineer, I used to be a teacher in the chemistry field*
- *I volunteer at the Conservancy*
- *I'm a systems analyst for a health care organization.*

Retired from (This is what I used to do, typically interviewee speaks about it in past tense)

- *I'm an engineer and a lawyer.*
- Interviewer: *Okay. So, then, what did you do as an engineer and a lawyer for the federal government?*
Interviewee: *I worked for the U.S. patent office.*
- Interviewer: *Are you still working at that veterinary clinic?*
Interviewee: *I don't any more. I had to retire.*

Career (This is who I am, I was –not I worked)

- *I was secondary ed, so I taught 7 through 12. Primarily high school range.*

Other (includes disabled, considering a second career, searching)

- *Maybe a second career as a teacher*
- *I am not working at this time.*
- *I worked for a couple of years, had three children. Stayed home with the children and then when the last one was in high school getting ready for university I went back to work.*
- *I think sometimes I should be doing something education wise, but then, that was kinda compartmentalized in my life, but I see myself when there's — it's not a good thing coming from a teacher and you're like, come to the zoo or come to the Conservancy and there's kids and there's — I wanna teach them*
- *I am disabled. I haven't worked since 2006.*

Education

Description: Interviewee describes their education, including formal and informal opportunities, degrees, certificates, licenses, etc.

Extended family degree

Description: My dad was..., My child working on....

- *One of them is electrical engineer. He works for Qualcomm.*
- *His situation's a little bit different, and it's because he is going to pharmacy school right now.*

STEM

Description: Any degree that is related to STEM

- *My bachelor's degree is in chemical engineering.*
- *then the other one he has MBA, and he works with a government contractor, into computers, the security aspect. I don't know what exactly he does. It's a secret thing or confidential. And then the third guy is a — by profession he's a chemical engineer, but he has a lot of interest in art and music.*
- *Later in my 30s, I went back to school and got a degree in veterinary science and became a technician.*

Lifelong learner

Description

- *I'm always kinda learning and interested in stuff,*
- *Yeah, take a class or something.*
- *I enjoy fixing things up or learning skills*
- *I would say probably part of it is continuing education, what's going on, what's happening. Like in the Everglades, the last time I was wondering what's going on with those Burmese pythons.*

Degrees, Licenses, and Extended Educational Experiences

Description: Includes any mention of a degree, certification, or educational experience

- *I have a masters degree and I went to the University of Florida and studied mass communication.*
- *My bachelor's degree is in chemical engineering.*
- *graduated from Arizona State*
- *I have certifications. I did not get my bachelor's. I have some college with certifications*
- *It was a division of London University. We lived just outside London in Elay, West Elay actually. And it was East Mont. It was a teacher training college*
- *I took the tour of — it's now, I think, Kaplan College or Carrington — Carrington maybe. It's changed names, but she — I took the tour with her, just to go on with and I ended up signing up and she ended up dropping out. I stuck it out and got the degree and then really liked it and started working right away.*
- *I went to Marshall University.*
- *Graduated high school and then went to college for a short period of time*
- *have my real estate license*

Other

Description: Includes a one-off workshop or class, putting off college, going back to college, switching degrees, etc.

- *then I'll probably go back to get another masters degree from UNCW — is what I'm looking at.*
- *I had opted to put off college 'cause I had told my parents they would be wasting their money, I knew my first year out of high school would not be a good choice and I wanted to just go work*
- *Interviewee: — so I go to ASU but I work at ASU.*
Interviewer: Okay.
Interviewee: So it's like, I take classes here and there, I haven't completed.

Race/Ethnicity

Description: Interviewee indicates their race/ethnicity, or lack of

Lack of

Description: I don't believe in race, we are all human

African American

Pacific Islander

Hispanic

White/Caucasian

- *Sure. I'm white [laughs] Caucasian, non-Hispanic.*
- *I'm Caucasian, white.*
- *Interviewer: A lot of Native American?*
Interviewee: Yeah.
- *Interviewer: Would you consider that, if you were checking the box, would you check that box?*
Interviewee: Naw, white.
- *Interviewer: No?*
Interviewee: Yeah, just Caucasian.

Native American

- *I'm actually Native American. I'm Cheroenhaka. A good portion of that and I'm Ukrainian, b*
- *Native American*
- *Caucasian. But you've got a lot of Native American background?*

Asian

Heritage/Country

Description: Interviewee discusses family heritage, country of origin, i.e., My family is from Poland, My family emigrated from Korea

- *Interviewer: So you came from India when you were college age?*
Interviewee: Yeah.
- *Well we met and married in England and immigrated in 1965*

Residency

Description: Interviewee discusses where they were born, lived, etc.

Identify with

Description: I'm from

- *I'm from North Carolina*
- *I'm native of Phoenix. I've lived here for my entire life.*
- *formerly from Connecticut*
- *Michigan originally*
- *When I was four and a half my mom remarried and we moved to Boston, so from the age four and a half to twenty, so I consider Boston my home, so I'm from Massachusetts.*
- *So you're very much a local.*
Interviewee: Yeah.

Born

Description: I was born in

- *born and raised in Chicago.*
- *I was born in Yorkshire. Charlotte Bunting Country.*
- *No. I'm originally from New Hampshire*

Live now

Description: Interviewee shares where they are currently living

- *Now we are living at Wrightsville Beach*
- *I live in Naples,*
- *Well, we have still a house back north, and we just come here twice a year for a couple of months each. We have a house here and a house there.*
- *No. I'm originally from New Hampshire and transplanted out here and just really like the warm weather. Decided I didn't wanna go back home to the cold.*

Grew up

Description

- *I'm originally from the Washington, D.C. area*
- *growing up, I went to the Bronx Zoo, 'cause we lived in New Jersey,*

- *Yes my father came home. And then he had to get a job and he got a job and then he got another one in Manchester. Gosh dredging all this stuff up. I don't think about my past. I don't talk about it very often. I'm married to a man who knows it so what conversation do you have about the old days. I lived in Manchester from about eight years through 14. My father moved again got another job down to London and went to school there and -*
- *they would literally pull me out of school in the winters and we would winter here in Arizona.*

Lived

Description: Interviewee talks about other places they may have lived

- *I've lived in eight states, three major metropolitan areas,*
- *previous to that, I worked in New York City, and before that I played Division I softball at the University of Virginia, and we – I also lived in Atlanta, 'cause I went to Georgia State my freshman year. I loved Atlanta.*
- *Interviewee: So really just northern Virginia, St. Louis, and then he was in Manhattan, so we were in New Jersey.*
Interviewer: Okay.
Interviewee: And then back to Virginia.

Religion

Description

None

Description

- *No, I'm not a real religious person. My husband's Catholic, but I didn't have to do any classes or anything or — no, just kind of a free spirit as far as religion is concerned.*
- *No, no formalized religion.*

Structured

Description

- *Yes, I grew up Catholic, but now we've just recently started practicing at Hope Community Church, which is a new church, in November I believe. And it's sort of an offshoot of the Presbyterian Church, but it's still Bible-based,*
- *Interviewer: Do you belong to a church, synagogue -*
Interviewee: Yeah.
Interviewer: And how important is that to your life?
Interviewee: Very important. Extremely important.
- *I am Catholic, but I don't belong to a church.*
- *we go to church occasionally, but not on a regular basis.*

Important

Description

- *Interviewer: Do you belong to a church, synagogue -*
Interviewee: Yeah.
Interviewer: And how important is that to your life?
Interviewee: Very important. Extremely important.
- *I'd say pretty important. We go to church regularly.*

Not very important

Description

- *I don't formally belong to anything, but I'm a Hindu by my upbringing, and I practice _____ overall. But I don't subscribe to any rigid philosophy kinda thing.*
- *I am Catholic, but I don't belong to a church.*

Extended family

Description

- *My husband's Catholic,*
- *Interviewer: He was raised Catholic, he considers himself Catholic, but —*
Interviewee: Yeah, his parents were very Catholic.

Unstructured

Description

- *It's very important to me, but it's internal. I'm not a public –*
- *Interviewer: you're spiritual, but you aren't formally affiliated.*
Interviewee: Right.
- *Nothing organized, I don't.*
- *I don't belong to any. I grew up Catholic, then I got married in the Lutheran church, and then kind of would call myself Christian, but not necessarily practicing.*
- *I definitely believe in a higher power. Yeah. I would say, yeah*

Hobbies

Description

Exercise

Description: I walk, I hike, I swim, I do hip hop class

- *just finished 14 weeks of training three days a week*
- *here's a yoga retreat with my yoga studio in Crequessin*
- *I do do a lot of hiking and exploring. I'm an avid Salt River tubing person. My brother and I snorkel*

Animals

Description: I do agility with dog, I ride horses, I have chickens, I go to the zoo

- *I had a cat for 15, 18 years, but no. I just — the affinity for animals,*
- *We did go on safari in Africa and Kenya and that was amazing because they were in the wild.*
- *we go to the zoo*
- *I go to Disney. I did the safari canyon thing and we had an opportunity to go behind the scenes in the Africa section.*
- *they're having a wildlife outdoor activity thing*

Visual Arts

Description: Photography, drawing, painting

- *we like the Cameron Art Museum*
- *I paint. I draw*
- *maybe some more art stuff. Actually, I wanna learn how to weld. I don't know. It just fascinates me. I'd like to be able to learn how to weld.*
- *I ran back to get my camera. I usually keep it in the dining room*
- *there's always some new picture to take, and this time it was a very daring turtle walking right in front of an alligator's nose.*

Local events

Description

- *I got to Artists Naples, but I don't have a membership.*
- *take advantage of different activities and things that happen in the valley*
- *I go to the festivals*

Nature

Description: Birding, watch nature documentaries

- *Me spending time in nature. I'll — Arizona's a big desert area, but we do have couple of _____ areas up above the Mogollon Rim. So, every summer, I'll just — I'll go and camp for a weekend,*
- *He was really interested in finding geodes. We spent a week just all over the desert looking and picking up rocks and hammering them to crack them open.*
- *I enjoy coming to the beach as often as possible*
- *a lot of time if we're traveling to Pennsylvania or New York or something like that, we'll try to plan a stop into one of the national parks and then there's a battle field park close to here that's — you can go out to see.*
- *participating in different activities on the beach.*

Travel

Description

- *I'd travel. I would — if I had more time and more money, I would definitely travel*
- *I've been to over three-quarters of the states and 14 countries as of yet.*
- *I always had a wanderlust*
- *We did go on safari in Africa and Kenya and that was amazing because they were in the wild.*
- *we just go to different places, different restaurants and we used to have a group of friends that we did things w*
- *not so much hiking, but exploring different parts of Florida since it's relatively new, and travel.*
- *Interviewee: I'm like a travel agent, so in my like not downtime but in my, when I can niche time out, yeah, I'm like people's travel agent.*

Food

Description

- *go to Port City Produce, which is one of the farmer's market stands,*
- *I would eat more at the Cameron Art Museum Café, which is wonderful. I've eaten there once and it was one of the best meals I've had in Wilmington*
- *we just go to different places, different restaurants and we used to have a group of friends that we did things w*

- *I'll take cooking classes if I see something that's interesting.*

Social

Description: Doing things with groups, family and friends

Group

Description: church, club

- *we are active in things we have at church. A lot of times on Saturday we might have something that we do.*
- *I think being a docent was the best thing that ever happened. I met a lot of new friends. Really got to know our zoo. Got to know a lot about things that were going on, and it's just been the best experience.*

Friends

Description

- *I'd spend more time with my girlfriends – my two best friends.*
- *when my friends would come, I'd always look and we'd always go and do things.*

Family

Description

- *with having a 14-year old, my hobbies are his, my hobbies are his hobbies right now*
- *So my hobbies are more of just getting him to where he has to be and what activities he is doing. So his activities used to be robotics, up until eighth grade; now that he's in ninth grade, because his school demands are so much higher we had to pick and choose what we were gonna cut out and he chose to cut out robotics because the time commitment is four days a week for robotics. But he is still in code and coding club and then he also was accepted into the National Science Foundation Research for the ANT Program at ASU, which is AP Maker Pro. So that's an 18-month commitment so pretty much, and he's very active in all sorts of Lego building and pretty much my hobbies are getting to him, getting him where he needs to be.*
- *I'm like a travel agent, so in my like not downtime but in my, when I can niche time out, yeah, I'm like people's travel agent.*

Theater

Description: Perform or watch plays

- *I only take the kids to see the Nutcracker at Christmas. I haven't – I don't know if it's the scheduling. Cape Fear Community College has a new theater that's been great. We saw Annie. It's off-Broadway too. I mean it was a great production, and that was at Thanksgiving. We've seen the Nutcracker – it was the Carolina Nutcracker. We've seen – we were on stage there with part of the Jungle Book and we – actually Bear memorized lines and we helped narrate the Jungle Book.*
- *Fly to New York and go see theater up there*
- *The girlfriend and I are also members at the Camuch Theater. We have a run of plays or musicals*
- *Interviewer: but you're not an arts person? Musical, theater?*
Interviewee: No. I do participate but we don't have a membership.
Interviewer: So you just go a handful of times a year.
Interviewee: Probably like three or four.

Music

Description: Play or listen to

- *I would take some kind of music lesson.*
- *I'd also go to more live music venues.*
- *I like to go to the Artist Naples when the philharmonic is playing*

Garden

Description

- *one of my hobbies is to grow fruit trees*
- *we've done a lot of stuff outside in the yard, and the kids have helped plant some flowers,*
- *Water her plants.*

Sports

Description: Play or watch

- *I played Division I softball at the University of Virginia*
- *I just did a half marathon.*
- *Bear takes karate, El does gymnastics, and Bear just started T-ball,*
- *we would always plan a trip every year up to Baltimore to go watch the Orioles for a series.*
- *Well not season tickets, but my husband runs the clock for the PDL soccer team in Greensboro.*
- *Interviewee: No, but the Red Sox?*
Interviewer: Yeah.
Interviewee: Their spring training is here, so we try to go to a game. It's very hard to get tickets.

Crafts

Description: Quilting, knitting, sewing

- *I crochet;*
- *Interviewer: What kind of things do you do there?*
Interviewee: Well, whatever I find on Pinterest I get ambitious for. I do a lot of stuff around the house. I'll paint or maybe do some craft things or kind of refurbish, or upfurbish as they call it, furniture things like that.
- *recently I bought this loom. It's a wooden frame and it's for making little handbags, and scarves. And a couple of years ago, I bought the round knitting looms. And I make little hats and scarves with those. So I knit.*

Reading

Description

- *but we live – I listen to public radio. We like to go to Barnes and Noble and look at books.*
- *I'd definitely read.*
- *we're both avid readers.*
- *I belong to a book club also*

Active outdoors

Description: Interviewee describes doing vigorous outdoor activities, including hiking, rock climbing, snorkeling, etc.

- *I do a lot of hiking and exploring. I'm an avid Salt River tubing person. My brother and I snorkel*

Other

Description: Unstructured, typically relaxing, activities or structured activities that don't fit under the other codes, including listening to public radio, smoking cigars, sleeping, playing cards, welding

- *I listen to public radio.*
- *I smoke cigars. That's a relaxing activity at best time.*
- *Interviewer: time in the day, what would do you with it?*
Interviewee: Sleep. Terrible answer, but sleep.
- *I play bocce, I play mahjong, and I play cards.*
- *So my hobbies are more of just getting him to where he has to be and what activities he is doing. So his activities used to be robotics, up until eighth grade; now that he's in ninth grade, because his school demands are so much higher we had to pick and choose what we were gonna cut out and he chose to cut out robotics because the time commitment is four days a week for robotics. But he is still in code and coding club and then he also was accepted into the National Science Foundation Research for the ANT Program at ASU, which is AP Maker Pro. So that's an 18-month commitment so pretty much, and he's very active in all sorts of Lego building and pretty much my hobbies are getting to him, getting him where he needs to be.*

Visit

Who visit with

Grandparents

Description

Other adults

Description

- *My girlfriend had her grandkids in, and I brought them here and we spent an afternoon here*
- *My wife and a friend.*

Group/Club

Description: Scouts, 4-H, running, moms with preschoolers

- *I came with both young life _____, so it's like I'm _____.*

Children

Description

- *the kids see the fish.*
- *It's usually just me and my – the children.*
- *My girlfriend had her grandkids in, and I brought them here and we spent an afternoon here*
- *Usually my girlfriends — most of my girlfriends have kids,*
- *I was taking my niece to zoo camp,*
- *This is the first time I came to the zoo without a child which is unusual because normally I wouldn't have done that*

Alone

Description

- *I would actually come here sometimes during lunch and just do the outer loop around Africa Trail*
- *Usually my husband and I come, but it's probably half and half when we come together or we come separately*
- *So when he's doing that, that allows me to walk around. But one time just this past December I came to buy our zoo light tickets and I was waiting for something to open, do something, I can't remember. And I actually spent like an hour and a half here, like the zoo was open, here by myself walking around without*
- Interviewer: *Do you ever come visit by yourself? Maybe other than today or.*
Interviewee: *Sometimes. But that's not often. Like maybe once or twice a year*

Friends

Description

- *My wife and a friend.*
- *My wife and I always and then occasionally we have friends that travel with us just to hang out.*

Other family

Description: Includes aunts/uncles, nephews/nieces, etc.

Date/Spouse/Significant Other

Description

- *I come to the zoo primarily because the girlfriend and I enjoy animals.*
- *Usually my husband and I come,*
- *I like going to the zoo by myself. But here, pretty much he goes with me.*

Grandchildren

Description

- *with my great-grandchildren*
- *usually we come with – we have some of the grandchildren with us*
- *She's 6 and she always has to come here. She likes it here*

Parents

Description

- *my mom is also on our membership pass so sometimes she'll come, too.*
- *Yeah, with my son, and, actually, my parents came with us when they were*

Number in visit group

Description: Interviewee mentions number in the group

Interviewer: How many kids did you come with today?

Interviewee: Two.

- *came by myself.*
- Interviewer: *So it's just three of you then? Just the two little ones.*
- Interviewee: *Yeah. Husband is working today, and so we have a couple guys under five and here we go.*

What prompts visit

Bringing others

Description

- *I will bring friends here.*
- *We have a _____ [background noise] membership to include the family type of thing so that we can bring our grandkids here when they come to visit us.*
- *Usually anybody that comes into town, I bring them to the zoo*
Interviewer: *Where did you take them on field trips? Did you take them to the zoo?*
- Interviewee: *The farm, the zoo, always the zoo.*
- *It's part of my being a hostess to come to the zoo*

Out of town

Description

- *They always wanna do something like to go to the aquarium, so we do that.*
- *when people come to town*
- *My best friend from Boston and now she adopted a young boy and hopefully they'll be coming out to visit soon and we can bring him.*
- *Usually anybody that comes into town, I bring them to the zoo*
- *To show them the - mostly because of the animals and the foliage here. There's a lot of beautiful trees and it's a very quiet zoo*

Tradition

Description

- *We go to the aquarium just about everywhere we go so.*
- *as a kid my parents brought us to Carolina Curry beach area. So I've been here coming all my life*
- *we've come and tried to maintain that tradition*
- *I've been on night walks and the zoo lights I love. I've gone every year for eight or nine years since I've been out here.*
- *This has been usually an annual visit especially if the grandchildren are with us*
- *My grandfather used to take us to the zoo all the time, so it's always kind of been like a love.*

Convenience

Description

- *I work probably four miles away. This is a good place for me to come and just walk around.*
- *Sometimes I don't plan ahead of time and we just wake up and I just say, "Let's go to the zoo." So we have that convenience as being zoo members,*
- *If I felt more comfortable driving, the aquarium of is not that far away.*

Add on to experience

Description

- *if you start backwards and go to Fort Fisher and just play on the rocks, and go out and beach comb, and then go to the playground, and then do the aquarium, it lasts longer,*
- *We just came here to vacation.*

Something to do

Description

- *I'll just be like, I don't have anything to do today, I'll go to the zoo*
- *I'm free today. No commitments, no grandkids, so I just decided it's a good place to come on a Saturday morning.*

Special event

Description: Interviewee comes for a scheduled activity that does not happen on a regular basis

- *did come last year for a drawing learning.*
- *I've been on night walks and the zoo lights I love. I've gone every year for eight or nine years since I've been out here.*
- *The other benefit when I was working as a technician, we'd come for the continuing events that are held here. I would come here for CE, but I do*
- *I was taking my niece to zoo camp,*

Because I have membership

Description

- *Cause we have the membership, we probably come two – probably every four to six weeks,*

Other

Description

- *Getting out of – away from Wilmington.*
- *I just enjoy going through the aquarium and just seeing all the marine life.*
- *Sometimes it's just you need them. We always call it a change of zip code.*
- *Interviewer: Did you ever go to the zoos for professional development as a teacher?*
- *Interviewee: Yes I did. More towards the end of my career because that's when I kind of got more into hands-on science, and kind of learned more of what actually was going on at the zoo.*
- *Interviewer: What's the purpose of your visit to the zoo?*
- *Interviewee: I was coming just for this.*
- *We actually weren't coming here this weekend but when I saw the e-mail about the survey I decided "Well, it's supposed to be nice; we'll come down."*
- *because there was an e-mail that said come do a survey*
- *we'll be Pokémon hunting.*
- *we have the membership and I like to get them out of the house and since we have the membership we don't really have to spend a whole bunch of money, so I like to bring them here. Convenience?*
- *Interviewer: What prompts these visits?*
- *Interviewee: The weather. Them asking.*

Who drives experience

Description: Mentions of who leads the experience (the kids, the interviewee, etc.)

Adult interviewee

- *Expecting to take our kids to see as much animals as possible*
- *came by myself.*

- *Usually anybody that comes into town, I bring them to the zoo*

Multiple individuals

Description: Child sometime, interviewee sometimes

- *they always wanna do something like to go to the aquarium, so we do that.*

Adult other

Description

- *We came down here to – for a memorial service for my sister, and she loved the aquarium. And so that's why we decided, after the service, to come on down here.*

Children/grandchildren

Description: We go where the kids want to go

- *Whatever our toddler wanted to do.*
- *we come to visit the grandchildren. And they love coming to the aquarium so we come up quite often.*
- *Usually what I do is the kids pick. I pull up a map. Let's find animal list, and they point to what they want to do. We try to go to a different place every time. So like today we're going to go see the alligators and the horses is what they said, and then if the zebras are done with their exhibit construction, we're going to go see the zebras.*

Technology

Description: Interviewee mentions technology in some form, either positively or negatively, including social media, selfies, cell phones, or Pokemon

- *get him away from video games and computers and TV and all that fun things that kids grow up with today.*
- *we have an app for that.*
- *we'll be Pokémon hunting.*
- *where we went inside the tank and took selfies. We've been here three or four times and we've never noticed that part before. That was fun*
- *unfortunately they're in the new age kids and they'd rather have a phone in their hands. But whenever I can get their attention in the animals they like to look at the animals too.*
- *Yes. If you search, it's O-C-E-A-R-C-H.org, and you can see the actual tracking device there, and you can get the app on your phone. That's what I have. I can show you.*
- *so I thought wouldn't it be funny if that shark had a Twitter account, and so I checked and it didn't have one. As a matter of fact, none of the sharks had Twitter accounts so I created one, and it's now has like 103,000 followers.*

How often visit

Description: Interviewee tells us how often they visit the zoo

- *we come as often as we can*
- *it seems like you come three or four times a year.*
- *More during the summer. During the summer, at least four times a week.*
- *don't come here that often. I've been here a handful of times.*
- *we would do that every Tuesday. And sometimes we come on Fridays*
- *Interviewer: So 40-50 years you've been coming here.*
Interviewee: Yeah.
- *Cause we have the membership, we probably come two – probably every four to six weeks,*

Visit time/season

Description: discusses the season or time of day of visit, including weather, animal activity, crowd conditions

Impact of Crowds

Description: Impact of crowds on visit

- *Interviewer: Why do you think you read more today?*
Interviewee: Because we weren't flying through, and because it was more crowded, so we were stopped more. Usually they run through so fast, I'm trying to keep up with them; but because it was crowded, we actually stopped
- *That's sort of why we came today because it wasn't as crowded as it would have been if we would have come when school was in*

Time of Day

Description: Impact of time of day on visit

- *this time of day is perfect, because the animals are out. They're enjoying themselves still, they're doing something, and even as much as the tiger is just pacing in their exhibit, they're up, and they're doing something. It's fun to watch.*
- *We are 20 to 30 minutes away driving. So to come to evening things if you drink it's too far to be driving if you have had a drink. And everything social these days has alcohol and I happen to like alcohol. So the two of us we're saying it's not a smart thing to do. We need to do things closer to home unfortunately.*

Weather/season

Description: Impact of weather on visit

- *The zoo is a great place, especially when the weather is nice*
- *I'll come three or four times a month in the nicer months. Nine months out of the year, I'll be here three or four times a month. In the summer months, I'll be here maybe once a month, 'cause it's just too hot.*

Intent for visit

Description

Social

Description: Be with family and friends, Make contacts

- *It started with me-and-my-nephew-type activity.*
- *it's typically somebody else. It's more of a fun experience to enjoy with another.*
- *And so it's different when you have your kids and your grandkids along and you share, each of you share ideas and you see the enjoyment.*
- *And it's a place where people can be together as families.*
- *Watching them. I spend a lot of time watching them, yeah, but also, it's fun to watch them, because they're getting excited about what they see.*

Family time / activity

Description

- *I purposefully tried to take my time with them,*
- *Obviously you see the excitement on our kids' faces just makes it worth the time.*
- *it's to see how they reacted to what they saw*
- *we all get to enjoy it together*
- *we like to spend time together*

Be outside

Description: Interviewee talks about getting outside, away from the trappings of the indoors, enjoying the fresh air

- *a great way to get out*
- *just to get him out, get him running around, get him away from video games and computers and TV and all that fun things that kids grow up with today.*
- *Interviewer: So you're trying to get them –*
Interviewee 1: More active outside, yes.

Natural environment

Description: Interviewee talks about the plants, the landscaping

- *Mostly just to come and kinda communicate with nature*
- *enjoy the various trees and plants they have.*
- *it's always interesting, the landscaping, how they incorporate the zoo into the – kind of what you were just saying – the natural environment*
- *I mean the zoo is a great place, especially when the weather is nice to come out and see some Arizona scenery*

Exercise

Description: Walk, physical activity

- *just get a little bit of exercise*
- *I would actually come here sometimes during lunch and just do the outer loop around Africa Trail*
- *the physical activity,*

Animals/Animal experience

Description: I want to see baby polar bear

- *the kids see the fish.*
- *Expecting to take our kids to see as much animals as possible*
- *I mean the zoo is a great place, especially when the weather is nice to come out and see some Arizona scenery and all the animals so it's just a great way to spend your day.*
- *way from your normal world, and able to kinda get back to nature, and kind of think about, you know, obviously all the animals are interesting and have typically their stories and you can get more involved in that, and take your mind away.*

- every time you come, you see something different, and you see the animals do something different.

De-stress

Description

- build the mood up. I mean, make both of us happier. That's about what we'll get out of it today.
- It's calming for me
- just the peace and quiet of today for me.
- Yeah, just being able to mentally zone out, go enjoy something that's not work related

Learn something

Description

- The learning experience
- the ability to see animals that I might not otherwise get to see.
- kind of educate the general public
- We like to know more.

Gift shop

Description

- I love the gift shop. Any chance I get, I love to get stuff from there, because it's pretty affordable as gifts for people to give during the holidays

See / do something different

Description

- I like that it's big enough that you feel like you see something new every time,
- Interviewer: what do you think you'll get from your visit here today?
Interviewee: I don't know yet. Every day is a little different when we come here.

Fun

Description

- Her and I now come to the zoo and it's just a fun, rewarding activity.
- it's kind of enjoyable outing for us.
- so this is a place that you go to be educated by going to the lectures, and a place that you take to entertain family?

Participate in special event

Description: Interviewee shares they are participating in an activity that that happens at a prescribed time, doesn't happen every day

- before we had kids my husband and I would come to the zoo for like Zoo Lights by ourselves
- So we started a routine on Tuesdays they would do toddler Tuesdays here.
- Interviewee: he, he takes a lot of classes here, right, wild sciences, horse hands.
Interviewer: Okay.
Interviewee: He's been through all of them. So when he's doing that, that allows me to walk around.

New exhibit/Thing

Description

- We go to a different part of the zoo every time,

Other

Description: includes work, pokemon

- usually if I come out here by myself, I'm coming out to maybe work on something for the newspaper, like, come out and talk to Madeline,
- You come here and you see the very same thing in captivity and then you say, "Wow this is what I'm seeing here but I saw the real thing at the Oakland Ocean up near the shore."
- You mean other than we're trying to track down a guardose Pokémon?
- I'll get to kind of enjoy more of what I want to look at versus being pulled, hey, mommy, let's go look at this, let's go look at that.

Supporting zoo / aquarium

Description: Interviewee is here to support zoo/aquarium

Visit activity

Hobbies (Photography, birding)

Description: Interviewee shares a hobby-type activity that they plan to do/or did as part of their visit

- I took some pictures and stuff of like the giraffes 'cause they were eating.

- *get some photographs,*

Playground/Rides

Description: Interviewee shares that one of the reasons they visited was to use a playground, splash pad, or ride a ride or animal (i.e. carousel, camel).

- *They had a lot of fun on the carousel ride.*
- *the splash pads are open so, of course, we took advantage of that.*
- *Everyone went inside the crab – the hermit crab statue.*
- *Look at the fish, touch some fish, play on the playground.*

Food

Description: Interviewee references eating something at the zoo

- *We just got here, so eating breakfast.*

Special event

Description: Interviewee shares they are participating in an activity that that happens at a prescribed time, doesn't happen every day

- *veterinary friends had her wedding here*
- *They have a lot of lectures. For instance, we've gone to – it varies. There's been lectures on giraffes because giraffes are close to becoming endangered, and we've had the professor that is out there – I don't know his name; he's a professor. Whatever his title is – that is handling a big project and migrating giraffes from place to place.*
- *I've been on night walks and the zoo lights*
- *The other benefit when I was working as a technician, we'd come for the continuing events that are held here. I would come here for CE, but I do – I come for special occasions and the invitations that are given out, I try to come to the events that are held here. Definitely Zoo Lights*
- *And they offer lots of different – I think they offer lots of different educational programs*
- *The zoo has offered a local artist will come and she will take people around and for two hours or whatever it is. And you draw or sketch or whatever. And it was very nice. I enjoyed doing it.*
- *The toddler Tuesday thing here is a smaller scale. The kids get to learn about sea creatures on a four and five year old level.*

Animal Experience/ Show

Description: includes keeper talks, diver shows, etc

- *Well obviously we go through the petting area.*
- *watched a couple of animal feedings. They were feeding the black foot ferrets. They were feeding the orangutan. They were feeding probably two or three other animals.*
- *You can touch the sand sharks here.*
- *the first time we've been here that we've been able to see the feeding tank, which they weren't – they weren't feeding. It was the show with the diver in the tank, and he was speaking through his oxygen mask to the audience, telling us about manta rays and sharks, and –*
- *I got to stop and listen to the giraffe keeper speak today*

Look at animals

Description

- *We saw the jelly fish.*
- *My favorite part was the big tank.*
- *You've got the bird overlook where the hurricane education center is. I think that whole bird area is really interesting, 'cause sometimes there is an osprey or something sitting on the top.*
- *The elephants from a distance were great and the tiger was making a lot of noise today so it was a lot of fun.*
- *looked at the animals*
- *usually what I do is the kids pick. I pull up a map. Let's find animal list, and they point to what they want to do. We try to go to a different place every time. So like today we're going to go see the alligators and the horses is what they said, and then if the zebras are done with their exhibit construction, we're going to go see the zebras.*
- *here's that one area where you can stick your hand in.*

Do the usual

Description

- *It was pretty normal typical day at the zoo.*
- *Interviewer: So it was a fairly typical visit for you.*
- *Interviewee 1: Yes.*

Explore / walk around

Description

- *Always walk around and visit with the animals.*
- *We'll walk through*

- *I just think letting them explore. You know, we don't need to force them into some sort of structured environment,*
- *we just did a little tour walked through the aquarium looking at the exhibits*

De-Stress

- *Just got to hang out*
- *I can just sit and look at something for a few minutes without feeling like I had to move to the next thing.*

Educational experience

Description: Read labels, docent interaction, keeper talks

- *Yeah. Every exhibit they have a little sign about it, and so that's how we learned about it 'cause we were sitting there watching the alligators and we read the sign.*
- Interviewee: *We saw a bunch of boys put the pennies in the centrifical –*
Child: *And I caught one.*
Interviewee: *And what was that mimicking? The power of a – what kind of storm?*
Child: *A hurricane.*
- *They have that rolling thing at almost every window that tells you what the different fish are.*
- *I think each time you come you pick up little tid bits of information that maybe last month or last year you didn't gather and you add to that it kind of gets you a little bit of a feel for what goes on in the underwater world.*
- *There was a baby loggerhead turtle there, and that's the first time I'd seen that 'cause usually they had green turtles in the tank, and so the volunteer was talking to me about the process*

Do everything

Description

- *We saw most of them*
- *it's a small aquarium, but it's got a lot going for it, but they tend to fly through and then get to the playground*
- *see everything there is to see*
- *I kind of take a walk around the whole loop.*
- *We're probably gonna do the Arizona Trail this morning and then probably the Africa Trail before we leave. Probably just some interactions with some of the animals that might — that are still awake enjoying themselves. Seeing the Mexican wolf pacing or yeah, one of the baboon species up in the Africa Trail manipulating or playing with objects. That's what we expect to get out of the zoo today.*

Something New

Description

- *And then we've been here – we never noticed before – El Bell, Elena your favorite were – it was concave – the big circle – the plastic where we went inside the tank and took selfies. We've been here three or four times and we've never noticed that part before. That was fun.*
- *I'm kinda hoping to get out of today is to see some of the animals out on the African trail 'cause our last several visits we haven't done the outer loop*
- *I guess I'll go check out — I don't know, what's new.*
- *normally I don't see the ant eater, today was the first day I saw the ant eater.*

Exercise

Description: walk around with purpose of exercising

- *I have a plan to walk at least three times around, if not four.*
- *I can do with a little bit of activity*
- *I'm a member, an annual member, and I walk a couple of times a week. Three or four times a week.*

Fun

Description

- *They have so much fun*
- *Just enjoyed ourselves*

Gift shop

Description: Interviewee mentions gift shop

- *They get a tee shirt or stuffed animal, whatever.*

Other

Description

- *Mostly I watch the kids how they enjoy the aquarium.*

Zoo Mission

Mission of the zoo / aquarium

Description

Environmental/Habitat conservation

Description

- *part of it's environmental stewardship and preservation,*
- *so I know that the turtles and the ecology is always forefront.*
- *Kind of what I was just saying, I think, I don't know if it is but conservation, yes, but I think it's just general overall just trying to educate the general population. You know, why is conservation important, why is, why is it important to save these species.*
- *they're trying to raise money to save a lot of different places, I think.*
- *to gain interest so that it can be maintained.*

Education

Description

- *to inform the public about animals, maybe an endangered species and how they live and their various appetites and everything. Yeah. I think a lot of it outside of entertainment is about education.*
- *educating the public*
- *Yeah one of the guys who was going to dive was standing by one of the exhibits and he was talking about the fish.*
- *I think the zoo does a lot to educate children and families and I know they take stuff out to the — to different neighborhoods. They have the mobile zoo thing,*
- *Yeah. I think, yeah, it is. Yeah, because I haven't really — I haven't really seen anything to sway my opinion otherwise. I haven't seen any mistreat — mistreated — the conservation stuff that they do is huge, I know that, with the ferrets and I think frogs, too, I saw that, and I think they do a lot really to educate the public. I really do and they hold a lot of events that get people's interest and they do a really good job at getting, I think, the message out there to the public about what they have to offer and what you can do here. If people take the time to check it out, I think it's great.*
- *it's important that zoos bring awareness to what our environment is like*

Other

Description

- *I found out this zoo is doing a lot of research along with the conservancy tagging the male when they find them to lead them to the females*
- *People if they don't see the animal. If they don't have an interest in the animal they're not going to care. That's my feeling.*

Entertainment

Description

- *it was entertaining a*

Supporting other conservation organizations

Description

- *I think there're, what, four across the state maybe. They're part of a network.*
- *the conservation stuff that they do is huge, I know that, with the ferrets and I think frogs, too, I saw that, and I think they do a lot really to educate the public.*
- *I think it's just to protect and I know this zoo is a part of a large organization that is they tradeoff animals so that we can propagate if that's the right word, new animals so that their gene pool doesn't get too dismal.*
- *they help the African people and Wildlife Fund. The Madagascar I think that they've — some of your money here goes towards the conservation efforts in other countries for the animals.*

Animal conservation

Description

- *inform the public about animals, maybe an endangered species and how they live and their various appetites and everything.*
- *the turtle program*
- *conservation. Primarily zoos are meant for the continuation of a species that might not otherwise exist.*
- *primarily zoos are meant for breeding and conservationism to try to release animals back out into the wild and just repopulate species that are becoming close to extinct for whatever reasons,*
- *I think it's to have good husbandry*

Relationship with zoo/aquarium

Support

Description

- *So now that we're members, I felt good joining and giving back,*
- *I love the gift shop. Any chance I get, I love to get stuff from there, because it's pretty affordable as gifts for people to give during the holidays and stuff.*
- *Interviewer: Why is it important to you to come to those events? Why do you do it?*

Interviewee: Support. Support — one, they're fun and they're reasonable. I also I like supporting the zoo. I mean, I haven't donated a whole lot, but that's been something I've thought about is actually donating so that I could kinda sponsor an animal, a tiger, of course.

- *I think it's good to help when we can.*
- *When we come, I just feel like if we — spending money is a way of supporting the zoo, so it's a win-win.*

Advocate

Description

- *I think that's amazing that kids get to do that stuff and I've always wanted to do — I've always wanted to borrow a kid and do breakfast with the animals and the zookeeper and I mean, I always take my Wild Times and I gave a copy of that to my dental hygienist, 'cause she's got little kids and I'm like, here, they have a ton of stuff. You can bring your kids to.*
- *I think they're forward looking. They're always looking to the next step and certainly the giraffe thing has worked out very well and I know it's recognized nationally. And for the size of the zoo I think that's unusual. But I think the size is perfect because everybody including children, you can walk around it in probably an hour if you walked and see everything. But if you stopped it takes a little longer. And they do have a place for the kids to eat. And adults not just children. And it's covered. You have to think about that down here in the sun.*
- *I'm a huge advocate. I'm always pushing it on people*
- *Because when people ask about the zoo I tell them it's not like your typical zoo that you're going to see up north. It's a little bit more laid back. There's a lot of botanical. A lot of plants*

Ownership

Description

- *I talk to the keepers all the time. Some of them know me by name.*
- *I think this is one of the best zoos I've come across and I've watched it grow.*
- *I think being a docent was the best thing that ever happened. I met a lot of new friends. Really got to know our zoo.*
- *I think that since we go so often my daughter, like I said, she feels welcome. She gives tours. Like to me. And so I'll have to pretend like I've never been here and she'll show me everything. She'll like say, and this is my worker who works with me. And she'll me the people's names who work here*
- *nine years ago joined the docent organization at the Buffalo Zoo, so this is my 10th year.*
- *Yeah, it's probably — that will always be my zoo.*
- *I am a very long-term member of the zoo, probably since, well let's see, my son who's being interviewed right now is 14 and I had a membership way before him, so probably 20 plus years I've been a member of the zoo.*
- *I've had a zoo membership since before I moved here full time. I give them as gifts. I have a friend who visits a few times a year and she will come here while I volunteer over there on Sunday morning. That's my official morning and then she meets me back over there after. I know I like the fact that they're both here and I don't have to come all day to go to the zoo. It's nice. It's quiet. It's small and it offers things. They did the python training over there and then Ian did his python presentation here and kinda tied together. I can come to things here easily and what else do I do?*
- *we have lost things like our sloth passed away and things that I — when I first came here that you get very attached to. You lost one of our lions since I've been here, two cheetahs. You get attached to them and their stories and the zookeepers who give their keeper talk and I could probably do some of the keeper talks.*

Use / appreciate

Description

- *I noticed, a lot of volunteer presence there to answer questions.*
- *it's very pedestrian friendly,*
- *it's neat that habitat wise and the way they're fed and it's kept as close to nature as possible*
- *it's not as organic as this zoo. It's a city zoo. They're all city zoos. This is cozy. This is — I like this.*
- *they're very good on their education. They have Greet the Keeper continually going on. It's a monolog but it's a great question and answer session. Anybody that wants a question or has a question, it gets answered.*
- *'Cause it's laid out really nice and it's usually not super crowded or busy and it's enjoyable. Yeah, it's just kinda — it's a fun place to meet at. Just different.*
- *there were a lot of ramps, so it was conducive to those with special needs*
- *it's an act of nature that you don't get to experience unless you come somewhere like this and see it first hand in captivity.*
- *But what I do like about this organization is I feel like they do a lot of giveback. I feel like they are very infused in the community*
- *It's just, the education and the knowledge that people get by visiting the zoo even if they're not gonna become members it has some sort of impact on them, I would hope. So it is very important to me.*

Zoo / Aq Membership

Description

Value

Description: Come multiple times, saves money

- *I joined I think because the prices were reasonable*
- *The price increase really wasn't worth it for me, but I can see that the zoo makes additional monies on people who have a family and have the two adults and up to four kids. It makes sense in those situations, but not in mine.*
- *it gives me a good way to get out with the girlfriend, enjoy ourselves for a day and yeah. The only thing that cost me today, some cost, was the gas to get out here. Nothing else.*
- *I maintain my membership here, because you do get benefits and the ability to come and see the zoo and the animals any time, that's awesome.*
- *if you come very often, it saves on the amount you have to pay, plus then when you get grandchildren you want to bring them*

Other

Description

Support Mission

Description: Conservation of animals and habitat

- *Just continue it even though you're not thrilled with the new membership levels and everything, at the same time, you're still gonna continue to support it and —*
Interviewee: *Yeah. I appreciate what they do*
- *I don't plan on letting my membership lapse. I mean, there's no reason to and I think it's important to support. If I had extra income, I would donate more. I really would, 'cause I think it's a worthwhile cause.*
- *Yes. It shouldn't just be like a roadside entertainment thing. That is the clincher, I think,*

Support zoo / aq

Description: Community asset and entertainment

- *So now that we're members, I felt good joining and giving back,*
- *I don't think I joined for any sort of thinking that I was helping contribute to anything other than keeping the aquarium running.*
- *I don't plan on letting my membership lapse. I mean, there's no reason to and I think it's important to support. If I had extra income, I would donate more. I really would, 'cause I think it's a worthwhile cause.*

How long member

Description

- *We have been a member for maybe 10 – 12 years.*
- *This one's the one that I've kinda maintained. I maintain my membership here, because you do get benefits and the ability to come and see the zoo and the animals any time, that's awesome*
- *This is just my first year and, like I said, I lived here for ten years and we bought a membership last year*

How long plan to be member

Description

- *f they send me a renewal I'll look at the prices and decide then.*
- *Until they give me a reason not to.*
- *As long as I can still pay my dues*
- *Forever.*
- Interviewer: *Do you think you're going to go ahead and renew your membership at the end of this year or no?*
Interviewee: *I don't know. I don't know. That's a good question. We might. I don't know. I have no idea.*
- *As long as I'm alive, yeah.*

Visit other zoos / aquariums

Description

- *We went to Gatlinburg last year we went to their aquarium. This one. We've been to the Charleston Aquarium, just wherever we go most the time we take them to the aquarium.*
- *growing up, I went to the Bronx Zoo, 'cause we lived in New Jersey,*
- *I haven't been to the new aquarium in Atlanta.*
- *Whenever I travel, so I travel a lot for work, if I can arrange my schedule so that I have a weekend available, I'll try to go to various zoos and aquariums in the areas.*

Add on to travel

Description

- *We went to Gatlinburg last year we went to their aquarium. This one. We've been to the Charleston Aquarium, just wherever we go most the time we take them to the aquarium.*
- *Whenever I travel, so I travel a lot for work, if I can arrange my schedule so that I have a weekend available, I'll try to go to various zoos and aquariums in the areas.*

Destination

Description

- *We were going to the — actually we were going to the San Diego Zoo, so we stayed out in San Diego for a while*
- *I haven't gone to the new aquarium, 'cause it was a little on the pricy side, but I've gone to the one in the Arizona Mills Mall. They have that Sea Life, I think it's called and that's pretty cool*
- *We go to World Wildlife Zoo but that's a haul, way out at like exit 303.*
- *We go to Pine _____ Shores Aquarium probably five times a year. I'll just take the kids up there for an impromptu trip.*
- *It's a destination for them because they ask me to come. "Can we go to the zoo? Can we go to the zoo? How many more days till we can go to the zoo?"*

See something I can't see at my zoo

Description

- *I will go to another zoo or aquarium for specific animals that they have. San Diego Zoo, the condors, the polar bears, and the koalas are why I would go there. The national zoo, pandas, I mean, primarily. It's the specific species that they have that would interest me in going to a different zoo.*
- *Because (a) they're on their way to extinction and they're primarily in areas that I'm going to travel to anytime soon. It's not like I can just run through a bamboo jungle in China anytime soon and hope to run into a panda or red panda. Same thing with polar bears. I mean, I've spent some time up in Alaska, Prudhoe Bay area, but you generally don't see a polar bear. It's the chance to see animals that I might not have otherwise be able to.*
- *Sand sharks we don't have sand sharks.*
- *you have otters.*
- *It's nice to see different things from what we see at our own. So I liked being able to come to a different one and see the differences.*

Local attraction

Description

- *Not as much now, but when we were living there. We lived in Annapolis for a number of years, and we had little kids. We'd take them there and stuff like that.*
- *Interviewer: So do you ever go to any other zoos and aquariums?*
Interviewee: We go to World Wildlife Zoo but that's a haul, way out at like exit 303a little zoo in Mendon, where I lived
- *That was the zoon when I was growing up was like the San Diego Zoo.*
- *I grew up going to Brookfield Zoo in Chicago it's totally different.*

Other Free Time Options

Memberships/subscriptions

Description: We include memberships and multiple outings to the same place

Theatre

Description

- *The girlfriend and I are also members at the Camuch Theater. We have a run of plays or musicals*
- *I belong to the arts in Bonita, The Center for the Arts which is really excellent. I belong here. I say I. We belong here. We often go to the philharmonic. We don't subscribe we just go when something grabs us. Barbara B. Mann we'll go to. You don't know Barbara B. Mann that's in Fort Myers.*
- *So we probably go to the Chandler Art Center to see like the Nutcracker, Spirit of Christmas, like a whole, we have a slew of things of like standing things we go to. So probably six times a year we go to Mesa Art Center shows probably four or five times a year*

Museums

Description

- *The only place we had one was the Children's Museum, but it expired*
- *other ones. I have had the Phoenix Art Museum*
- *Chandler Art Center. So we have like, oh, what do I want to say? Standing things that we go to every year*
- *Interviewer: do you have a membership to the children's museum?*
Interviewee: No. I just go when there's a coupon.

Botanicals

Description: Franklin Park Conservatory

- *Botanical Garden, we're members;*
- *I had a Botanical Garden one. I didn't go as often, so I let that one go,*

Other

Description

- *NPR, National Public Radio we belong to that. We subscribe to that. I like public television and public radio. I listen to that.*
- *We do. We actually one to the planetarium down in Holden Beach and it lets you to the museum there as well*
- *we subscribe to National Geographic, Ranger Rick, Wild Times to the Phoenix Zoo, Highlight.*

Dance

Description

Music

Description

- *I belong to the arts in Bonita, The Center for the Arts which is really excellent. I belong here. I say I. We belong here. We often go to the philharmonic. We don't subscribe we just go when something grabs us. Barbara B. Mann we'll go to. You don't know Barbara B. Mann that's in Fort Myers.*
- *I used to have tickets with Phoenix Symphony,*

History

Description

Animal related

Description: Florida Conservancy, Ohio Wildlife Center, The Wilds, other zoos

- *we have been members at Sea Life at Arizona Mills*
- *I have to have one at the Conservancy. If you volunteer, it's part of the deal.*

Parks & Rec

Description

- *Well we like to be outside a lot. I mean there's a lot of great parks here. Halliburton Park,*
- *Interviewer: Do you go to national or state parks?*
Interviewee: If I'm around one, yes.
- *We went to the dinosaur exhibit over at the convention center.*
- *I am a park person*

Local

Description

- *Well we like to be outside a lot. I mean there's a lot of great parks here. Halliburton Park,*
- *We go to the park and go for walks.*

State

Description

National

Description

Excerpt - Document: maw.4.27.17.interview2.pre.doc, Position: 13822-13900

- *Interviewer: Okay. You have the Golden Passport or something to the —*
Interviewee: Yeah, I'm not sure what they call it.

Sports

Description

- *Interviewer: Do you have season tickets or attend any professional sporting events?*
Interviewee: No. Too expensive and, I mean, we can watch sports on TV and get a better experience anyway.
- *we follow the playoffs in many sports, like the National Hockey League and even basketball or NFL.*
- *I work with a PDL club Premier Development League Club out of Greensborough w*
- *I got into officiating, refereeing. So I've referred probably I would say probably about 1,500 - 1,600 games. 1,600 matches. And I got into high school soccer. I coached high school soccer as well in Rockingham County.*
- *We did have season tickets for the Cardinals and that was just passed down through my husband's family. We had those and then, we weren't going as much as — it wasn't really beneficial anymore, so we let those go, but yeah.*

Season tickets

Description

- *Interviewer: Do you have season tickets or attend any professional sporting events?*
- *Interviewee: No. Too expensive and, I mean, we can watch sports on TV and get a better experience anyway.*
- *Chicago Blackhawks tickets.*
- *We did have season tickets for the Cardinals and that was just passed down through my husband's family. We had those and then, we weren't going as much as — it wasn't really beneficial anymore, so we let those go, but yeah.*

Occasional

Description

- *Occasionally I'll watch golf or basketball. Basketball down here, when the colleges are playing, seems to be a big deal with my friends, so that's -*

- *Their spring training is here, so we try to go to a game. It's very hard to get tickets.*

Watch on TV

Description

- *Interviewer: Do you have season tickets or attend any professional sports kinds of events?
Interviewee: No.
Interviewer: No to the sports.
Interviewee: Just on TV.*
- *we follow the playoffs in many sports, like the National Hockey League and even basketball or NFL.*

Post-Visit Interview

Cognitive learning

Description

Animal facts

Description: I learned the rhino weighs 600 lbs

- *I didn't realize that – I knew alligators could replenish their teeth. But I didn't realize that they have at least three-thousand teeth in a lifetime*
- *Each one showed the size of the whale compared to the size of a diver, which I thought was cool. I didn't know there were so many whales – different kinds of whales.*
- *Parent: the diver of course said that's not entirely true. And then we read about – what did we learn to do with your feet? What's it called? The stingray –
Child: Shuffle.*
- *And the sand sharks they don't ordinarily _____*
- *We learned that there are currently 9 black footed ferrets the exhibit here at the Phoenix Zoo and that after the females give birth, in April, May timeframe, there might be as many as 22.*
- *it's interesting to learn about the different habits that the different animals have. And their habitats and different...*
- *if a diver was to be cut or injured would his blood attract the shark and I think that maybe a movie thing. And I know that chum aggravates sharks or invites sharks but he said because they're fed they probably wouldn't become aggressive.*
- *I did learn something about the howler monkey, that the monkeys are born golden, and then the howler monkeys turn black, the males, as they mature. I learned that Lulu's new to the zoo. She's only been here a week. She came over from the San Diego Wild Animal Park.*
- *They aren't playing dead. They actually go into shock and become comatose. And they have no control over when they wake up. So it's not - maybe it's nature's way of protecting them but I was shocked to know that. I thought the possums did it on purpose. So there's something you can learn every day about and animal.*

Conservation

Description 2% habitat left for rhinos

- *in the past I know we've gone to different exhibits where they've talked about extinction, and they have a little – I don't know if it's a hospital, but kind of in the center of the zoo a little conservation center where you can see where they're working on the health of certain animals. So I think just seeing that and seeing that awareness right now, and that they're really actively trying to put that awareness in funding to help with those specific species of dolphins is good.*
- *Parent: Why are the balloons dangerous if they get on the sand?
Child: Because they'll float in the water and the sea life will get sick and die.*
- *the turtle's gonna be released*
- *I think, the information signs it had something like conservation, education and something else.*

Insights

Description What we learn about others?,

- *They're really good listeners and rule followers, and it's funny to see how they get so excited.*
- *Ella, who's eight years old, that she grows it's interesting to see which animals she's attracted to the most and how that changes throughout the years,*
- *You know, we come as often as we can so we kind of knew what to expect*
- *I think insight might have been what I already mentioned that mid-day the animals are the most active. When we come at like 9:00 in the morning or if it's extremely cold there's no activity. I thought the first time we came when it*

was - well it was not this year maybe two or three years ago - it was so cold and I said, "Oh the animals will be very active." Being from the north originally. They're Florida animals. They don't like the cold.

- It is a lot of animals. I think you don't realize there's that many in there 'cause they're constantly moving I think.

Zoo/Aquarium specific

Description: This zoo supports conservation. This aquarium has 2 otters

- first time we really processed that that big dark fish tank is a ship wreck.
- The Phoenix Zoo is big on that. I mean, black footed ferret population, I think they have a couple of frog or toad populations that are indigenous to this state. It's the ability to continue to release animals into the wild and back into their normal environments.
- I didn't know you had the children's playground out here.
- The movie Weekend At Bernie's it was filmed partly here
- there were a lot of flowers in bloom,
- I thought the thing about the anteaters was really interesting. That the zoo helps provide funding to put the tracking devices.
- Or tracking pythons. And putting stuff on pythons.
- Actually I did read something that there was some specific animal that was on the endangered list. They brought it back.

Affect

Description: Feelings related to your zoo visit

Connection to animal

Description: Visitor describes feelings regarding an animal, either in general (i.e., tigers, bears, etc-- Those two animals remind me of us.) or specifically names an animal (i.e., I came to say hello to Dashka.)

- Once we lose things, like we lose our sloth and — 'cause she was very special.
- She's like, you know you're a grandma now.

Conservation

Description: Feelings toward conservation, i.e., I am glad the zoo supports conservation.

- I just think it's important that we pass that information on to the generations coming up behind us, and that we, as this generation, heed that, 'cause we're making decisions for those that are coming behind us or after us.
- I just have a great appreciation for wildlife and the efforts that people take to preserve them

Animal

Description: I am sad that the baby polar bear is gone. I am happy the dolphin had a baby. I like seeing the manatees

- Interviewee: The baby orangutan was probably the most fun.
Interviewer: Okay, great. Any reason why?
Interviewee: Oh, you know, it just had energy. As it gets warmer in Arizona I think a lot of animals seek shade and relax, but the baby had a lot of energy and was playing around and so it was fun to watch.
- I come to the zoo primarily because the girlfriend and I enjoy animals. T
- I appreciate the majesticness of the animals.

Other

Description: Feelings about something other than conservation and animals

- think, as Ella, who's eight years old, that she grows it's interesting to see which animals she's attracted to the most and how that changes throughout the years, and then the animals are more visible for our eleven-month old that we pulled up to see that closer to the windows and everything was nice for him
- we kind of enjoy the thunderstorms
- Interviewer: What is one thing that you think you'll remember from today?
Interviewee: That we tried that new ride. This is the first thing getting on that ride thing. I don't know what it's called.
Interviewer: The carousel with the animals that you ride around?
Interviewee: Yeah, the carousel. That's gonna remember 'cause I saw happy ____.
- I guess I just was kind of glad that it had some kind of enrichment. Something that was maybe a little different. I'm thinking maybe it had to hunt for that. Maybe the bag was in the basket.
- when you're here and you actually are by yourself walking around, you do get to enjoy more of this is an amazing place where I live
- I'm very into nature.

Spiritual

Description: Interviewee mentions a spiritual aspect of the zoo, including relaxing, calming, de-stress, communing with nature, i.e., Watching manatees is very peaceful

- *It's relaxing*
- *It just feels good to just have this thing where you just don't have any stress. You just have fun wherever you want to go, and relax, a*
- *it's kind of therapeutic, you know, to go by yourself and just kinda hang out for the day, and mentally decompress if you will.*
- *And I think the nature thing, it all ties in, and I — when they go, do you go to church? I go, I got to the Conservancy on Sunday morning and to me that's — it all is interconnected to me.*

Region / exhibit area

Description: Feelings about the region, z/a, or something within the z/a.

- *A diver waved to her. That was exciting for her, I think*
- *I'm quite critical of the space available to the individual animal.*
- *They like the farm.*

Zoo / Aquarium

Description:

- *We love coming here.*
- *I think this is one of the best zoos I've come across*
- *I like zoos.*
- *I like the fact that they have the auditorium where they will show the animals personally how they're handled. It's good for young children too to be able to come.*
- *I like when I see — now, it seems like most zoos are turning more to lettuce for giraffes instead of biscuits, which they wouldn't normally — I mean, not that they would eat lettuce, but at least it looks like leaves.*
- *think the very fact that zoo is involved in taking part in something like this where there is some research going on which I assume the end result is going to be to improve everybody's experience especially the animals, to increase attendance at zoos and how to raise more money*
- *It gives back, like the breeding program and all and securing species and survival and I'm kinda into all of that stuff.*
- *I took a little more time to read all the signs and things. And they really, really are into conservation*

STEM skills

Description

Observation

Description: Interviewee goes beyond look and describes something specific about what they saw

- *that was fun to watch them kind of move, and seemed more interactive and mobile than they usually are.*
- *he was like, "Mom, the tortoise is not afraid today. He's out walking and he's not hiding in his shell,"*
- *Everyone got to see him come up for air*
- *you liked seeing the happy face on the underside of the manta ray — the sting ray,*
- *The elephants from a distance were great and the tiger was making a lot of noise today so it was a lot of fun.*
- *As it gets warmer in Arizona I think a lot of animals seek shade and relax, but the baby had a lot of energy and was playing around and so it was fun to watch.*
- *There's two different species that you have here. One of them is polka dotted. And it's so cool looking. I really liked it.*
- *One of the condors, looked like the female condor, was busy playing with one of those contraptions that they use to hide treats in for the animals and then eventually caught the attention and ire of the male condor and the male condor, obviously, comes over and asserts control and then that caused a large bickering session between the two condors.*
- *I listened, I looked, I watched, took pictures.*
- *Because I could stay at the exhibits longer, and really look at some of the more specific. Like Lulu, for example. She was doing a lot with her head and her horn. So, don't know if that was her familiarizing herself with the environment, or if she was sharpening her horn, or if it's a sensory type thing. I hope this is in formulating questions too.*
- *There's always some new picture to take, and this time it was a very daring turtle walking right in front of an alligator's nose. So. Would this be part of photography?*
- *I really enjoy the shows.*
- *all that lettuce they were getting fed.*
- *There were a lot of flowers in bloom, which my allergies found out, too.*
- *observe and learn things.*

Formulate questions

Description Interviewee is wondering outloud, formulating questions to investigate

- *I wonder if they must like the hot weather.*
- *We ask a lot of questions.*

Compare and contrast

Description Interviewee is comparing and contrasting 2 animals, what they have seen before, or comparing animal to human

- *It was fun. They were actually really active right now, and usually – we've seen other exhibits of the iguanas and they weren't always as active as the one we saw today.*
- *normally the rhinoceros has always been in the back, and not very active. But Lulu was exploring her whole ground.*

Behaviors

Personal actions

Description: Garden, reduce, reuse, recycle

- *Anything I can do to keep kids interested, and liking zoos, and supporting zoos.*
- *I used to be on like a egg hatching, like if eggs were hatching I would wake up in the middle of the night and go watch and help them.*
- *I sign lots of petitions*
- *I actually did a talk on the pythons that are invasive species here and all. I came to that, 'cause I wanted to see and it was a packed house. I was pretty happy to see that.*
- *It's a very – yes. I got python handling training and I'm carrying my two pillow cases in the car now and I don't know if I would*
- *we have to take our recycling to the recycling center.*

Support conservation organization

Description: I give to organizations that support conservation

- *I've done some stories on her because I'm involved also with the OCEARCH Organization that tags great white sharks off the coast and other sharks*
- *I volunteer in the wildlife hospital. I like the hands-on, the animal piece. I love to hold the bald eagle.*

Learning actions

Description: Intent to learn more about a topic

Support an animal

Description: Adopt an elephant, build enrichment for giraffe

- *we adopted Luna at Christmastime.*
- *so I thought wouldn't it be funny if that shark had a Twitter account, and so I checked and it didn't have one. As a matter of fact, none of the sharks had Twitter accounts so I created one, and it's now has like 103,000 followers.*

Intention to act

Description: Now that I know about palm oil, I will look for palm oil free candy

- *I've never left any anyway, but I have seen people get up and leave trash, especially the plastic. So I would remind everybody not to do that*
- *Support the zoo / aquarium*

Description: I buy things here because I know it supports the animals.

- *Checking out the Naples Zoo, and probably will try to support the Naples Zoo as well.*
- *When we come, I just feel like if we – spending money is a way of supporting the zoo, so it's a win-win.*

Negative codes

Description

Excerpt - Document: Elaine.3.24.17.interview4.Pre.doc, Position: 14714-14794
o you have memberships with museums or anything like that?

- *Interviewee: Not yet.*

Excerpt - Document: Elaine.3.24.17.interview4.Pre.doc, Position: 15230-15275
no, we don't have any subscriptions like that

Excerpt - Document: Elaine.3.24.17.interview4.Pre.doc, Position: 15319-15422
No. I almost did when we went to the Petrified Forest. I almost bought a national parks, but we didn't.

Excerpt - Document: Elaine.3.24.17.interview4.Pre.doc, Position: 15470-15563
do you have season tickets to any of the sporting events around here?

Interviewee: No, uh-uh.

Excerpt - Document: maw.3.25.17.interview1.pre.doc, Position: 649-707
Does he or she like to come to the zoos?

Interviewee: No.

Excerpt - Document: maw.3.25.17.interview1.pre.doc, Position: 12365-12517

Do you have any memberships to state parks or national parks? Are you a park person?

Interviewee: *I am a park person, but I don't have any memberships.*

Emergent code

Description: Anything new or noteworthy

Excerpt - Document: maw.4.7.17.interview1.post.doc, Position: 8555-8586

the turtle's gonna be released

Excerpt - Document: maw.4.7.17.interview.1.pre.doc, Position: 25551-25650

think maybe in my mind I thought it would be just reminder to go back and use this great resource.

Excerpt - Document: Elaine.3.25.17.interview1.pre.doc, Position: 209-239

've got tons of them at home.

Excerpt - Document: Elaine.3.25.17.interview1.pre.doc, Position: 2256-2283

it's very kid friendly, too

Excerpt - Document: Elaine.3.25.17.interview1.pre.doc, Position: 5394-5430

I always wanted to work with animals

Excerpt - Document: Elaine.3.25.17.interview1.pre.doc, Position: 5575-5629

I actually went into jewelry design and jewelry making

Excerpt - Document: Elaine.3.25.17.interview1.pre.doc, Position: 8211-8350

and I actually had my teenage niece and nephew, my brother's two kids, I decided it would be fun to have them for a summer, a whole month.

Excerpt - Document: Elaine.3.25.17.interview1.pre.doc, Position: 8788-8822

cell phones were their best things

Excerpt - Document: Elaine.3.25.17.interview1.pre.doc, Position: 12126-12170

I've lived in Illinois for about seven years

Excerpt - Document: Elaine.3.25.17.interview1.pre.doc, Position: 14038-14077

I definitely believe in a higher power.

Excerpt - Document: Elaine.3.25.17.interview1.pre.doc, Position: 15986-16022

Usually anybody that comes into town

Excerpt - Document: Elaine.3.25.17.interview1.pre.doc, Position: 16549-16567

hit the gift shop

Excerpt - Document: olivia.4.8.17.interview1.pre.doc, Position: 8004-8293

Right it is; that and conservation. You know, and just making people aware, and they aim to do what they can in the community to conserve the marine ecosystem. So does the mission of this aquarium matter to you, and is it part of why you support coming here?

Interviewee: *Yeah I think so.*

Excerpt - Document: maw.4.8.17.post.unmatch.1.doc, Position: 2769-2959

At least we have one of the two of us together. Usually I'm stacking things and putting my camera on it and checking it and trying to get a picture of us but this is neat with the grandkids.

Excerpt - Document: eeh.4.27.17.post.only.1.doc, Position: 3995-4055

I think they are kind of outplayed by the zoo. So they come,

Excerpt - Document: Elaine.3.25.17.interview1.post.doc, Position: 572-807

Did you learn anything today?

Interviewee: *Um, oh, yeah. There was a really neat – it was like a metal garden, and it was in donation of, I believe, the artist's mother. So I thought that was kind of cool, and I was like noticing that.*

Excerpt - Document: Elaine.3.25.17.interview1.post.doc, Position: 2083-2332

How about the zoo?

Interviewee: *Yeah. Actually, you know what? They really do an amazing job here of like just keeping it pretty, and it was a pleasant experience, and really I noticed everybody was super friendly, everybody I came in contact with.*

Excerpt - Document: maw.4.29.17.interview1.post.only.doc, Position: 10481-10696
s a lot of people object to zoos because the animals are confined and I truly believe if people can't get close to an animal or build a relationship with an animal or see an animal they're not going to care about it

Excerpt - Document: maw.4.29.17.interview1.post.only.doc, Position: 11931-12059
People if they don't see the animal. If they don't have an interest in the animal they're not going to care. That's my feeling.

Appendix D: Entry questionnaire (study component 2)

WZAM³ Entry-Questionnaire

Thank you again for agreeing to participate in this study. Your responses are anonymous and what you tell us could be very helpful to the zoo/aquarium as they develop programming to meet your needs.



This study is funded in part by the National Science Foundation Grant #1612699

The anonymous ID we suggested includes the first 2 digits are the month of your birth, followed by the last 4 digits of your phone number. So, if you were born in June and my phone number is 555-555-2674, you would enter this ID number: 062674.

[Data entered by data collector: Zoo name, location, date, time in, crowd size, weather, pre-test #]

1. What was your primary reason for visiting the zoo/aquarium today? (Check only one)
 - Get outside
 - It's something to do
 - Spend time with friends and/or family
 - Do something fun/enjoyable
 - See animals/fish
 - Relax/rejuvenate
 - Educational/Learn something new
 - Special Event
 - See the new/featured exhibit
 - Do something different
 - Relax/rejuvenate
 - Buy something in the gift shop
 - Exercise
 - Reconnect with the natural environment
 - Support my zoo/aquarium

2. In addition to your primary reason, what else do you plan to do at the zoo/aquarium today? (Check all that apply)

Skip logic will be used to remove the response to question 1

 - Get outside
 - It's something to do
 - Spend time with friends and/or family
 - Do something fun/enjoyable
 - See animals/fish
 - Relax/rejuvenate
 - Educational/Learn something new
 - Special Event

- See the new/featured exhibit
- Do something different
- Relax/rejuvenate
- Buy something in the gift shop
- Exercise
- Reconnect with the natural environment
- Support my zoo/aquarium

3.

	Highly Unlikely		Likely		Very	
	1	2	3	4	5	6
How likely are you to share photos of yourself and/or your group at the zoo online through e-mail, Facebook, Twitter, Snapchat, etc.?			7			

4. Which, if any, of this zoo/aquarium's social media platforms did you use in the last seven (7) days to help plan your visit (Check all that you used)

- Website
- Facebook page
- Twitter
- Instagram
- Snapchat
- Yelp
- Zoo/Aquarium App

5. Thinking of zoos as a source of information, to what extent do you agree with the following statements . . .

			Strongly Disagree		Strongly Agree	
	1	2	3	4	5	6
Zoos are a trustworthy source for information on environmental issues.			7			
Zoos provide accurate information on environmental issues.			7			
Zoos provide unbiased information about animals and endangered species.			7			
Zoos are a trustworthy source for information on wildlife conservation.			7			
Zoos provide accurate information about wildlife conservation.			7			
Zoos are a trustworthy source for information on animals and endangered species.			7			
Zoos provide accurate information about animals and endangered species			7			

6. To what extent do the following statements reflect your feelings toward nature?

			Strongly Disagree		Strongly Agree	
I feel a deep connection to wildlife.	1	2	3	4	5	6
				7		
I actively seek opportunities to view wildlife.	1	2	3	4	5	6
				7		
I am highly motivated by the need to interact with wildlife.	1	2	3	4	5	6
				7		
Wildlife protection must be society's highest priority.	1	2	3	4	5	6
				7		
I spend a lot of time learning about wildlife.	1	2	3	4	5	6
				7		
I have a responsibility to do all I can to protect wildlife.	1	2	3	4	5	6
				7		

7. To what extent do you agree that the PURPOSE of zoos and aquariums is . . .

			Strongly Disagree		Strongly Agree	
Educate about, and connect people to wildlife.	1	2	3	4	5	6
				7		
Provide pleasure and enjoyment.	1	2	3	4	5	6
				7		
Provide economic and cultural benefits to the community.	1	2	3	4	5	6
				7		
Be actively involved in worldwide conservation efforts.	1	2	3	4	5	6
				7		
Take care of its animals.	1	2	3	4	5	6
				7		

8. To what extent do the following statements reflect your interests?

			Strongly Disagree		Strongly Agree	
I often think about whether my actions harm the environment.	1	2	3	4	5	6
				7		
I am interested in learning more about the environment.	1	2	3	4	5	6
				7		
I actively search for information about conservation.	1	2	3	4	5	6
				7		
I often think about whether my actions harm the natural world.	1	2	3	4	5	6
				7		
I often engage in conservation activities like buying environmentally-friendly products and talking to others about the environment	1	2	3	4	5	6
				7		

9. As you think about zoos you may have visited throughout the years, to what extent do you agree with the following words and phrases that are used to describe zoos? Zoos . . .

	Strongly Disagree					Strongly Agree	
	1	2	3	4	5	6	7
Are valuable cultural institutions.	1	2	3	4	5	6	7
Have changed over the years and are now significant players in worldwide conservation efforts to preserve species and protect habitats.	1	2	3	4	5	6	7
Are inhumane and have no place in a modern society.	1	2	3	4	5	6	7
Are only useful as entertainment for children.	1	2	3	4	5	6	7
Are places to relax and enjoy the beauty of nature.	1	2	3	4	5	6	7
Are fun.	1	2	3	4	5	6	7
Are important to others in my group.	1	2	3	4	5	6	7
Provide me with opportunities for bonding with friends.	1	2	3	4	5	6	7
Provide a valuable space for us to learn or discover new things together.	1	2	3	4	5	6	7
Are not designed for people like me.	1	2	3	4	5	6	7
Are useful for entertainment purposes only and do not have any educational value	1	2	3	4	5	6	7

10. Thinking of your experiences with zoos (in general) throughout the years, to what extent do you agree with the following statements?

	Strongly Disagree				Strongly Agree		
	1	2	3	4	5	6	7
I can get away from the everyday stresses of life when I visit zoos.	1	2	3	4	5	6	7
I can find a spiritual connection with nature when I visit the zoos.	1	2	3	4	5	6	7
I feel like I belong, when I visit zoos.	1	2	3	4	5	6	7
I can exercise or be active at zoos.	1	2	3	4	5	6	7
I have traditions, such as family traditions around going to the zoo.	1	2	3	4	5	6	7
At the zoo, I can restore my connection with the natural world.	1	2	3	4	5	6	7
I have fond memories of good times at the zoo, with family and friends.	1	2	3	4	5	6	7
I see myself as a zoo-goer.	1	2	3	4	5	6	7
I feel comfortable at the zoo.	1	2	3	4	5	6	7

11.

	1	2	3	4	5	6	7
	Primarily Children			Mix			Primarily Adults
In moving through the zoo/aquarium today, do you think it will be primarily children, adults or a mix of both who make decisions about where you go and what you see during your visit?	<input type="checkbox"/>						

12. How much time are you planning to spend at the zoo today?

- An hour or two
- About half a day (3 – 4 hours)
- Most of my day (5 - 6 hours)
- The entire day (7+ hours)

13. Today, as you visit the zoo, which of the following do you identify as? (Check all that apply)

- Parent
- Grandparent
- Spouse/Partner/Date
- Adult by myself
- Friend
- Child

14. Who are you visiting the zoo with today? (Please check all that apply)

- Alone
- Date
- Family
- Friends
- Organized Group (i.e., Scouts, Church, School, etc.)

15. Including yourself, how many are in your group?

- | | |
|--------------------------------|---------------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 7 - 10 |
| <input type="checkbox"/> 2 - 3 | <input type="checkbox"/> 11+ |
| <input type="checkbox"/> 4 - 6 | |

16. How many in your group are children (under 18 years of age)?

- | | |
|------------------------------|-------------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 7-10 |
| <input type="checkbox"/> 2-3 | <input type="checkbox"/> 11+ |
| <input type="checkbox"/> 4-6 | |

17. Please select the highest level of education you have completed:

- Less than high school (kindergarten-11th grade)
- High school degree (completed 12th grade)
- Some college (1-3 yrs)
- Associates degree (2 yrs)
- College graduate (4 yrs)
- Some post graduate
- Post graduate/ Professional Degree (Masters, PhD, JD, MD, etc.)
- Prefer not to answer

18. In what year were you born? _____

19. How would you describe your gender identity?

- Male
- Female

- Non-binary
- Prefer to self-describe _____
- Prefer not to answer

Appendix E: Entry measure, Spanish (study component 2)

Gracias por visitar el Zoológico hoy y ayudarnos con este estudio. Sus respuestas a este cuestionario nos ayudarán a comprender lo que aporta a su visita y sus respuestas al segundo cuestionario, justo antes de partir, nos ayudarán a comprender lo obtrenda durante la visita de hoyTodas sus respuestas son anónimas. Para ser capaces de conectar su cuestionario previo cuestionario posterior a la visita, le pedimos que escriba un número de identidad anónimo cuestionario, justo antes de partir, nos ayudarán a comprender lo obtrenda durante la visita de hoyTodas sus respuestas son anónimas. Para ser capaces de conectar su cuestionario previo y cuestionario posterior a la

visita, le pedimos que escriba un número de identidad anónimo.

Por favor, apunte 6 dígitos: Sugerimos que los 2 primeros dígitos sean el mes de su cumpleaños seguido de los 4 últimos dígitos de su número de teléfono. Si nació en Junio y su número de teléfono es 555-555-2674, usted apuntará este número de identificación: 062674.

rs.activity.primary ¿Cuál fue su motivación principal para visitar el zoológico/acuario en el día de hoy? (Marque solo una)

- Salir de la casa (1)
- Es algo que hago habitualmente (2)
- Pasar tiempo con la familia o los amigos (3)
- Hacer algo divertido/agradable (4)
- Ver animales/peces (5)
- Relajarme/rejuvenecerme (6)
- Educarme/Aprender algo nuevo (7)
- Un evento especial (8)
- Ver la exhibición nueva o especial (9)
- Hacer algo diferente (10)
- Comprar algo en la tienda de regalos (11)
- Hacer ejercicio (12)
- Contacto con la naturaleza (13)
- Apoyar mi zoológico/acuario (14)

rs.activity.second ¿Además de la motivación principal, que más planea hacer en el zoológico/acuario el día de hoy? (Marque todas las necesarias)

- Salir de la casa (1)

- Es algo que hago habitualmente (2)
- Pasar tiempo con la familia o los amigos (3)
- Hacer algo divertido/agradable (4)
- Ver animales/peces (5)
- Relajarme/rejuvenecerme (6)
- Educarme/Aprender algo nuevo (7)
- Un evento especial (8)
- Ver la exhibición nueva o especial (9)
- Hacer algo diferente (10)
- Comprar algo en la tienda de regalos (11)
- Hacer ejercicio (12)
- Contacto con la naturaleza (13)
- Apoyar mi zoológico/acuario (14)

rs.share.photo ¿Cómo de probable es que comparta en línea sus fotos o las de su grupo en el zoológico a través de correo electrónico, Facebook, Twitter, Snapchat, etc.?

	1 Muy improbable (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 Muy probablemente (7)
¿Cómo de probable es que comparta en línea sus fotos (rs.share.photo_1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

rs.soc.media ¿Cuál de las plataformas de media social de este zoológico/acuario ha usado en los últimos siete (7) días para planear su visita? Si es que ha usado alguna (Marque todas las que ha usado)

- Sitio web (1)
- Página de Facebook (2)
- Twitter (3)
- Instagram (4)
- Snapchat (5)
- Yelp (6)
- La aplicación del Zoológico/Acuario (7)

rs.source.info Pensando en los zoologicos como una fuente de información, hasta qué punto está acuerdo con las siguientes declaraciones:

	1 Muy en desacuerdo (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 Muy de acuerdo (7)
Los zoologicos son fuentes fiables de información sobre problemas medioambientales. (rs.source.info.trustworthy.ENV)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Los zoologicos proporcionan información precisa sobre problemas medioambientales. (rs.source.info.accurate.ENV)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Los zoologicos proporcionan información imparcial sobre animales y especies en peligro de extinción. (rs.source.info.Unbiased)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Los zoologicos son fuentes fiables de información sobre la conservación de la vida silvestre. (rs.source.info.trustworthy.Wildlife)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Los zoologicos proporcionan información precisa sobre la conservación de la vida silvestre. (rs.source.info.Accurate.Wildlife)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Los zoologicos son fuentes fiables de información sobre animales y especies en peligro de extinción. (rs.source.info.Trustworthy.Animals)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Los zoologicos proporcionan información precisa sobre animales y especies en peligro de extinción. (rs.source.info.Accurate.Animals)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

rs.feel.nature ¿Hasta qué punto reflejan los siguientes declaraciones su actitud hacia la naturaleza?

	1 Muy en desacuerdo (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 Muy de acuerdo (7)
Siento una profunda conexión con la vida silvestre. (rs.feel.nature.Connection)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Busco activamente oportunidades para observar vida silvestre. (rs.feel.nature.nature.View)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Me motiva mucho interactuar con la vida silvestre. (rs.feel.nature.Interact)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
La protección de la vida silvestre debe ser la mayor prioridad de la sociedad. (rs.feel.nature.Protect)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Paso mucho tiempo aprendiendo sobre la vida silvestre. (rs.feel.nature.Learn)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tengo la responsabilidad de hacer todo lo que pueda para proteger la vida silvestre. (rs.feel.nature.Responsible)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

rs.purpose ¿ Hasta qué punto está de acuerdo en que el PROPÓSITO de los zoológicos y acuarios es . . .

	1 Muy en desacuerdo (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 Muy de acuerdo (7)
Educar y conectar a la gente con la vida silvestre. (rs.purpose.Educate)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Proporcionar experiencias placenteras y agradables. (rs.purpose.Enjoy)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Proporcionar beneficios económicos y culturales a la comunidad. (rs.purpose.Economic)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Participar activamente en los esfuerzos por conservar la vida silvestre. (rs.purpose.Conserve)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cuidar de sus animales. (rs.purpose.Care)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

rs/env.interest ¿Hasta qué punto reflejan los siguientes declaraciones sus intereses?

	1 Muy en desacuerdo (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 Muy de acuerdo (7)
Pienso a menudo si mis acciones están dañando el medio ambiente. (rs.env.interest.Harm.Env)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tengo interés en aprender más sobre el medio ambiente. (rs.env.interest.Learn)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Busco activamente información sobre conservación. (rs.env.interest.Search)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A menudo pienso si mis acciones son dañinas para el mundo natural. (rs/env.interest.Harm.World)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A menudo participo en actividades de conservación como comprar productos responsables con el medio ambiente, y hablar con otros sobre el medio ambiente. (rs.env.interest.Cons.Activity)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

rs.describe ¿Pensando en los zoológicos que ha visitado hasta ahora, hasta qué punto está usted de acuerdo con las siguientes declaraciones para describir a los zoológicos? Los zoológicos . . .

	1 Muy en desacuerdo (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 Muy de acuerdo (7)
Son valiosas instituciones culturales. (rs.describe.Cultural)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Han cambiado a lo largo de los años y ahora son importantes agentes en los esfuerzos mundiales por la conservación de especies y la protección de hábitats naturales. (rs.describe.Changed)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Son inhumanos y no tienen cabida en una sociedad moderna. (rs.describe.Inhumane)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Son sólo útil para entretener a la infancia. (rs.describe.Kids)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Son lugares para relajarse y disfrutar de la belleza de la naturaleza. (rs.describe.Relax)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Son divertidos. (rs.describe.Fun)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Son importantes para otros en mi grupo. (rs.describe.Others)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Me proporcionan oportunidades para fortalecer mis amistades. (rs.describe.Friends)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nos proporcionan un valioso espacio para aprender o descubrir nuevas cosas. (rs.describe.Learn)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No están diseñados para gente como yo. (rs.describe.Not.Me)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Son útiles sólo como entretenimiento y no tienen ningún valor educativo. (rs.describe.Entertain)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

rs.experience Pensando en sus experiencias con zoológicos (en general) a lo largo de los años, hasta qué punto está usted de acuerdo con las siguientes declaraciones:

	1 Muy en desacuerdo (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 Muy de acuerdo (7)
Puedo alejarme del estrés diario de mi vida cuando visito un zoológico. (rs.experience.Get.Away)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Puedo encontrar una conexión espiritual con la naturaleza cuando visito un zoológico. (rs.experience.Spiritual)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Me siento como en casa cuando visito un zoológico. (rs.experience.Belong)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Puedo hacer ejercicio y mantenerme activo en los zoológicos. (rs.experience.Exercise)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tengo tradiciones, como tradiciones familiares relacionadas con ir al zoológico. (rs.experience.Traditions)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
En el zoológico, puedo recuperar mi conexión con el mundo natural. (rs.experience.Restore)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tengo preciosos recuerdos de buenas experiencias en el zoológico, con amigos y familiares. (rs.experience.Memories)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Me veo como un visitante regular de los zoológicos. (rs.experience.Zoo.Goer)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Me siento muy a gusto en el zoológico. (rs.experience.Comfortable)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

rs.led.visit Mientras pasea por el zoológico/acuario hoy, ¿quién cree que tomará las decisiones de adónde ir y qué ver durante la visita: sobre todo los niños, los adultos o una mezcla de ambos?

	1 Sobre todo niños (1)	2 (2)	3 (3)	4 Mezcla (4)	5 (5)	6 (6)	7 Sobre todo Adultos (7)
¿Quién tomará decisiones sobre a dónde irá durante su visita? (rs.led.visit.Who.Decides)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

rs.time2day ¿Cuánto tiempo planea pasar en el zoológico hoy?

- Una hora o dos (1)
- Más o menos la mitad del día (3 – 4 horas) (2)
- La mayor parte del día (5 - 6 horas) (3)
- El día entero (7 o más horas)

rs.identify Hoy, mientras visita el zoológico, ¿cómo se identifica usted? (Marque todas las que se apliquen)

- Padre/madre (1)
- Abuelo/a (2)
- Cónyuge/Pareja/cita (3)
- Adulto sólo (4)
- Amigo/a (5)
- Niño/a (6)

rs.visit.with ¿Con quién visita hoy el zoológico? (Marque todas las que se apliquen)

- Sólo (1)
- Con una cita (2)
- Familia (3)
- Amigos/as (4)
- Grupo organizado (p.e., Scouts, Iglesia, Escuela, etc.) (5)

rs.group.size Includiéndole a usted, ¿cuántas personas hay en su grupo?

- 1 (1)
- 2-3 (2)
- 4-6 (3)
- 7-10 (4)
- 11 o mas (5)

rs.group.kids ¿Cuántos en su grupo son menores de 18 años?

- 0 (0)
- 1 (1)
- 2-3 (2)
- 4-6 (3)
- 7-10 (4)
- 11 o mas (5)

rs.education Por favor, seleccione el nivel educativo más alto que ha completado:

- Menos que preparatoria/instituto (preescolar-11er grado) (1)
- Graduado de Preparatoria/instituto (completado el 12ndo grado) (2)
- Algo de universidad (1-3 años) (3)
- Grado asociado/diplomado (2 años) (4)
- Grado universitario/licenciatura (4 años) (5)
- Algunos estudios de postgrado (6)
- Graduado superior / Graduado profesional (Masters, Dr., JD, MD, etc.) (7)

Prefiero no responder (8)

rs.born ¿En qué año nació? _____

rs.gender ¿Cómo describiría su identidad de género?

Hombre (1)

Mujer (2)

No-binaria (3)

Prefiero autodescribirme (4) _____

Prefiero no responder (5)

rs.thanks Agradecemos su ayuda con nuestro estudio. Disfrute de su visita y, por favor, vuelva al final para realizar nuestra segunda encuesta para que podamos comprender mejor lo que ha obtenido en la visita de hoy.

Appendix F: Exit questionnaire (study component 2)

WZAM³
Exit-Questionnaire

Thank you for coming back to help us with our study. We hope you enjoyed your visit to the aquarium. Your answers to this questionnaire will help us understand what you gained during today's visit.

Once again, your responses are anonymous and what you tell us could be very helpful to the aquarium as they develop programming to meet your needs.



This study is funded in part by the National Science Foundation Grant #1612699

The anonymous ID we suggested includes the first 2 digits are the month of your birth, followed by the last 4 digits of your phone number. So, if you were born in June and my phone number is 555-555-2674, you would enter this ID number: 062674.

-
1. What did you do at the zoo/aquarium today? (Check all that apply)
 - Went outside
 - Saw the new/featured exhibit
 - Did something different
 - Spent time with friends and/or family
 - Had fun
 - Saw animals/fish
 - Relaxed/rejuvenated
 - Learned something new
 - Special Event
 - Bought something in the gift shop
 - Exercised
 - Reconnected with the natural environment
 - Supported my zoo/aquarium

 2. Did you (or do you plan to) share photos of yourself and/or your group from today's visit at the zoo/aquarium online via e-mail, Facebook, Twitter, Snapchat, etc?
 - Yes
 - No
 - Maybe

 3. Which, if any, of this zoo/aquarium social media platforms.

	Did you use during today's visit	Do you plan to use in the next 2 weeks
Website	<input type="checkbox"/>	<input type="checkbox"/>
Facebook page	<input type="checkbox"/>	<input type="checkbox"/>
Twitter	<input type="checkbox"/>	<input type="checkbox"/>

Instagram	<input type="checkbox"/>	<input type="checkbox"/>
Snapchat	<input type="checkbox"/>	<input type="checkbox"/>
Yelp	<input type="checkbox"/>	<input type="checkbox"/>
Zoo/Aquarium App	<input type="checkbox"/>	<input type="checkbox"/>

4. How much do you agree or disagree with the following? I think zoo/aquariums...

	Strongly Disagree				Strongly Agree		
Offer direction about how to conserve energy	1	2	3	4	5	6	7
Offer direction about how to conserve water	1	2	3	4	5	6	7
Collaborate well with other conservation organizations	1	2	3	4	5	6	7
Collaborate well with animal advocacy organizations	1	2	3	4	5	6	7
Provide animals with proper medical care	1	2	3	4	5	6	7
Care about their animals well-being	1	2	3	4	5	6	7
Have the facilities to meet the needs of the animals in their care	1	2	3	4	5	6	7
Have the expertise to meet the emotional needs of the animals they keep	1	2	3	4	5	6	7
Are an important part of conserving species in the wild	1	2	3	4	5	6	7

5. We'd like to know how you feel about this zoo/aquarium. To what extent do you agree with the following statements?

	Strongly Disagree				Strongly Agree		
I often talk to people about this zoo/aquarium	1	2	3	4	5	6	7
I often bring people to visit this zoo/aquarium because I think they should see it.	1	2	3	4	5	6	7
I am very attached to this place.	1	2	3	4	5	6	7
I feel a strong sense of belonging to this zoo/aquarium.	1	2	3	4	5	6	7
My family/friends would be disappointed if we were to stop visiting this zoo/aquarium.	1	2	3	4	5	6	7
I prefer this zoo/aquarium over other settings/facilities for the recreational activities that I enjoy most	1	2	3	4	5	6	7
If I were to stop visiting this zoo/aquarium, I would lose contact with a number of my friends.	1	2	3	4	5	6	7
I am very attached to some of the animals at this place.	1	2	3	4	5	6	7
I have special memories associated with this place.	1	2	3	4	5	6	7

6. We realize you may know a great deal about this zoo/aquarium and the fish/animals. We want to know what, if anything, you learned about today during your visit. Today, I learned about . . .

	Strongly Disagree				Strongly Agree		
	1	2	3	4	5	6	7
How this zoo/aquarium takes care of its animals	1	2	3	4	5	6	7
Fish/Animal habitats	1	2	3	4	5	6	7
Where this zoo/aquarium's animals were born	1	2	3	4	5	6	7
How to decrease my use of plastics	1	2	3	4	5	6	7
Global climate change	1	2	3	4	5	6	7
How to practice water conservation	1	2	3	4	5	6	7
How to practice energy conservation	1	2	3	4	5	6	7
That zoo/aquariums give money to support and protect species conservation	1	2	3	4	5	6	7
The conservation efforts of this zoo/aquarium	1	2	3	4	5	6	7
Sustainable shopping practices (i.e., sustainable seafood, palm oil, etc.)	1	2	3	4	5	6	7

Can you share with us 2 or 3 things you learned today?

7. During my visit today, I . . .

	Strongly Disagree				Strongly Agree		
	1	2	3	4	5	6	7
Was in a beautiful setting	1	2	3	4	5	6	7
Learned some scientific information	1	2	3	4	5	6	7
Discovered things I can do for the environment	1	2	3	4	5	6	7
Affirmed my care for the environment	1	2	3	4	5	6	7
Got deeper insights into my family/friends	1	2	3	4	5	6	7
Saw animals I don't usually see	1	2	3	4	5	6	7
Had the type of experience I wanted	1	2	3	4	5	6	7
Realized I want to do more to help the environment	1	2	3	4	5	6	7
felt my love for animals reinforced	1	2	3	4	5	6	7
Learned about the zoo/aquarium itself	1	2	3	4	5	6	7
Deepened my bond with family and friends	1	2	3	4	5	6	7
Enjoyed watching other people explore the zoo/aquarium	1	2	3	4	5	6	7

8. My visit to the zoo/aquarium engaged me: (Check all that apply)

- Spiritually
- Physically
- Mentally

9. Which of the following statements is closest to your personal view of nature? (Choose only one)

- Nature is sacred because it is created by a Higher Power
- Nature is spiritual or sacred in itself
- Nature is important, but not spiritual or sacred

Cannot choose

10. On political matters, do you generally consider yourself to be (Choose only one):

- Very Liberal/Progressive
- Liberal
- Moderate
- Conservative
- Very Conservative
- Libertarian
- Prefer not to answer

11. Do you donate money to or are you a member of a nature or animal conservation group (i.e., World Wildlife Fund, Nature Conservancy, the Sierra Club)?

- Yes
- No

12. How often do you visit a national or state park?

- Less than 1x a year
- At least 1x a year
- 2 – 3 x a year
- 4 – 6 x a year
- 7+x a year

13. Approximately how many hours each week do you exercise alone and/or participate in organized recreation activities (i.e., swim class, dance class, pickleball leagues, etc.)?

- 1 hour or less/week
- 1.5 – 5 hours/week
- 5.5 – 10 hours/week
- 10.5 – 15 hours/week
- 15+ hours/week

14. If you are a parent, how many hours do you spend ensuring that your children attend/participate in different organized recreational activities (i.e., swimming lessons, karate, dance, soccer, etc.)?

- Not applicable
- 1 hour or less/week
- 1.5 – 5 hours/week
- 5.5 – 10 hours/week
- 10.5 – 15 hours/week
- 15+ hours/week

15. For each of the following, please share how often you visit these cultural institutions, attend and/or participate in these types of events?

**Less than 1
time/year**

1 time/year

**2 – 4 times a
year**

**5+ times a
year**

Museums (Art, Natural History, Science, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Theater performance and/or acting class	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Music performance and/or music lesson	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dance performance and/or dance class	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gardens (Botanical, Conservatories, Horticulture, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Historical Sites (Gettysburg, Alamo, Paul Revere's house, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

16. Which of the following types of hobbies/activities do you enjoy?

- Animals (show dogs, ride horses, etc.)
- Nature
- Active outdoors
- Visual arts
- Theater
- Music
- Gaming (Video, Board, Arcade, etc.)
- Travel
- Sports
- Exercise
- Food
- Social - general
- Social - family
- Garden
- Crafts
- Reading
- Local events
- Tinkering (electronics, carpentry, small engines, etc.)

17. Are you a member of this zoo/aquarium?

- Yes
- No

18. Do you (or your family members) participate in programs (e.g. camps, lectures, workshops, ticketed special events) at this zoo/aquarium?

- Yes
- No

19. Which of the following best describes your work situation? (Check only one)

- Employed full-time
- Employed part-time
- Disabled

- Retired
- Stay at home parent, grandparent, caregiver
- Unemployed

20. Which one of these statements best describes you? (Check only one)

- I am exploring many career possibilities; I am developing personal and professional goals.
- I am early in my career; I am working to achieve my personal and professional goals
- I am established in my career; I have achieved many of my professional goals
- I am retired from my career; I am focused on personal goals
- I am staying at home to take care of my child/grandchild and/or adult relative

21.

	1	2	3	4	5	6	7
	Primarily Children			Mix			Primarily Adults
In moving through the zoo/aquarium today, was it primarily children, adults or a mix of both who made decisions about where you went and what you saw during today's visit?	<input type="checkbox"/>						

22. About how often do you visit this zoo/aquarium? (Select the one best answer)

- Today is my first visit
- I haven't visited for many years
- Once every few years
- About once a year
- 2-4 times per year
- 5+ times per year

23. How much time did you spend at the zoo/aquarium today?

- Approximately 1 – 2 hours
- Approximately 3 – 4 hours
- Approximately 5 – 6 hours
- Approximately 7 + hours

24. Which of the following terms best describes where you live (Choose only one)

- Rural
- Suburban
- Urban

25. Which of the following comes closest to your total household income?

- Under \$25,000
- \$25,000 - \$49,999
- \$50,000 - \$74,999
- \$75,000 - \$99,999
- \$100,000 - \$149,999
- \$150,000 - \$199,999
- \$200,000 - \$249,999

- \$250,000 - \$300,000
- More than \$300,000
- Don't know
- Prefer not to say

Appendix G: Exit questionnaire, Spanish (study component 2)

Gracias por regresar para ayudarnos con nuestro estudio. Esperamos que haya disfrutado de su visita al acuario. Sus respuestas a este cuestionario nos ayudarán a comprender lo que ganó durante la visita de hoy. Una vez más, sus respuestas son anónimas y lo que usted nos dice puede ser muy útil para el acuario a medida que desarrollan programación para satisfacer sus necesidades.

os.ID Todas sus respuestas son anónimas. Para ser capaces de conectar su cuestionario previo, le pedimos que escriba su número de identidad anónimo. El número de identidad anónimo que le sugerimos incluye los 2 primeros dígitos del mes de su cumpleaños, seguidos de los 4 últimos dígitos de su número de teléfono. Si nació en Junio y su número de teléfono es 555-555-2674, usted apuntará este número de identificación: 062674.

os.activity.today ¿Qué hizo usted en el zoológico/acuario hoy? (Marque todas las que se apliquen)

- Dar un paseo (1)
- Ver la nueva exhibición (9)
- Hice algo diferente (10)
- Pasé tiempo con amigos/as y familia (3)
- Lo pasé bien (4)
- Vi animales/peces (5)
- Me relajé/rejuvenecí (6)
- Aprendí algo nuevo (7)
- Un evento especial (8)
- Compré algo en la tienda de regalos (11)
- Hice ejercicio (12)
- Reconecté con el medio natural (13)
- Apoyé a mi zoológico/acuario (14)

os.share.photo ¿Compartió (o tiene la intención de compartir) fotos en línea de sí mismo/a y/o su grupo en la visita de hoy, a través de correo electrónico, Facebook, Twitter, Snapchat, etc?

- Sí (1)
- No (2)
- Quizás (3)

os.soc.media Cuál de las plataformas de media social del zoológico, si es el caso...

	usó durante la visita de hoy (1)	Planea usar en las próximas 2 semanas (2)
Página web (os.soc.media.Web)	<input type="radio"/>	<input type="radio"/>
Página de Facebook (os.soc.media.FB)	<input type="radio"/>	<input type="radio"/>
Twitter (os.soc.media.Twit)	<input type="radio"/>	<input type="radio"/>
Instagram (os.soc.media.Insta)	<input type="radio"/>	<input type="radio"/>
Snapchat (os.soc.media.Snap)	<input type="radio"/>	<input type="radio"/>
Yelp (os.soc.media.Yelp)	<input type="radio"/>	<input type="radio"/>
Aplicación del Zoológico/acuario (os.soc.media.Zoo)	<input type="radio"/>	<input type="radio"/>

os.conservation ¿Hasta qué punto está de acuerdo o en desacuerdo con las siguientes declaraciones? Creo que los zoológicos...

	1 Muy en desacuerdo (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 Muy de acuerdo (7)
Ofrecen consejos sobre cómo ahorra energía (os.conservation.Energy)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ofrecen consejos sobre cómo ahorrar agua (os.conservation.Water)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Colaboran bien con otras organizaciones de conservación (os.conservation.Collaborate.Cons)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Colaboran bien con organizaciones de defensa animal (os.conservation.Collaborate.animal)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Proporcionan buenos cuidados médicos a los animales (os.conservation.Med.Care)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Se preocupan por el bienestar de sus animales (os.conservation.Well.Being)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tienen instalaciones que cubren las necesidades de los animales a su cuidado (os.conservation.Facilities)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tienen los conocimientos para cubrir las necesidades emocionales de los animales que alojan (os.conservation.Emotional.Needs)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Son una parte importante en la conservación de las especies silvestres (os.conservation.Part)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

os.this.zoo Nos gustaría saber su opinión sobre este zoológico. ¿Hasta qué punto está de acuerdo con las siguientes declaraciones?

	1 Muy en desacuerdo (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 Muy de acuerdo (7)
A menudo hablo con gente sobre este zoológico (os.this.zoo.Talk.Up)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A menudo traigo a gente a visitar este zoológico porque creo que deberían verlo. (os.this.zoo.Bring.People)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Estoy muy apegado a este sitio. (os.this.zoo.Attached)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tengo un fuerte sentimiento de pertenencia con este zoológico. (os.this.zoo.Belonging)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mi familia/amigos se sentirían decepcionados si dejáramos de visitar este zoológico. (os.this.zoo.Family.Dissappoint)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prefiero este zoológico a otros lugares/instalaciones para las actividades recreativas que más disfruto (os.this.zoo.Prefer.Rec)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Si dejara de visitar este zoológico, perdería contacto con un cierto número de amigos. (os.this.zoo.Lose.Friends)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Estoy muy apegado a algunos de los animales de este sitio. (os.this.zoo.Attached.Animals)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tengo recuerdos muy especiales asociados a este lugar. (os.this.zoo.Memories)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

os.learn Entendemos que usted puede tener amplios conocimientos sobre este zoológico y los animales. Nos gustaría saber que ha aprendido en su visita de hoy, si ha aprendido algo nuevo. En la visita de hoy, yo he aprendido sobre. . .

	1 Muy en esacuerdo (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 Muy de acuerdo (7)
Cómo este zoológico cuida de sus animales (os.learn.Care)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Los hábitats de los animales (os.learn.Habitats)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dónde los animales de este zoológico han nacido (os.learn.Animals.Born)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cómo reducir mi uso del plástico (os.learn.Decrease.Plastics)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
El cambio climático global (os.learn.Climate.Change)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cómo conservar el agua (os.learn.Water.Cons)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cómo ahorrar energía (os.learn.Energy.Cons)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Que los zoológicos donan dinero para apoyar y proteger la conservación de especies silvestres (os.learn.Zoo.Supports)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Los esfuerzos de conservación de este zoológico (os.learn.Cons.Zoo)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prácticas de compra sostenible (p.e., marisco sostenible, aceite de palma, etc.) (os.learn.Sustainable)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

os.learn.open ¿Puede compartir con nosotros 2 o 3 cosas que haya usted aprendido hoy?

os.visit Durante mi visita hoy, yo . . .	1 Muy en esacuerdo (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 Muy de acuerdo (7)
Estuve en un lugar precioso (os.visit.Setting)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aprendí algo de información científica (os.visit.Learned.Sci)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Descubrí cosas que puedo hacer por el medio ambiente (os.visit.Discovered.Env)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reafirmé mi preocupación por el medio ambiente. (os.visit.Affirm.Care)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conocí mejor a mi familia/amigos (os.visit.Deeper.Family)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vi animales que no veo normalmente (os.visit.Saw.Animals)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tuve el tipo de experiencia que quería (os.visit.I.Wanted)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Me di cuenta de que quiero hacer más para ayudar al medio ambiente (os.visit.Help.Enviro)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sentí reforzado mi amor por los animales (os.visit.Love.Animals)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aprendí sobre el zoológico/acuario en sí mismo (os.visit.Learned.Zoo)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reforcé mis lazos con mi familia y amigos (os.visit.Deeper.Bond)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disfruté observando a otras personas explorar el zoológico (os.visit.People.Watch)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

os.engage Mi visita al zoológico me hizo participar: (Marque todas las que se apliquen)

- Espiritualmente (1)
- Físicamente (2)
- Mentalmente (3)

os.view.nature ¿Cuál de las siguientes declaraciones se encuentra más cerca a su visión personal de la naturaleza? (Elija sólo una)

- La naturaleza es sagrada porque fue creada por un poder superior (1)
- La naturaleza es espiritual o sagrada en sí misma (2)
- La naturaleza es importante, pero no espiritual ni sagrada (3)
- No puedo elegir una (4)

os.politics En asuntos políticos, usted se considera generalmente (Elija sólo una):

- Muy liberal/progresista (1)
- Liberal (2)
- Moderado (3)
- Conservador (4)
- Muy conservador (5)
- Libertario (6)

os.donate ¿Dona usted dinero o es miembro de un grupo de conservación (p.e., World Wildlife Fund, Nature Conservancy, el Sierra Club)?

Sí (1)

No (2)

os.visit.park ¿Cómo de a menudo visita parques nacionales o estatales?

Menos de una vez al año (1)

Al menos una vez al año (2)

2 – 3 veces al año (3)

4 – 6 veces al año (4)

7 o más veces al año (5)

os.exercise.u Aproximadamente ¿cuántas horas a la semana hace ejercicio sólo y/o participa en actividades recreacionales organizadas (p.e., clases de natación, clases de baile, liga de pickleball, etc.)?

- 1 hora o menos por semana (1)
- 1.5 – 5 horas por semana (2)
- 5.5 – 10 horas por semana (3)
- 10.5 – 15 horas por semana (4)
- 15 o más horas por semana (5)

os.exercise.kids Si es usted padre/madre, ¿cuántas horas pasa asegurándose de que sus hijos/as asisten/participan en diferentes actividades recreacionales organizadas (p.e., clases de natación, kárate, danza, fútbol, etc.)?

- No se aplica (1)
- 1 hora o menos por semana (2)
- 1.5 – 5 horas por semana (3)
- 5.5 – 10 horas por semana (4)
- 10.5 – 15 horas por semana (5)
- 15 o más horas por semana (6)

os.culture.visit A continuación, por favor, comparta ¿con que frecuencia visita estas instituciones culturales, asiste a o participa en este tipo de eventos?

	Menos de 1 vez/año (1)	1 vez/año (2)	2 – 4 veces al año (3)	+5 veces al año (4)
Museos (de arte, de Historia natural, de ciencia, etc.) (os.culture.visit.Museum)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Representaciones teatrales y/o clases de actuación (os.culture.visit.Theater)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Actuaciones musicales y/o clases de música (os.culture.visit.Music)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Actuaciones de danza y/o clases de danza (os.culture.visit.Dance)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jardines (Botánicos, Conservatorios, Hortícolas, etc.) (os.culture.visit.Garden)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lugares históricos (Gettysburg, El Álamo, la casa de Paul Revere, etc.) (os.culture.visit.History)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

os.hobbies ¿Cuál de los siguientes hobbies/actividades disfruta? (Marque todas las que se apliquen)

- Animales (exhibiciones de perros, montar a caballo, etc.) (1)
- Naturaleza (2)
- Actividades al aire libre (3)
- Artes visuales (4)
- Teatro (5)
- Música (6)
- Juegos (videojuegos, de mesa, de arcade, etc.) (7)
- Viajar (8)
- Deportes (9)
- Ejercicio (10)

- Comida (11)
- Sociales – en general (12)
- Sociales – en familia (13)
- Jardines (14)
- Manualidades (15)
- Lectura (16)
- Eventos locales (17)
- Reparaciones, actividades de taller (electrónica, carpintería, pequeños motores, etc.) (18)

os.member ¿Es usted miembro de este zoológico/acuario?

- Sí (1)
- No (2)

os.programs ¿Participa usted (o alguno de los miembros de su familia) en programas (p.e. campamentos, conferencias, talleres, eventos especiales) de este zoológico/acuario?

- Sí (1)
- No (2)

os.work.situ ¿Cuál de las siguientes describe mejor su situación laboral? (Marque sólo una)

- Empleo de tiempo completo (1)
- Trabajo de medio tiempo (2)
- Discapacitado (3)
- Jubilado (4)

- Padre/madre de casa, a tiempo completo, abuelo/a, asistente de cuidados (5)
- Desempleado/a (6)

os.career ¿Cuál de las siguientes declaraciones le describe mejor? (Marque sólo una)

- Estoy explorando varias posibilidades profesionales; Estoy desarrollando objetivos personales y profesionales. (1)
- Estoy al inicio de mi carrera; Estoy trabajando para alcanzar mis objetivos personales y profesionales. (2)
- Estoy posicionado en mi carrera; He alcanzado varios de mis objetivos profesionales. (3)
- Me he retirado de la vida laboral; Estoy enfocado en mis objetivos personales. (4)
- Permanezco en casa para cuidar de mi hijo/nieto/a y/o un miembro adulto de la familia. (5)

os.led.visit Mientras pasea por el zoológico/acuario hoy, ¿quién tomó las decisiones de adónde ir y qué ver durante la visita: sobre todo los niños, los adultos o una mezcla de ambos?

	1 Sobre todo niños (1)	2 (2)	3 (3)	4 Mezcla (4)	5 (5)	6 (6)	7 Sobre todo Adultos (7)
¿Quién tomará decisiones sobre a dónde irá durante su visita? (os.led.visit.Who.Decides)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

os.visit.frequency ¿Con que frecuencia visita este zoológico/acuario? (Seleccione la mejor opción)

- Esta fue mi primera visita (1)
- No lo he visitado desde hace años (2)
- Una vez cada ciertos años (3)
- Una vez al año más o menos (4)
- 2-4 veces al año (5)
- 5 o más veces al año (6)

os.time2day ¿Cuánto tiempo ha pasado en el zoológico hoy?

- Aproximadamente 1 – 2 horas (1)
- Aproximadamente 3 – 4 horas (2)
- Aproximadamente 5 – 6 horas (3)
- Aproximadamente 7 o más horas (4)

os.where.live ¿Cuál de los siguientes términos describe mejor dónde vive? (Elija sólo una)

- Rural (1)
- Suburbano (2)
- Urbano (3)

os.income ¿Cuál de los siguientes intervalos es el más cercano a sus ingresos familiares totales?

- Por debajo de \$25,000 (1)
- \$25,000 - \$49,999 (2)
- \$50,000 - \$74,999 (3)
- \$75,000 - \$99,999 (4)
- \$100,000 - \$149,999 (5)
- \$150,000 - \$199,999 (6)
- \$200,000 - \$249,999 (7)
- \$250,000 - \$300,000 (8)
- Más de \$300,000 (9)
- Lo desconozco (10)
- Prefiere no decirlo (11)

os.thanks

MUCHAS GRACIAS. Agradecemos su ayuda con n

Appendix H: Interview schedule (study component 3)

STEM Matters Zoo and Aquarium Member Interview Questions

Revised: 7/29/19

Date: _____ Location: _____

My name is _____, and I want to thank you for your willingness and availability to talk with me today. This interview is part of a research study being conducted by the Center for Research and Evaluation (located at the Center of Science and Industry in Columbus, Ohio) as well as the Association of Zoos and Aquariums. The research is exploring the learning that happens at zoos and aquariums. We will also be talking with several persons at this zoo/aquarium as well as other zoos and aquariums in other states.

- *This discussion/interview should last about 30 minutes.*
- *Your participation is voluntary and you are free to not answer any questions and to stop at any time.*
- *Your responses are confidential. Your name(s) will not be identified with any of your responses*
- *I would like to record our discussion for the sole purpose of my notes and being able to most accurately capture your responses. No other person will have access to this recording, and after I complete my notes I will erase this recording. Do I have your permission to record our discussion today? (If yes, turn on the recorder and record interviewee's verbal permission for recording the interview).*

Do you have any questions before we begin? Do not hesitate to ask any questions throughout this discussion.

Questions

1. **Tell me a little about what you did at the zoo/aquarium today.**
 - a. Talk about some of the choices you made during today's visit (e.g. what animals to see, shows to attend, length of visit, other)
 - b. What are some of the choices you made during past visits?

2. **Is there anything new that you learned today?** (e.g., about animals, animal habitat, conservation issues, other). **If so, please talk a little about what you learned.**
 - a. What did you learn about yourself? The others you were with?
 - b. Did you learn anything about something you do, could do, or would like to do, such as recycling, or purchasing certain products?
 - c. What is your biggest take away from your visit today to the Zoo/Aquarium?

Memorable: I will remember seeing a white rhinoceros because it was beautiful and I had never seen one before.

Meaningful: Seeing a white rhinoceros was meaningful to me, because they are on the endangered species list and therefore I may not see a live one again.

3. **What is most memorable from today's visit?**
 - a. What made it memorable?
 - b. Is there anything that has been memorable from past visits? What are these memories?

4. What was most meaningful about today's visit?

- a. What has made it meaningful?
- b. Is there anything from past visits that has been meaningful?

5. Will you do anything differently as a result of today's visit? If so, please talk a little about it. (Possibly probe for environmental stewardship, animal conservation, animal habitat and behavior, other)

- a. What about your visit at the zoo/aquarium that has made you want to do something differently?
- b. Have you done anything different as a result from past visits? If so, please talk a little about it.

6. Is there anything else you would like to add about today's visit to the zoo/aquarium?

Appendix I: Codebook (study component 3)

STEM Matters Zoo and Aquarium Member Interviews Codes

Level 1	Level 2	Level 3	Level 4	
1. Experience	1.1. Motivation to visit	1.1.1. External	1.1.1.1 Family member 1.1.1.2 Entertainment, just something to do 1.1.1.3 Educational opportunity 1.1.1.4 Environment, physical comfort 1.1.1.5 Geographic location 1.1.1.6 Other	
		1.1.2. Internal	1.1.2.1. Personal interest with an animal 1.1.2.2. Interest in conservation 1.1.2.3. Self-learning 1.1.2.4. Exposure to something new 1.1.2.5. Value time with family	
	1.2. Decision-making	1.2.1. Collaborative	1.2.1.1.Negotiated 1.2.1.2. Other	
		1.2.1. Self-directed 1.2.3. Specific person 1.2.4. Physical layout of facility 1.2.5. Visual appearance of exhibit/placement 1.2.6. To experience something new 1.2.7. Revisiting an exhibit 1.2.8. Time considerations		
		1.3. Space Place	1.3.1. Physical comfort 1.3.2. Accessibility 1.3.3. Welcoming 1.3.4. Family environment 1.3.5. Affect response 1.3.6. Place for self-reflection	
	1.4. Memorable	1.4.1. Family time together 1.4.2. Seeing something for first time 1.4.3. Novelty/ unusual experience 1.4.4. Animal experience 1.4.5. New learning 1.4.6. Other		
	1.5. Meaningful	1.5.1. Family experience 1.5.2. Personal life connections 1.5.3. Animal behavior 1.5.4. Family member's reaction 1.5.5. New learning 1.5.6. Increased interest, inspiration		
		1.5.7. Conservation message	1.5.7.1 Animal 1.5.7.2. Water 1.5.7.3. Energy 1.5.7.4. Habitat 1.5.7.5. Waste management 1.5.7.6. Consumption 1.5.7.7. Nature	
			2.1.1. Stimuli	2.1.1.1. Tactile

2. Learning Pathways/Process	2.1. Preferred learning mode (meta cognition)		2.1.1.2. Visual 2.1.1.3. Auditory
		2.1.2. Experiential, Interactive	2.1.2.1. Information from docent, volunteer
		2.1.3. Human interaction	
	2.2. Actual learning mode	2.2.1 Self-directed learning	
2.2.2. Facilitated learning			2.2.2.1. Docent, staff, volunteer 2.2.2.2. Visitor to visitor (not family members) 2.2.2.3. Adult to adult (family members) 2.2.2.4. Child to (grand) parent 2.2.2.5. (Grand) parent to child 2.2.2.6. Exhibit to (grand) parent to child 2.2.2.7. Exhibit to child to (grand) parent 2.2.2.8. Media to child to (grand) parent 2.2.2.9. On-site workshop to child to parent 2.2.2.10. On-site camp to child to parent
3. Outcomes	3.1 Knowledge	3.1.1 Animals	3.1.1.1. Physical characteristics 3.1.1.2. Behaviors 3.1.1.3. Habitat
		3.1.2. Conservation	3.1.2.1. Animals 3.1.2.2. Water 3.1.2.3. Energy 3.1.2.4. Habitat 3.1.2.5. Waste Management 3.1.2.6. Consumption
		3.1.3. Information about Zoos/Aquariums 3.1.4. Nothing new learned today 3.1.5. Animal habitat	
	3.2 Attitudes	3.2.1. Valuing Zoos and Aquariums 3.2.2. Feeling valued 3.2.3. Appreciate need for conservation 3.2.4. Increased interest/curiosity	
	3.3 Affect		
	3.4 Connection transference to like world	3.4.1. Current events 3.4.2. Life experiences 3.4.3. Community	
	3.5 Trust	3.5.1. Authority 3.5.2. Role modeling 3.5.3. Shared world-view 3.5.4. Advocacy 3.5.5. Animal care	
	3.6 Cumulative Influence		
3.7 Behavior, Action Readiness	3.7.1. Pre-contemplative 3.7.2. Contemplative 3.7.3. Initiation 3.7.4. Maintenance 3.7.5. Decay		
4. Identity	4.1. Visitor affinity 4.2. Institution		



	4.3. Environment, nature 4.4. Animals Region, geography		
--	--	--	--

**NSF STEM Matters -Study component 3
Zoo and Aquarium Member Interviews
Qualitative Coding Rubric**

- A. *Portland Zoo (n=7)*
- B. *Dallas Zoo (n=9)*
- C. *Cincinnati Zoo (n=9)*
- D. *National Aquarium in Baltimore (n=11)*
- E. *Florida Aquarium at Tampa (n=14)*

Category	Description	Examples
1. Experience		
1.1 Motivation to visit	Why visitor/member chooses or wants to visit the zoo/aquarium	
<i>1.1.1: External</i>	Comes from wanting to earn a reward or avoid punishment	
<i>1.1.1.1: Family member</i>	Visited because a family member wanted to visit	"I mostly come here because my children like coming here and they ask me to take them here."
<i>1.1.1.2: Entertainment; just something to do</i>	Visits the zoo/aquarium to avoid boredom, better option to spend time, and/or find zoo/aquarium is a place to be entertained	"Coming here gave me something to do other than just sitting around the house watching TV."
<i>1.1.1.3: Educational opportunity for a family member</i>	Educational opportunity for children	"It's certainly educational for my children."
<i>1.1.1.4: Environment/physical comfort</i>	Desire to change environmental condition to increase physical comfort	"It's hot outside and I wanted to be someplace that is air conditioned."
<i>1.1.1.5: Geographic location</i>	Location of Zoo/Aquarium reflects environment of where visitor resides	"...the fact that it's [Aquarium] near an ocean, near the bay, I think sublimely plays a role in why I chose to come and visit here [Aquarium]."
<i>1.1.1.6: Other</i>	Other types of responses	
<i>1.1.2: Internal</i>	Comes from within and is for personal satisfaction, desire, or its own sake without any sort of external reward.	
<i>1.1.2.1: Personal interest in animal/marine life</i>	Visitor is personally interested in a specific animal/animals in general	"I come here because I am personally interested in marine life."

<i>1.1.2.2: Interest in conservation</i>	Visitor is personally interested in conservation issues	"I come here because it supports my interest and values regarding animal and environment conservation."
<i>1.1.2.3: Self-learning</i>	Learning opportunity for self	"I visit here because there is always something new for me to learn, and I like learning."
<i>1.1.2.4: Exposure to something new</i>	Opportunity to be exposed to something new	"We are in an environment where we are exposed to things that we wouldn't have seen otherwise."
<i>1.1.2.5: Value time with family</i>	Family is of personal value	"This place is good quality time to spend with my family."
<i>1.1.2.6: Value/support the Zoo/Aquarium</i>	Valuing the Zoo/Aquarium for what it offers and the work it does.	"We've come to visit more to support the Aquarium for what it does regarding animal conservation"
<i>1.1.2.7: Other</i>	Other types of responses	
1.2 Decision-making	Influential factors/reason why visitors decided to visit specific exhibits	
<i>1.2.1: Collaborative</i>	Choices are made by all, or multiple, members of the visitor group	"We talked together as a family about the places we wanted to go see."
<i>1.2.2: Independent</i>	Choices are made without input from other members of the visitor group	"I decided to see the elephants first because I wanted to see them."
<i>1.2.3: Specific person</i>	Visiting an area or exhibit results from desire of a group member	"We visited the sharks because my son loves them."
<i>1.2.4: Physical structure/layout</i>	Physical layout of zoo/aquarium has a natural route	"There just seems to be a natural route through the aquarium, a place where most people start, and we just followed that."
<i>1.2.5: Visual appeal of exhibit/exhibit placement</i>	What is eye-catching	"We visited the jellies because they were close to the entrance and they looked interesting."
1.3 Space/Place	Visitors' reactions to physically being at the Zoo/Aquarium	
<i>1.3.1: Physical comfort</i>	Visitors physical and/or psychological comfort while visiting the Zoo/Aquarium	"The lighting, sound of the water, temperature inside the Aquarium feels soothing."
<i>1.3.2: Accessibility</i>	Perceptions of how easy or difficult it is to move through, see, hear, and engage with the Zoo/Aquarium	"As a disabled person I found this place very difficult for me to get around in. I felt there were many physical barriers."
<i>1.3.3: Affect</i>	Emotions/feelings as a result of visiting	"I feel calm when I visit the Aquarium."
<i>1.3.4: Self-reflection</i>	Zoo/Aquarium as a place that allows for thinking, internal processing, making	"Being at the Aquarium has taught me that it is a good place for me to spend in self-reflection."

	meaning, and gaining personal insight.”	
<i>1.3.5: Welcoming</i>	The ways and extent visitors perceive the Zoo/Aquarium to be a safe and supportive place for them	“I feel this is a place for me that shares my values and supports what is important to me.”
<i>1.3.6: Family environment</i>	The ways and extent visitors perceive the Zoo/Aquarium to be a place for families	“It’s a great family environment.”
<i>1.3.7: Zoo/aquarium staff</i>	Visitor perceptions of Zoo/Aquarium staff.	“The staff here are great, knowledgeable.”
<i>1.3.8: Authenticity</i>	Visitor perceives experience/exhibit to be authentic to nature.	“I have been to the actual Amazon Rainforest, and this exhibit here of the Rainforest is as accurate and authentic as I have ever seen.”
1.4 Most memorable	Aspects of a visit that “stick” in a person’s mind; more affect in nature	
<i>1.4.1: Family time together</i>	A memory that result from spending time with family	“What made it memorable is being with my family.”
<i>1.4.2: Seeing something new for the first time</i>	A memory that resulted from seeing or experiencing something new at the zoo/aquarium.	“What was most memorable was seeing a real live sloth for the first time.”
<i>1.4.3: Unusual experience</i>	A memory that result from an unusual or unique experience at the zoo/aquarium	“My most favorite memory is when I was able to scuba with my son in one of the tanks here at the aquarium.”
<i>1.4.4: Experience with an animal</i>	Experience with an animal	“I’d say the moon jellies, just being able to touch them and really feel them up close and personal.”
<i>4.4.5: New learning</i>	Learning something new	“I’d say most memorable from today’s visit would be learning about the digestive system of a coral.”
1.5 Most meaningful	Connecting an experience with something of perceived value to self, environment, animals, and/or humanity.	
<i>1.5.1: Family experience</i>	Experience with family	
<i>1.5.1.1: Child learning</i>	Experiencing when a child makes a connection and grasps context and meaning	“...as a mom when my children tell me something that they’ve learned here and demonstrate they have understood the content.”
<i>1.5.1.2: Family time</i>	Just being together as a family	“Being together as a family”
<i>1.5.1.2: Zoo/Aquarium animal conservation</i>	Perceiving the zoo/aquarium is making a difference with animal conservation	“...knowing that these animals would not be able to survive outside because most of them are injured.”

<i>1.5.1.3. Personal life connections</i>	Connecting zoo/aquarium to one's personal life experience	"The coral trees area is a fairly new exhibit here. My kids and I like to snorkel, and we like to see things under the water knowing they will be there for a while longer."
<i>1.5.1.4: Animal behavior</i>	Connecting zoo/aquarium experience and insight into animal behavior with perceived value to self, environment, animals, and/or humanity.	"...the insight into animal behavior, because I didn't know that they [lemurs] could be trained or that they could learn with human interaction like that."
<i>1.5.1.5: Conservation</i>	Engaging in animal and environmental conservation, and/or the consequences of not engaging in conservation	"The sea is very important to humans and our survival, so if we replenish the coral, save the oceans in general, we can save the future of our children."

2. Learning Pathways/Process

2.1 Preferred Learning Mode (Meta Cognition)	Awareness and understanding of one's own preferred learning process	
<i>2.1.1: Stimuli</i>	External sensory catalysts for learning	
<i>2.1.1.1: Tactile</i>	Learning through touch	"I learn best when I am able to touch what I am learning about."
<i>2.1.1.2: Visual</i>	Learning by seeing/watching/observing/reading something	"I like to learn about animals mostly by sitting and watching their behavior."
<i>2.1.1.2.1: Text/reading</i>	Learning by reading text	"I like having a board or something that you can read as well." "I find that I would always like to spend more time reading every little thing."
<i>2.1.1.2.2: Bulleted information</i>	Learning by consuming text and other information in chunks	"When I read a sign I want to get right to the point, bullet the information that would make the information so much clearer."
<i>2.1.1.3: Auditory</i>	Learning through sound	"I think I learn best when I am told something, when I hear it."
<i>2.1.2 Human factor</i>	Combined external sensory catalysts combined with human engagement for learning	
<i>2.1.2.1: Direct human interaction</i>	Learning by humans providing information and answer to questions	"I like somebody who's there briefly just to provide answers to questions." "Have a volunteer around just to answer questions."
<i>2.1.2.2: Live demonstration</i>	Staff/volunteer provides a visual and/or auditory and/or tactile presentation of information and/or concepts	"I like having someone explain information and demonstrate the information so that it becomes more real for me and makes more sense."

2.1.2.3: Other	Other types of responses	
2.2. Actual Learning Pathways	The path from where information originates to resulting in visitor learning	
<i>2.2.1: Direct/primary learning</i>	Learning is self-directed	
2.2.1.1: Reading plaques/signs	Learned from reading information presented by plaques/signs	"I was reading a sign about... choices you can make that will affect, either positively or negatively, animals in the wild."
2.2.1.2: Aquarium/Zoo printed material	Learned through printed materials provided by Aquarium/Zoo (e.g. newsletters, etc)	"...she does receive the Aquarium newsletter and occasionally it will have new information in it and she learns something new from reading it."
2.2.1.3: Visual (not film or text-related)	Learned from directly observing animals	"I learned what bald eagles eat, because for the first time I saw one eating a fish."
2.2.1.4: Auditory	Learned through sound	"I learned that Blue penguins make a barking sound by hearing it."
2.2.1.5: Films/movies	Learning through films/movies shown at the Zoo/Aquarium	"I watched a shark movie here and there was something that a shark that could live outside water."
2.2.1.6: Other	Self-directed learning without specifically responding how	"Our learning is more our own independent self-service interaction with the facility."
<i>2.2.2: Indirect/secondary learning</i>		
2.2.2.1: Docent/staff/volunteer to visitor	A visitor learns directly from the knowledge of a zoo/aquarium docent/staff/volunteer	"She [staff] engaged us in a conversation about the differences between sloths and the tamarins."
2.2.2.1.1: Zoo/Aquarium programs	Learning by a child that happened at a zoo/aquarium-sponsored event/program	"We always learn lots of stuff at the Nature Exchange."
2.2.2.1.2: Lectures	A visitor learns directly from the knowledge of a content expert by listening to such person	Every so often the Zoo has lectures during weeknights on specific topics. I went to one on the impact of climate change on animal habitat and behavior."
2.2.2.1.3: Demonstrations	A visitor learns directly from the knowledge of a zoo/aquarium docent/staff/volunteer by watching a demonstration by such person	"We saw the presentation on predators, so there were some cool facts that we didn't know."
2.2.2.2: Visitor to visitor (not family related)	Visitor learns from another not family-related visitor	"I overheard a visitor talking to another visitor in an exhibit area about how dolphins can be trained using classical conditioning approaches. That was something I did not know."

<i>2.2.2.3: Adult visitor to adult visitor (family-related)</i>	Visitor learns from another adult family member visitor	"Craig [husband] knows so much more about the fish [at the Aquarium] and I can say 'what's that there?' and he tells me."
<i>2.2.2.4: Child to (grand)parent</i>	A parent learns from their child	"My granddaughter plays bird bingo and she was able to tell me names of birds that I didn't know in the Australia exhibit area."
<i>2.2.2.5: Parent to child</i>	A child learns from their parent/guardian	"Our 3-year-old son wanted to pet the otters. We told him that most wild animals do not like to be touched by us and they might bite because they might be afraid if us."
<i>2.2.2.6: Exhibit to parent to child</i>	A child learns from what their parent/guardian learned from an exhibit	"Sometimes he [son] asks me a question and I don't know the answer and it makes me have to look around at the exhibit to try to get the answer for him."
<i>2.2.2.7: Exhibit to child to parent</i>	A parent learns from what their child learned from an exhibit	"My new learning today was through my step-son who visited the Aquarium before and shared with her that he learned that males sea horses carry the babbies,"
<i>2.2.2.8: Media to child to parent</i>	A parent/guardian learns from what their child learned on T.V./ Internet/magazine	"Last time I was here I [child] used the Internet on my phone to find information of a fish her [Aquarium] called the snooty wrasse. I then told my mom about it."
<i>2.2.2.9: On-site workshop to child to parent</i>	A parent learns from what their child learned in a zoo/aquarium workshop	I learned from my daughter during our last visit the names of specific fish in one of the tanks. She had learned that from a day workshop that she attended here at the Aquarium."

3. Outcomes

3.1. Knowledge (facts)/awareness	New facts and information learned as a result of the Zoo/Aquarium visit	
<i>3.1.1 Animals</i>	Factual information about animals	"Today I learned that there's something called a spider turtle."
<i>3.1.1.1: Physical</i>	Something new learned about the physical appearance of an animal	"I learned about a Mexican feather dinosaur...massive wingspan...wings like a bat, 500 lbs..."
<i>3.1.1.2: Behavior</i>	Something new learned about animal behavior	"I learned that a mantis shrimp punches super hard to kill their prey."
<i>3.1.1.3: Habitat</i>	Something new learned about animal habitat	"I learned that
<i>3.1.1.4: Animal conservation/protection</i>	Something new learned about animal conservation/protection	"There are certain types of chemicals in sunscreens that are apparently dangerous to coral reefs."
<i>3.1.1.5: Environmental conservation</i>	Something new learned about environmental conservation	"I learned today that plastics are not biodegradable and plastic trash makes-up a huge floating island in the middle of the ocean."

<i>3.1.2 Environment (general)</i>	Factual information/awareness about the environment	"The aquarium is making me much, much more aware of the environment."
<i>3.1.3 Conservation (general)</i>	Recycling, reusable materials, other	"I read something about choosing something that's recyclable versus somethings that's not, choosing something that is reusable before it gets thrown out and ends up in streams."
<i>3.1.4: Aspects of zoo/aquarium</i>	Knowledge/awareness of zoo/aquarium operations	
<i>3.1.4.1: Programs/events offered</i>	Knowledge of programs/events offered by the aquarium/zoo	"I didn't know that this place had home school events."
<i>3.1.4.2:</i>		
<i>3.1.5: Nothing new learned today</i>	Member indicated no new learning during this visit.	"I really didn't learn anything new today."
3.2 Attitudes	Feelings and thoughts about the Zoo/Aquarium as a result of visit	
<i>3.2.1: Valuing Zoos/Aquariums</i>	Visitor experience either changes or supports perceived value of zoo/aquarium	"This visit is meaningful to me knowing these animals would not be able to survive outside [in the wild] because most of them are injured."
<i>3.2.2: Feeling valued</i>	Feeling personally valued by Zoo/Aquarium	"The business coordinator reached out for us to help with this interview. It makes me feel like they [Zoo] values us."
<i>3.2.3: Need for conservation</i>	Feelings about the consequences of a lack of conservation on animal life	"I learned that there are a lot of bad things going on in the coral reefs on America's west and east costs, and I don't want them [coral] to go away."
<i>3.2.4: Increased interest/curiosity</i>	Having questions and/or wanting to learn more about animals/environment	"Visiting the Zoo today has made we want to look-up more information about otters using the Internet when we go home."
3.3 Affect	Some aspect of the visit results in some feeling or emotion	"Being able to get close and personal with the animals here touches something within you that makes you want to protect them."
3.4 Behavior	Changes in visitor behavior that have been influenced by zoo/aquarium visit	
<i>3.4.1: Action Readiness</i>	Continuum of choosing to change behavior	
<i>3.4.1.1.: Pre-contemplative</i>	Visitor has not thought about making any changes in their behaviors as a result of visiting the Zoo/Aquarium"	"I really don't do anything differently in my life as a result of visiting the Zoo."
<i>3.3.1.2: Contemplative</i>	Thinking about the role and actions as humans that impact our environment	"The aquarium is making me better understand our effects on the world and the decisions that I've made in my own life."

<i>3.3.1.3: Initiation</i>	Beginning to take conservation action	By coming to this Zoo I began using public transportation (i.e. light rail) more often. The initial change was due more for reasons of convenience and saving money to part than for environmental reasons. However, it has now expanded to changes that are to environmental reasons.”
<i>3.3.1.4: Maintenance</i>	Demonstrating on-going conservation action	“We don’t use straws in the house.” “Instead of using Ziplock bags for school lunches we now use washable reusable containers.”
<i>3.3.1.5: Decay</i>	Discontinuing or taking action less frequently and/or to a lesser extent	[No examples from interviews]
3.4 Connection/transference to life/world	Visitor experience is applied or connected to life outside the zoo/aquarium	
<i>3.4.2: Current events</i>	Visit experience is made more real by, and/or applied to, current events	“When I visited the Amazon Rainforest exhibit it made me think about the fires that are destroying a part of the real Amazon Rainforest.”
<i>3.4.3: Life experience</i>	Visit experience is made more real by, and/or applied to, life experience.	“The coral trees area is a fairly new exhibit here. My kids and I like to snorkel, and we like to see things under the water knowing they will be there for a while longer.”
<i>3.4.4: Community</i>	Visit experience is made more real by, and/or applied to, connection to the community.”	“When a baby elephant Lilly died, Zoo visitors posted notes at the Zoo of their regrets. This demonstrated to me a sense of community and that the community cared about this animal and shared their sadness together.
3.5 Trust		
<i>3.5.1: Authority</i>	Zoo/aquarium perceived as expert and voice regarding animal and environmental care, conservation, and preservation.	“This zoo knows what it is doing, it operates based on tons of information about animals, the people here [Zoo] are experts about animals.”
<i>3.5.2: Role modeling</i>	Zoo/aquarium actively demonstrating animal/environment	“I saw solar panels and they collect all the rain water for the elephants.”
<i>3.5.3: Shared world-view</i>	Visitor and Zoo/Aquarium believe animals are valuable to humans and to the environment and should be protected, cared-for, and preserved.	“We are people who are committed to environmental stewardship and animal preservation and this place is like us in that sense.”
<i>3.5.4: Advocacy</i>	Zoo/Aquarium actively promotes knowledge, understanding, care, preservation, and support for animal well-fare.	“I know that when I come here [Aquarium] and spend my money on a ticket, I know that it is being used by the Aquarium to educate and support conservation efforts.”

<i>3.5.5: Animal care</i>	Zoo/Aquarium demonstrates care and support for healthy animal well-being.	"The Zoo really focuses on preserving a species that is in danger. The Zoo really cares about the animals."
3.6 Cumulative Influence	Learning and other outcomes experienced over time and multiple visits	"I feel that every time we visit the Zoo we learn something new about some animal."
4. Identity		
<i>4.1: Visitor affinity</i>	Feeling connected and identifying with other like-minded visitors."	"It is really a neat place to connect with people, and with people who share the same values."
<i>4.2 Institution</i>	Visitor feels the Zoo/Aquarium	"We are people who are committed to environmental stewardship and animal preservation and this place is like us in that sense."
<i>4.3 Environment/Nature</i>	Connecting zoo/aquarium efforts of conservation to one's personal life experience	"The coral trees area is a fairly new exhibit here. My kids and I like to snorkel, and we like to see things under the water knowing they will be there for a while longer."
<i>4.4 Animals</i>		
<i>4.4.1: Anthropomorphism</i>	Assigning human characteristics to animals	"The Zoo treating animals humanely by providing a comfortable habitat reinforces the feeling that we as humans are not so different than animals. It shows that this Zoo believes that animals do have thoughts and feelings."
<i>2.5 Regional/Geography</i>	Visitor identity characterized, in part, by the geography of where they live is also a character of the Zoo/Aquarium	"We live near an ocean and feel the Aquarium reflects a part of who we are because it is also located near an ocean and has some of the marine life that is part of our natural environment."