



Language of Conservation Replication: Summative Evaluation of Poetry in Zoos

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Executive Summary

The *Language of Conservation* is a collaborative project (funded by the Institute for Museum and Library Services) between libraries, zoos, and poets nationwide to replicate a project done at the Central Park Zoo, in which careful curation, design, and installation of poetry throughout the zoo enhanced visitor thinking about wildlife conservation. The project was designed to replicate the model of zoo, library, and poet-in-residence partnerships in five host cities: Brookfield, Illinois; Jacksonville, Florida; Little Rock, Arkansas; Milwaukee, Wisconsin; and New Orleans, Louisiana. It was anticipated that the zoo exhibits would result in positive outcomes for zoo visitors who encountered the poetry, including increasing the conservation thinking and language used after a visit and creating a positive response to poetry and its relevance to the zoo experience.

The Institute for Learning Innovation (ILI) conducted a summative evaluation of the project's degree of achievement of its outcomes with zoo visitors, which was designed both to address the evaluation questions of the present project and also designed as a replication study, seeking to understand the results of the partner cities' installations in comparable ways to the evaluation of Central Park Zoo's efforts. The project replicated the original study's method of using structured, open-ended exit interviews with visitor groups in two conditions, pre- and post-installation. These interviews were used to compare changes in conservation comments (pre to post), as well as obtain direct reflections on the poetry installations (post only). In addition the present study developed a closed-ended questionnaire (based upon the key themes identified in the Central Park Zoo study) to measure change in conservation thinking (pre to post) and feelings and attitudes about the poetry (post only).

Key findings of the study, across the five zoos:

- **Poetry installations were frequently read by visitors and were seen as a positive addition to the overall zoo experience.**
 - Overall, between 75% and 95% of visitors at each zoo reported having seen or read one or more of the poetry excerpts during that day's visit. (One exception was interviewees at Brookfield Zoo, where 60% reported seeing the poetry; but 80% of questionnaire respondents reported seeing the poetry.)
 - A majority of visitors at all zoos found the poetry in the zoo to be a positive attribute of their visit, with around 50% to over 70% of visitors (depending on the zoo and the item) strongly feeling that the poetry was accessible, relevant, appropriate, enjoyable, and a positive addition to their day in questionnaires.
 - Around 70% of interviewees indicated that they liked the addition of poetry in the zoo, and very few groups (6% or fewer) indicated that they disliked the idea or what they saw.
- **Visitors recalled a wide variety of poems and poetry excerpts from their visits, with several factors appearing to influence visitor recall and receptivity.**
 - Most of the groups who saw the poetry during their day, between 82% and 91%, were also able to identify a specific poem or poetry location that they recalled from their day.
 - These poems covered a wide range of those on display at the zoos. Across the ~45 interviews at each site, visitors mentioned specifically:
 - 58% (15) of all poems on display (Jacksonville Zoo and Gardens)
 - 47% (16) of all poems on display (Audubon Zoo, New Orleans)
 - 40% (21) of all poems on display (Little Rock Zoo)
 - 37% (20) of all poems on display (Milwaukee County Zoo)
 - 23% (9) of all poems on display (Brookfield Zoo)



- Four factors seemed to most influence visitor recall and attention to specific poems:
 - **Placement and design** – prominent or unconventional placement and design (particularly overhead signage on beams that require movement to read) were common themes in the poetry recalled most by visitors.
 - **Author familiarity** – visitors were often able to recall or identify poetry excerpts by author name in cases where they were written by familiar names (e.g., Henry David Thoreau, Emily Dickinson, Langston Hughes).
 - **Connection to community** – at New Orleans, visitor recall was strong for two poems that tied directly to the community and environment of the Mississippi River and New Orleans levees.
 - **Brevity and memorability** – at Jacksonville, visitors strongly recalled (and often recited) one poem that was notable for its brevity, strong meter, and rhyming structure, as well as its playful tone.

- **Visitors who saw the poetry described several positive impacts that the poetry had on their experience, including drawing connections between the themes of the poetry and conservation themes or ideas, with the poetry highlighting those key themes of importance to the zoo.**
 - Between 24% and 40% of visitors noted that the poetry related to and highlighted conservation concepts, ideas, and themes within their zoo visit.
 - Between 13% and 38% of visitors noted that the poetry influenced the overall quality of their zoo visit experience, prompting them to slow down, pause, or be more reflective during their zoo experience.
 - Between 19% and 42% of visitors felt that the poetry added something new and different to zoo signage and interpretation, providing a different entry-point for the themes of the zoo and connecting zoo content with other academic disciplines and culture.

- **About half of visitors who saw the poetry at each zoo indicated that the poetry had influenced them to think more about conservation themes or the natural world.**
 - The exception to this finding was Audubon Zoo in New Orleans, where only about one-third of visitors identified this direct connection with the poetry.
 - The conservation themes that were described in these direct connections were primarily related to human responsibility and connection to nature:
 - Human responsibility to act as wildlife stewards
 - Humans as interconnected to nature and ecosystems
 - Human benefit from wildlife (primarily psychological benefits of awe, wonder, and beauty of nature)

- **There were very few significant changes (from pre to post) in the type or frequency of visitor comments related to conservation themes in interviews or in their ratings of conservation thinking in questionnaires. The addition of poetry did not appear to cause an increase in implicit connections with the identified conservation themes.**
 - Overall, visitor thinking about several of these key concepts was rather strong from the baseline, indicating they are pre-existing themes communicated strongly by zoos, and which left little room for increase (ceiling effect), particularly in the themes of:
 - Human responsibility to act as wildlife stewards
 - Human impacts on nature
 - Human benefit from wildlife (primarily psychological benefits of awe, wonder, and beauty of nature)



- **There were no significant changes (from pre to post) in visitors' attitudes about poetry generally (outside of the reactions to the poetry installations themselves).**

- **Overall, results were on par with those found in the study of the Central Park Zoo model project, indicating successful replication of the original project in intent, execution, and visitor response.**
 - Visitor recall of poetry was on par, and in some cases higher than, that found at the Central Park Zoo. Factors driving recall were also generally similar to those identified in the original study.
 - Visitor enjoyment and receptivity to poetry was equivalent to results from Central Park Zoo.
 - Visitors explicit connections between poetry and conservation thinking (as well as other positive attributes to their visit) were equivalent with results reported from Central Park Zoo.
 - The Central Park Zoo study reported increase of conservation comments (unrelated to the poetry) in terms of a percent change (pre to post); the present study found similar changes when viewed as a percentage, but analysis indicated that most of these differences were not statistically significant.



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Introduction

Project Background

Language of Conservation is a collaborative project between libraries, zoos, and poets nationwide to replicate a project done at the Central Park Zoo, in which careful curation, design, and installation of poetry throughout the zoo enhanced visitor thinking about wildlife conservation. Funded through a National Leadership Grant from the Institute for Museum and Library Services, the project team sought to replicate this experiment on a national scale, creating a set of models and tools for developing partnerships and crafting essential curatorial vision for this kind of success. The project was designed to replicate the model in five unique cities in order to demonstrate the far-reaching potential of poetry in museums for creating shared language with visitors to explore new ways of thinking about conservation and poetry. Led by Poets House in New York City, the project supported zoo-library partnerships in five host cities: Brookfield, Illinois; Jacksonville, Florida; Little Rock, Arkansas; Milwaukee, Wisconsin; and New Orleans, Louisiana. The three-year project focused on the building of collaborative teams between zoo staff, library staff, and poets-in-residence, exhibit installations, library program execution, and evaluation of results.

An important aspect of this project was its design as a replication project. Poets House and partners intended to implement and test whether the model developed in the original partnership could be successfully replicated with other cities and library-zoo partnerships across the United States. To that end, the project was guided strongly by the experience, documentation, and evaluation that were undertaken in the original *Language of Conservation* project in 2004.

A primary activity that took place within this project was the careful selection, design, and placement of poetry excerpts throughout exhibits and grounds of the five zoo partners, a process that was undertaken collaboratively between each city's poet-in-residence and zoo (and in some cases receiving input or support from library partners). It was anticipated that these exhibits would result in positive outcomes for zoo visitors who encountered the poetry, including increasing the conservation thinking and language used after a visit and creating a positive response to poetry and its relevance to the zoo experience. Specifically, the outcomes defined for this audience were:

After experiencing *Language of Conservation* installations in zoos, **zoo visitors will:**

- Show positive attitudes toward poetry use in the zoo.
- Increase conservation thinking, language, and connection to self.
- Increase their perception of poetry as accessible.

Evaluation Questions

In support of this project, the Institute for Learning Innovation (ILI) conducted an in-depth summative evaluation of the project's degree of achievement of these outcomes with zoo visitors. This study was guided by several key evaluation questions. The overarching question was: **Within each of the five replication sites, to what extent did the *Language of Conservation* project achieve its stated outcomes for zoo visitors?**



Within this larger question, a series of specific evaluation questions guided the study:

- To what extent was the poetry seen or read by zoo visitors overall?
 - Which poems or installations were most recalled by visitors?
- Did visitors show positive, negative, or neutral attitudes toward the use of poetry in zoos? Why?
- Was there an overall increase in conservation thinking after poetry was installed?
 - Were there differences between specific categories of conservation thinking?
- Were there changes in visitors' perceptions of poetry after poetry was installed?
- Were there differences in outcome achievement across the five sites?

In addition, this evaluation was designed in large part as a replication study, seeking to understand the results of the partner cities' installations in comparable ways to the evaluation of Central Park Zoo's efforts. As a result, inquiry into the evaluation questions and measurement of outcomes used similar guiding questions, methods, and conceptual frameworks as those used in the evaluation of the Central Park Zoo project.

Methods

The replication study was conducted in five different zoos: Audubon Zoo (New Orleans, LA), Brookfield Zoo (Brookfield, IL), Jacksonville Zoo and Gardens (Jacksonville, FL), Little Rock Zoo (Little Rock, AK), and Milwaukee County Zoological Gardens (Milwaukee, WI). As a replication study, this summative evaluation followed the procedures and used instruments as closely as possible to the original *Language of Conservation* study, which took place in 2004 at the Central Park Zoo (New York, NY). Whenever deemed extremely necessary, some modifications were made to the original procedures or instruments; these modifications are noted in the descriptions that follow and caution was taken to assure they would maintain the integrity of the study. Additional instruments were developed in an effort to extend the tools and measurements to document impact.

The Central Park Zoo study utilized two strategies to survey zoo visitors: un-cued group exit interviews before and after poetry installations, and cued individual pre-/post-visit interviews after the poetry installation (Condon, 2005). In the present replication study, evaluators chose to employ the first interview strategy, using an open-ended face-to-face structured exit interview, to measure changes in visitor language and thinking in the two conditions (before and after poetry was installed in the zoo). In Condon's study, this method proved to provide the primary data for the outcomes achieved, with the cued pre-/post-visit interviews providing little evidence of outcomes. In addition, evaluators developed a self-administered questionnaire to measure outcomes, with this instrument based upon the concepts developed in the original study.

These two methods were selected strategically to provide complimentary data in the effort to determine if the results of the 2010 *Language of Conservation* project replicated those found at Central Park Zoo. As noted, the open-ended, structured interview was selected to directly replicate the method used by Condon, but this method was also important for allowing visitors to express, using their own language, the ideas, concepts, and themes that were part of their overall zoo experience. The project's premise was that the presence of poetry within the zoo experience would impact the nature and themes within visitors' conversations and language, and a comparison of this language in conditions before and after poetry installation might show this change. The second, questionnaire-based method was added to this approach as an additional, standardized measure of the identified outcomes.



Following the 2004/2005 evaluation study, Condon noted that there would be benefit in further development of these concepts into a set of standardized measurements that would allow for more robust quantitative comparison of changes in visitor response (Condon, personal communication).

Both of these methods used the same approach for collection of pre- and post-installation data, with data collected in two phases: 1) prior to having the poetry installations completed (Summer/Fall 2009) and 2) following poetry installation (Summer/Fall 2010). Efforts were made to collect data at each zoo during periods of typically high visitation (i.e., summer for Midwestern venues; fall for Southern venues). This represented a slight divergence from Condon's method (which conducted pre-installation interviews in the Summer and post-installation interviews in the Fall of the same year), but this was done in an effort to control for variation due to seasonal shifts in visitor profiles, noted as a limitation by Condon (2005).

This section first describes the target audience, sampling, and criteria for inclusion in the study, which were similar for both methods. It then describes, for each method, data collection procedures, instrument development and testing, and study limitations.

Target Audience and Sampling

Similar to the original study, this evaluation targeted the general visitor at each of the five zoos participating in the replication study, not focusing in any specific visitor type, age, or group composition. This was done because there was no intention that the poetry was designed to impact any one visitor type specifically, but was meant to be meaningful to the broad spectrum of zoo visitors.

In order to reach the general visitor and understand their experiences, three considerations were made when selecting participants. First, study participants were approached at the end of their visits to allow them to have visited the zoo as closely to a "typical" routine as possible and to allow a full opportunity to experience the poetry installations. Second, within the data collection periods, visitors were randomly selected to participate. For that, interviewers used an imaginary line near the location where they were positioned to recruit visitors; the moment they were ready to interview someone, they invited the first group that crossed that line to participate. Finally, very few restrictions were made to group composition for participation. Visitors included in the study could be visiting alone or in groups, with or without children. However, for proper facilitation of the interviewing process, groups were limited to six people (as was done in Condon's study). This procedure was extended to the recruitment of participants for the self-administered questionnaire as a way to allow the two samples to be as comparable as possible. Added to that, for ethical reasons, at least one person in the group had to be an adult (appearing to be 18 or older) and only adults were invited to complete the self-administered questionnaire. Children (17 and younger) could be a part of the group for interviews. Only groups that presented some clear barrier were not asked to participate, such as those with a child who was crying, or with an adult talking on the phone. Refusals to participation were noted on a refusal log, along with group type, in order to examine for potential bias in the sample.

Open-ended Face-to-face Structured Interview

An open-ended face-to face structured interview was used was used in two phases, pre- and post-poetry installation. After a visitor group was selected, an ILI researcher invited adults and children in the group to take part in the interview. Visitors were asked for permission to be audio recorded. Since this was a structured interview, questions were stated without being rephrased and all of the questions



were asked in the order they appeared. Clarifying questions, such as “can you explain that more,” or follow-up questions were used where appropriate. Interviewers were also instructed not to mention that the interviews were about the poetry installations in the zoos, until the end of the interview.

A total of 152 groups completed interviews during the pre-installation phase (approximately 30 per institution), with an overall refusal rate of 54%. During the post-installation phase, approximately 30 groups per zoo completed the full interview. In order to obtain a larger sample focused on feedback about the poetry installations specifically, researchers conducted an additional set of brief interviews that addressed only the poetry-related questions with approximately 15 groups per institution. In total, 228 groups completed these interviews, with an overall refusal rate of 60% (see Table 1).

Table 1. Refusal rates, by zoo, for open-ended interviews

	Interview	
	Pre	Post
Brookfield	64%	69%
Jacksonville	52%	54%
Little Rock	37%	52%
Milwaukee	56%	65%
New Orleans	54%	54%
Overall	54%	60%

Instrument Development

The interview instrument was developed during the Central Park Zoo project (Condon, 2005) with open-ended questions and prompts, designed to elicit visitor conversation and perspectives about what they thought, discussed, and experienced during their zoo visit. This open-ended approach was used ultimately to assess the conservation thinking and language used by visitor groups in describing their experience. Following the installation, additional questions were asked to assess their experience with and attitudes towards poetry in the zoo. Demographic information was collected as well. While the interview guide was used primarily as originally developed, some minor changes were made to clarify wording in questions or follow-up prompts. These were done to simplify sentence wording for data collectors and to reduce some leading phrasing, while maintaining the content and intent of each question. (See Appendix A for interview guide and comparison to Condon, 2005).

Data Coding and Analysis

In order to quantify the conservation thinking exhibited by visitors in these interviews, coding used by Condon was expanded in the present study. During the Central Park Zoo study, Condon developed coding categories based on five conservation thinking types that had been identified by the project partners (see Table 2, from Condon, 2005). These categories were seen as the indicators of conservation thinking that were anticipated to be impacted by the inclusion of poetry in zoo exhibits. Data in the original study were coded into these categories for analysis. Because a detailed coding rubric was not provided in the original study, ILI further developed and expanded this conceptual framework of conservation thinking categories and created a detailed coding rubric (see Table 3). Some conservation thinking categories which appeared to contain a number of conceptual ideas (such as Human Benefit from Wildlife) were broken down into sub-categories along these lines, with sub-



categories often informed from concepts developed in previous conservation psychology research (i.e., Schultz, 2000; Kals, Schumacher, & Montada, 1999; Meyers, 2002) and used in prior zoo/aquarium evaluation studies (Sickler, et al., 2006).

In addition, it was found that a few additional coding categories emerged from the data in the replication study. These were concepts not explicitly addressed in the original rubric, but which emerged as distinct and common themes among visitors' conversations about their experiences. In total, these modifications were done with care to maintain the integrity of the original five-category framework to define conservation thinking, which allows for comparison of data in this study with that of Central Park Zoo's example. It also provides a stronger grounding in the data for the boundaries and definitions of each of these categories and its constituent concepts.

Data were also coded with respect to mention of having seen/read poetry during a visit and which poems or poetry locations were recalled. In addition, data were coded to reflect the overall response to and satisfaction with the poetry in the zoo, whether positive, negative, or neutral, as well as the reasons visitors described for liking or disliking the poetry. To combat potential desirability bias in these responses, comments were only coded as positive when they were clearly pleased with the poetry. Any comment that suggested ambivalence about the concept were coded as neutral.

Table 2. Conservation Thinking Category Framework, developed in the Central Park Zoo Language of Conservation project (from Condon, 2005, p. 5)

Conservation Thinking Categories Measured	Corresponding Conservation Thinking Messages
Human Benefit from Wildlife (Quality of Life, Survival)	<ul style="list-style-type: none"> • Healthy wildlife improves our quality of life: Close-up encounters with the beauty and variety of living wildlife can inspire our respect and wonder, can help us to better understand ourselves and our place in the world, can refresh and renew our spirit, and provide memorable experience. • Healthy wildlife is essential to human survival • Healthy ecosystems are essential to our physical survival. • Biological diversity, which includes wildlife, provides materials for many life necessities, such as shelter, clothing and medicine.
Zoo Staff Cares About Animals and Wants Everyone To Care	<ul style="list-style-type: none"> • Zoos and Wildlife Conservationists Care Passionately, and Want Visitors to Care as Well
Humans as Part of Nature/Ecosystems	<ul style="list-style-type: none"> • Humans are part of interdependent systems (ecosystems) that depend on other living things and a healthy physical environment.
Human Impact on/Threats to Nature	<ul style="list-style-type: none"> • Human actions affect ecosystems; human actions have threatened wildlife/wilderness • Human population growth and consumption of resources have major impacts. • This threat has increased at an unprecedented rate in recent years. • Human threats to wildlife include global warming, habitat destruction, invasive species, and overuse of individual species.
Humans as Wildlife Stewards	<ul style="list-style-type: none"> • Humans must act as stewards for wildlife by maintaining healthy ecosystems: • WCS and many other zoos are acting to save wildlife and wild lands. • Everyone can/must take action to conserve nature and protect the environment.



Table 3. Conservation Thinking Categories and Code Descriptions, developed from data in *Language of Conservation* interviews, 2009-11.

Conservation Thinking Category (Condon, 2005)	Conservation Thinking Sub-Codes	Brief Code Description
Human Benefit from Wildlife (Quality of Life, Survival)	Human Benefit – survival	Descriptions of different ways humans benefit from wildlife. Directly related to humans (e.g., provide shelter, clothing, medicine) or related to health of planet for human benefit (e.g., healthy habitats keep the air clean).
	Human Benefit – awe and wonder	Expressions of awe or wonder about animals (related to either physical characteristics or behaviors), landscapes, or nature in general (e.g., diversity of life, all of creation). Includes evidence of visitor questions or curiosities provoked by zoo visit.
	Human Benefit – emotional affinity	Direct expressions of affinity (e.g., I love giraffes); empathy (understanding or feeling the emotions/experience of animals); interest in seeing animals in the wild; or concerns about the animals health or well being in the zoo. Human-like traits assigned to animals (anthropomorphism).
Zoo Staff Cares About Animals and Wants Everyone To Care	n/a	Descriptions of ways zoos staff provide care for zoo animals including attention to health, diet, care, and living area. Ways zoos help animals in the wild, including zoo participation in conservation, preservation, captive breeding, and education.
Humans as Part of Nature/ Ecosystems	n/a	Descriptions of the ways living things are connected to one another. Includes concepts such as interconnectivity (i.e., physical or scientific), interconnectedness (spiritual), and interdependence (moral).
Human Impact on/Threats to Nature	n/a	Awareness of threats facing nature such as habitat destruction, poaching, and hunting. Includes words such as endangered and extinct. Also included are statements that express indignation or outrage.
Humans as Wildlife Stewards	n/a	Awareness or concern about conservation, management, or protection of wild animals and/or habitats. Descriptions of actions that should be taken (e.g., maintaining, managing, protecting, helping) as well as who should be taking action (e.g., me, we, they).
N/A	Closeness to Humans	Descriptions of the similarities between humans and animals (primarily primates); includes a physical similarity or a behavioral similarity.
N/A	Intrinsic Value of Nature	Statements expressing the value of nature/animals in their own right, includes statements about animals' rights. These comments do not go on to suggest specific conservation actions.
N/A	No Human Interference	No efforts should be made to manage or control nature - Animals will be fine as long as humans don't interfere.

This coding allowed for some quantitative analysis to be conducted on the data. One level of analysis looked at the number of groups who mentioned each Conservation Thinking Category at least once during interviews, comparing frequency in pre- and post- interviews for evidence of difference (Chi-square). A second level of analysis examined the total number of times a group referenced each Conservation Thinking Category within an interview. For each Conservation Thinking Category, an average (mean) number of references made by groups was calculated for pre- and post- interviews (this was the analysis approach used by Condon (2005)). The two means were compared using an ANOVA to look for statistically significant differences. It should also be noted that Condon reported pre- to post-



change in terms of the percent of increase or decrease in this mean from pre- to post. That analysis is reported, but the statistical comparisons were done to strengthen the interpretation of data.

Closed-ended Self-administered Questionnaire

A closed-ended self administered questionnaire was used in two phases, pre- and post- poetry installation. After a visitor group was selected based on the criteria describe earlier, an ILI researcher or zoo staff-person or volunteer invited an adult in the group to complete the questionnaire. Visitors were instructed to fill out the questionnaire individually, and to complete both sides of the form. A special focus was given on highlighting instructions for the first set of items in terms of how much they had *thought* about each statement during their visit that day.

A total of 221 individuals completed questionnaires during the pre-installation phase (approximately 45 per institution), with an overall refusal rate of 51%. During the post-installation phase, 356 individuals completed questionnaires (approximately 70 per institution), with an overall refusal rate of 50% (see Table 4).

Table 4. Refusal rates, by zoo, for self-administered questionnaire

	Questionnaire	
	Pre	Post
Brookfield	53%	54%
Jacksonville	52%	37%
Little Rock	38%	52%
Milwaukee	60%	53%
New Orleans	47%	47%
Overall	51%	50%

Instrument Development and Testing

The questionnaire contained scales and individual items used to assess each of the constructs of interest in the evaluation. This instrument was developed within this project, based upon the frameworks and results from the 2005 qualitative evaluation by Condon. For purposes of this evaluation, the following constructs were measured.

Conservation Thinking and Language: This construct is defined as beliefs about the interactions between humans and nature; there are five categories of such beliefs, as described above (see Table 2 for definitions). During the replication study, this construct was measured by assessing the degree to which each visitor expressed these five patterns of thought during that day’s visit to the zoo. One scale was developed for each of the five categories and consisted on the average scores given to a series of items rated on a 7-point scale, where 1 was “didn’t think about this at all” and 7 was “thought about this a great deal.” As part of the development of these scales, a draft of the questionnaire was reviewed by an expert from the Institute for Learning Innovation, who assessed its construct and face validities. A pilot test of the scales was conducted in July of 2009 to assess the Conservation Thinking scales’ reliability. The pilot study involved 35 zoo visitors of Prospect Park Zoo (Brooklyn, NY). This test resulted in high reliability scores and the elimination of two items (see Table 5); a final list of the items used in each scale is presented in Appendix B.



Table 5. Reliability of Conservation Thinking and Language Scales

Scale	Items	Pilot		Pre		Post	
		Cronbach's alpha	n	Cronbach's alpha	n	Cronbach's alpha	n
Human Benefit from Wildlife	8	.874	29	.867	213	.895	346
Zoo Staff Care about Animals and Want Everyone to Care	4	.770	34	.796	214	.819	350
Humans are Part of Nature	5	.874	33	.837	219	.856	347
Humans Impact/Threaten Nature	4	.916	31	.820	217	.817	351
Humans as Wildlife Stewards	2	.733	33	.680	218	.754	353

Connectedness with Nature: This construct was defined as the extent to which individuals believe they are a part of the natural environment (Schultz, 2002 in Bruni, Fraser, and Schultz, 2008). It was measured using the “Inclusion of Nature in Self” (INS) Scale (Schultz, 2002). In this scale, respondents are asked to indicate how much they interconnect with nature, by selecting one of seven possible Venn diagrams of two circles (one with the word “self” and the other with the word “nature”), ranging from completely separated to completely overlapped circles (Figure 1).

2. Please circle the picture below which best describes your relationship with the natural environment. How interconnected are you with nature?

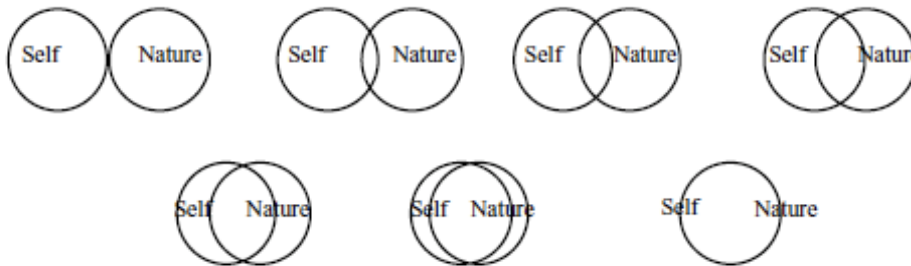


Figure 1. Images represent a rating from 1 to 7, with the top left image representing least connection with nature (1), the bottom right image representing the most connection with nature (7).

Attitudes towards Poetry: This construct was defined as visitors’ feelings and beliefs towards poetry in general. It was measured using four items, rated on a 5-point scale, where 1 indicated “strongly disagree” and 5 indicated “strongly agree.” These items were developed specifically within this project and during analysis were combined into the Attitudes towards Poetry scale . A reliability study supported the use of these items as a scale (Table 6); a list of the items used in the scale is presented in Appendix B.

Table 6. Reliability of Attitudes Towards Poetry Scale

Scale	Items	Pilot Study		Baseline		Post-Installation	
		Cronbach's alpha	n	Cronbach's alpha	n	Cronbach's alpha	n
Attitude Towards Poetry Scale	4	--	--	.878	219	.904	344

Attitudes towards Poetry in the Zoo: This construct was defined as visitors’ feelings and beliefs regarding the use of poetry within exhibits in the zoo. It was measured using five items, rated on a 5-



point scale from 1 = Strongly disagree to 7 = Strongly agree. These items were developed specifically within this project and are presented in Table 7.

Table 7. Items Measuring Attitudes Towards Poetry in the Zoo

Scale	Items
Attitudes Towards Poetry in the Zoo Scale	I enjoyed reading the poetry around the Zoo I felt the poetry added something positive to my zoo visit today The poetry I read was easy to understand The poetry I read was relevant to what the Zoo is about The poetry I read was appropriate to be in the Zoo.

Environmental Concern and Behaviors: This construct was used to assist in characterizing zoo visitors in terms of several key factors related to pro-environmental behaviors, focusing on three key constructs of a model for predicting pro-environmental behaviors (Oreg & Katz-Gerro, 2006). The constructs selected were Perceived Behavioral Control (defined as the degree to which an individual believes his/her behaviors can impact environmental issues), Environmental Concern (defined as the degree to which an individual believes environmental issues area problem), and Pro-environmental Behavior (defined as effort made to take specific pro-environmental actions).

Items used were drawn from the International Social Survey Programme (ISSP) Environment II module. ISSP is an international group that studies public opinion on various social issues across more than 30 countries, and in 2000 and 2010 the survey included an environmental module. Given the length of the present instrument, it was not feasible to include all questions from the Environment II module, nor was it feasible to include all of the items included within the Oreg & Katz-Gerro (2006) model. Instead, the evaluation team selected several indicator items from the survey that represented the above constructs; specifically, Perceived Behavioral Control (scale consisting of two items), Environmental Concern (one item), and Pro-environmental Behavior (one item). The purpose was to assess whether zoo visitors sampled were significantly different in these characteristics than the national U.S. population (based upon data from the 2000 ISSP survey). Previous work has shown that zoo and aquarium volunteers (Fraser, 2009) have significantly higher pro-environmental characteristics in these areas than the national population, and it is thought that zoo visitors may show the same trends. For the Perceived Behavioral Control scale, reliability scores were equivalent to that of the ISSP sample (see Table 8).

Table 8. Reliability of Perceived Behavioral Control scale

Scale	Items	Zoo Visitors		ISSP U.S. Data	
		Cronbach's alpha	n	Cronbach's alpha	n
Perceived Behavioral Control	2	.643	560	.637	1176

Data Analysis

The analysis of the closed-ended self-administered questionnaire consisted of descriptive and inferential statistics. In order to characterize participants of the pre and post-installation studies in each participating zoo, researchers used descriptive statistics to describe demographic composition (similar analyzes were conducted to describe interview participants). In order to assess differences between pre-installation and post-installation results, within each participating zoo, of the Conservation Thinking scales, Connectedness with Nature scale, Attitude towards Poetry scale, and Attitude towards Poetry in the Zoo items researchers conducted inferential statistics using analysis of variance (ANOVA).



Assumptions and Limitations

The design of this study (as with the original *Language of Conservation* study) included a key assumption at its core, that visitors were able to fully and accurately respond to the interview and questionnaire items. For example, this study assumes that visitors were able to verbalize and articulate their conservation thinking in descriptions of their experience during interviews and that adults were able to understand and accurately complete the questionnaire items.

In addition, although carefully designed, implemented, and having reached its objectives, the study had a few unavoidable limitations. First, among these, related to the sampling timeframe for the studies. According to the scope of the study, it was necessary that data be collected during just one or two weekends (per phase) for each zoo. Consequently, the data cannot fully represent a random selection of all zoo visitors, or even all zoo visitors during that season, due to the limited time frame for sampling that was necessary within this project. This limited sampling window also meant that a zoo's sample might reflect effects of other zoo events that influenced attendance on a given weekend. While every effort was made to avoid each zoo's largest events that might bias a sample, most zoos feature some type of a special event or activity on weekend days during peak seasons, which did occur during data collection. It did not appear on the surface that such events greatly influenced the types of responses given by visitors, but this cannot be known for sure. Due to these sampling limitations, generalizations made from these data to the larger zoo population should be made with caution.

The context of being an exit interview may have led to shorter or less in-depth conversations than may have been possible in another interview setting. As visitors were at the end of their visit, they were often tired and/or anxious to leave, which may have impacted the length or depth of their responses to interview questions. In addition, the study assumes that as poetry influences visitors' thinking about conservation, it will emerge in the comments they make to describe their general visit experience. A limitation of the study is that if these implicit changes are found in the comments made by visitors, the influence of the poetry alone cannot be isolated. It is conceivable that other uncontrollable factors could also contribute to a change in conservation comments made (e.g., other changes in zoo interpretation; the occurrence of the 2010 Gulf of Mexico oil spill).



Results

Description of Zoo Installations

This report presents the results of the evaluation studies individually for each of the five partner zoos, as it is important to reflect the unique qualities of each zoo's location, visitor profile, and approach to poetry installation. In order to provide context for these results, below is a brief description of the number, style, and locations of the poetry installations that were completed at each zoo.

Brookfield Zoo

As the largest zoo among the five partner cities, Brookfield Zoo decided to centralize their poetry installations into one exhibit, *Great Bear Wilderness* (GBW), which was being newly constructed during the period of this project. Covering 7.5 acres, the GBW habitat is approximately the same size as the Central Park Zoo model and is home to a variety of North American animals including polar bears, grizzly bears, wolves, bison, and bald eagles. The exhibit also includes a retail store and restaurant. Brookfield Zoo included a total of 39 poems in this exhibit that covered a range of themes including the North American region (animals, habitat, and culture), the Chicago region, native culture, and conservation. Poems were integrated into the exhibit using the same font, materials, and styles selected by the design team for all other GBW interpretation. Poems were creatively placed throughout the exhibit in a variety of locations including sidewalks, fences, the ceiling, glass tanks, buildings, benches, rocks, the overpass, and a mural. Installation materials and techniques included vinyl on Plexiglas and glass, carving (wood and rock), plaques, woodburning, glass etching, banners, and audio boxes (plays clips of poetry read English and native languages).

Jacksonville Zoo and Gardens

Jacksonville Zoo and Gardens chose to include poetry throughout the entire grounds of their zoo, incorporating poetry into a variety of exhibits and displays. They included a total of 26 poems across the zoo on a variety of locations including sidewalks, exhibit walls (carved into rock and wood), benches, glass tanks, landscapes, and the ceiling. They intentionally limited the number of poems displayed in order to invest more heavily in the design and fabrication of the materials used to display the poems. This strategy allowed for permanent installations that responded to the existing environment and graphic treatment in each area. Materials and techniques included shaped aluminum (e.g., flower and snake), sandblasting, wood carving and staining, dimensional letters, painting, printed materials, and Plexiglas. Their poem collection included authors from a variety of countries including the United States, Spain, Lebanon, Germany, Guyana/Trinidad, China, England, and France as well as a Native American and Inuit poets. Jacksonville also included quotes from historical figures such as Ann Frank and Albert Schweitzer.

Little Rock Zoo

Little Rock Zoo also included poetry throughout the entire grounds of their zoo, incorporating poetry into a wide variety of exhibits and displays. They included a total of 52 poems across the zoo, using a strategy of wanting to display as much poetry as possible, truly blanketing the zoo. Poems were displayed using a wide variety of techniques, including both permanent (e.g., signboard material, artificial rocks, wire and rope, ply board and paint, paint and stencil, and vinyl on glass, Plexiglas, and other material) and temporary (mesh and solid banner, solid banner). Many of the installations were designed to show off the poetry with bold, contrasting, colors that created an "eye-popping" presence,



while other installations were designed more subtly such as vinyl installations on glass that blended in with the habitat. Their poem collection included a wide variety of authors from many different cultures and geographic locations, with an emphasis on native authors. Their collection also included some home grown specialties, featuring with one poem written by one of Little Rock's own animal keepers and another poem written by Little Rock's poet-in-residence, Joseph Bruchac, reflecting on his experience with the animals at the Little Rock Zoo. It should also be noted that the Little Rock Zoo installed and opened another set of interpretative signs related to the benefits of trees simultaneously with the LOC. This installation was made possible by an Urban Community Forestry Assistance Grant.

Milwaukee County Zoo

Milwaukee County Zoo chose to install poetry throughout the entire grounds of their zoo, incorporating poetry into many of their exhibits, displays, and gathering places. They included a total of 54 poems across the zoo. The in-house design team implemented a wide range of installation techniques, which included traditionally sized and placed signs, as well as poems engraved in clay, pottery, or stone; projected on walls or floors; hung along rafters; and placed on small signs in nooks and unexpected locations. Their philosophy was to create both large, prominent installations such as the Navajo poem "In Beauty May I Walk" that was installed in large font on the rafters of the Peck Boardwalk as well as more subtle installations such as poems carved into rocks that blend into the environment. Milwaukee County Zoo's poetry selections represented a global collection of authors from many different backgrounds, although authors of the Western culture were the most common. Many of the poems were animal-related, and connected to the animal on exhibit in a very direct way. Reflecting on the poem selection process, the poet-in-residence mentioned that this strategy was more difficult than anticipated. "We were looking for poems that fit the zoos and the animals there... It's hard to find a serious poem about a hippo!! ... to find one that is respectful of animals and *not* reflecting human angst is the problem."

Audubon Zoo (New Orleans)

Audubon Zoo also installed poetry throughout the zoo and many of its exhibits. They included a total of 34 poems throughout the zoo. Their installation strategies primarily focused on non-permanent signage and banners, although placed in unconventional locations in many cases (such as hung from tree limbs or placed along fencing on a pathway). They also placed poems along rafters in gazebo-like spaces. Several permanent installations included sandblasting poems into stonework, including into the bottom of the zoo's large, centerpiece fountain. Rather than creating bold, dominant displays, the designers choose to create more subtle installations that each reflected the existing environment and graphic treatment. One of the zoo staff explained, "We wanted to try to put a little conservation throughout our 55 acres, but not be overt in it. Let it be part of the beauty of the exhibits. And because our zoo is outside, and is more of a garden and park, our poems all flow out of that environment." While a range of authors from around the globe were represented, the collection tended to focus more on American poets; some with a particular connection to New Orleans highlighting the environment of New Orleans, the swamp, and the Mississippi River. Overall the poems were primarily about awe, appreciation, wonder of nature and animals. A few poems were specifically descriptive of the animals themselves, rather about their environments and the wonder of observing them and appreciating those environments.



Description of Samples

Demographic profile

A total of 956 individuals or groups participated in the study: 372 during the pre-installation phase and 584 in the post-installation; 379 groups were interviewed and 577 individuals answered the questionnaire. Participants were asked to answer a few demographic questions in each method. The demographic makeup for each participating zoo is summarized below (see Appendix C for detailed demographic data tables).

Brookfield Zoo

A total of 193 visitors of the Brookfield Zoo, participated in the study, during pre and post-installation phases; 77 were interviewed and 116 answered the questionnaire. Visitors from the Brookfield Zoo who participated in the interviews and answered the questionnaire during both phases (pre and post) had very similar demographic composition. The great majority was from Illinois (~80%) and lived in a suburban area (~75%). They were mostly females (~65%), 30-49 years-old (~55%), and visited the zoo in family groups (~75%). They also tended to be frequent visitors of public libraries, with the majority visiting more than 5 times per year; however, in general, fewer questionnaire respondents (~45%) were as frequent library users as interview respondents (~75%). The majority visited the zoo at least twice a year (~60%; an exception was where only 44% of post-installation questionnaire respondents who visited the zoo at least twice a year).

Jacksonville Zoo and Gardens

A total of 181 visitors of the Jacksonville Zoo and Gardens, participated in the study, during pre and post-installation phases; 75 were interviewed and 106 answered the questionnaire. Visitors who participated in the interviews and answered the questionnaire during both phases (pre and post) had very similar demographic composition. The great majority was from Florida (~75%) and lived in a suburban area (~55%). They were mostly females (~60%), 30-49 years-old (~55%), and visited the zoo in family groups (~75%). They also tended to be frequent visitors of public libraries, with around half visiting more than 5 times per year (~45%). About half visited the zoo at least twice a year (~50%); an exception was that only 36% of post-installation questionnaire respondents visited the zoo at least twice a year and, in fact, 41% of these visitors were visiting the zoo for the first time or had not visited it in many years).

Little Rock Zoo

In Little Rock, a total of 192 visitors participated in the study, during pre and post-installation phases; 76 were interviewed and 116 answered the questionnaire. Visitors who participated in the interviews and answered the questionnaire during both phases (pre and post) had very similar demographic composition. The great majority was from Arkansas (~85%) and lived in a rural area (~50%); somewhat fewer pre-installation questionnaire respondents lived in Arkansas (72%) and fewer post-installation interview respondents lived in rural areas (36%). They were mostly females (~60-70%), 30-49 years-old (~50-65%), and visited the zoo in family groups (~75%). They also tended to be frequent visitors of public libraries, with less than half visiting more than 5 times per year (~45%). As for zoo visitation, ~45% of post-installation respondents visited the zoo at least twice a year, but only ~25% of pre-installation respondents did so; in fact, ~30% of pre-installation visitors were visiting the Little Rock Zoo for the first time.



Milwaukee County Zoo

A total of 199 visitors of the Milwaukee County Zoo, participated in the study, during pre and post-installation phases; 76 were interviewed and 123 answered the questionnaire. Visitors who participated in the interviews and answered the questionnaire during both phases (pre and post) had very similar demographic composition. The great majority was from Wisconsin (~90%) and lived in a suburban area (~45%); relatively fewer post-installation interviewees were from Wisconsin (71%). They were mostly females (~70%), 30-49 years-old (~65%), and visited the zoo in family groups (~80%); relatively fewer post-installation questionnaire respondents (40%) were 30-49 years-old and fewer pre-installation questionnaire respondents (65%) visited the zoo in family groups. They also tended to be frequent users of public libraries, with the majority visiting more than 5 times per year (~50%; 72% of pre-interview respondents did so). The majority visits the zoo at least twice a year (~55%).

Audubon Zoo (New Orleans)

A total of 191 visitors of the Audubon Zoo, participated in the study, during pre and post-installation phases; 75 were interviewed and 116 answered the questionnaire. Visitors who participated in the interviews and answered the questionnaire during both phases (pre and post) had very similar demographic composition. The great majority was from Louisiana (~70%) and lived in a suburban area (~45%); relatively fewer pre-installation interviewees were from Louisiana (57%) and fewer pre-installation questionnaire respondents were from suburban areas (34%). They were mostly females (~50% of pre-installation respondents and ~70% of post-installation respondents), 30-49 years-old (~50-60%), and visited the zoo in family groups (~60% of pre-installation respondents and ~80% of post-installation respondents). They tended to visit public libraries less frequently than other zoo visitors, with about a third visiting more than 5 times per year (~30%). In terms of zoo visitation, questionnaire respondents visited the zoo more frequently than interviewees: ~50% of questionnaire respondents visited the zoo at least twice a year, ~35% of interviewees did so.

Environmental Concern and Behaviors

Comparative analysis between the samples of zoo visitors in this study and the ISSP national sample of the U.S. population revealed that in aggregate, zoo visitors sampled had significantly higher pro-environmental attitudes in all three areas: perceived behavioral control, environmental concern, and pro-environmental behavior (ANOVA, $p < .000$, $df=1$). There were no significant differences between pre and post attitudes within the zoo samples, so these data were combined for this analysis. The pattern was the same when looking at the zoos individually (Table 9). In nearly all cases, zoo visitors showed significantly higher pro-environmental attitudes than the national population. The only non-significant differences between a zoo's sample and the national data were at the Little Rock Zoo and Audubon Zoo (New Orleans), where there was not a significant difference in ratings regarding pro-environmental behavior (specifically, making an effort to sort/recycle).

In comparing the zoo samples to one another, the samples of visitors were not significantly different from one another in perceived behavioral control and environmental concern (ANOVA, $df=4$). They were significantly different in the area of pro-environmental behavior (recycling effort) (ANOVA, $p < .000$, $df=4$). Little Rock Zoo and Audubon Zoo visitors reported lower levels of effort to recycle. Interestingly, Audubon Zoo (New Orleans) visitors reported the highest levels of not having access to recycling in their community (20%, $n=23$). See Table 10 for detail in visitor responses by zoo.



Table 9. Mean scores, by zoo and for general U.S. population, on environmental concern scales/items.

	ISSP		Brookfield		Jacksonville		Little Rock		Milwaukee		Audubon	
	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD
Perceived Behavioral Control**	3.30	0.92	4.00	0.99	3.99	0.89	4.00	0.99	4.05	0.77	3.96	0.98
Environmental Concern**	3.24	1.06	3.83	1.20	3.88	1.10	3.85	1.23	4.07	1.03	3.92	1.25
Pro-Environmental Behavior***	2.78	1.10	3.35	0.82	3.11	0.97	2.66*	0.88	3.59	0.64	2.63*	0.93

*not significantly different from ISSP sample at p=.05 (ANOVA, df=1)

**Where 1=low, and 5=high

***"How often do you do make a special effort to sort glass, cans, plastic or newspapers and so on for recycling ?" 4=Always, 1=Never; "Recycling not available" excluded from analysis

Table 10. Distribution of responses to "How often do you make a special effort to sort glass, cans, plastic or newspapers and so on for recycling?"

	ISSP 2000	Brookfield	Jacksonville	Little Rock	Milwaukee	Audubon
n=	1211	108	105	116	123	113
Always	32%	54%	46%	21%	66%	18%
Often	24%	23%	20%	23%	24%	22%
Sometimes	22%	19%	26%	43%	8%	33%
Never	16%	1%	5%	4%	0%	7%
Recycling not available	6%	4%	4%	9%	2%	20%

Use and Recall of Poetry Installations

The first evaluation question in this study related to the extent to which the poetry installations were seen and read by zoo visitors and which poems were most recalled.

Brookfield Zoo

In exit interviews, 60% (n=28) of groups contained at least one person who recalled seeing or reading some of the poetry installed around the zoo. Survey results indicated an even stronger level of visitor use of the poetry, with 80% (n=52) of respondents indicating that they read one or more poems during their visit. However, results from the survey also indicated that there was low prior knowledge or awareness of the *Language of Conservation* project among Brookfield Zoo visitors; only 12% (n=8) reported that they had seen, heard, or read media coverage of the poetry installations prior to their visit. This suggests that the high levels of recall of poetry among survey respondents were not strongly influenced by previous knowledge of the overall project.

Of the 28 interview groups who had seen poetry during their visit, 23 groups (82%) were able to identify specifically one or more of the poems and/or its location that they had read during the course of their visit. From visitor comments, 9 different poems (23% of the poems installed) were specifically recalled by one or more groups during interviews, and 5 locations or themes were recalled. In instances of recalling locations or themes, multiple poems could match the description given by visitors, preventing a single poem from being identified during coding.

The number of poems recalled at Brookfield was moderate compared to other zoos. Visitor responses suggest that the demographic characteristics of Brookfield visitors likely played a role. Many groups mentioned being a member of the zoo as well as frequent visitors, also reporting that although they had



visited GBW and noticed the poems, they had not read poems that day. Additionally, the exhibition layout of GBW made it difficult to link visitors' descriptions of where they saw a poem to the poem itself because there were multiple poems in each animal viewing area. No single poem dominated visitor recall, but poems or quotes from Gary Snyder (26%, n=6) and Henry David Thoreau (22%, n=5) were the most frequently mentioned:

Along the edge of the sidewalk outside the main entrance, a poem by Gary Snyder: "This living flowing land/Is all there is forever/We are it/It sings through us."

Displayed in large font above bison overpass, a quote from Henry David Thoreau, "...in Wildness is the preservation of the world."

Distribution of other poems recalled in interviews is available in Appendix C.

Visitor responses indicate that the unconventional and creative location of the Snyder poem may have been a reason it was particularly memorable. While visitors were able to recall its location and design, there was no mention of the poem's content.

There are multiple factors that could explain visitors' ability to recall the poem by Thoreau. One factor may have been visitors' familiarity with the author. Additionally, location was likely an important factor, as Thoreau's quotation was displayed in very large font in a prominent location. Notes from the design team indicate that the intention of this poem was to act as the "overall theme for poetic installation."

Jacksonville Zoo and Gardens

In exit interviews, 73% (n=33) of groups contained at least one person who recalled seeing or reading some of the poetry installed around the zoo. Survey results indicated a similarly strong level of visitor use of the poetry, with 78% (n=50) of respondents indicating that they read one or more poems during their visit. However, results from the survey also indicated that there was low prior knowledge or awareness of the *Language of Conservation* project among Jacksonville Zoo visitors; only 6% (n=4) reported that they had seen, heard, or read media coverage of the poetry installations prior to their visit. This suggests that the high levels of recall of poetry among survey respondents were not strongly influenced by previous knowledge of the overall project.

Of the 33 interview groups who had seen poetry during their visit, 30 groups (91%) were able to identify specifically one or more of the poems and/or its location that they had read during the course of their visit. From visitor comments, 15 different poems (58% of the poems installed) were specifically recalled by one or more groups, indicating that a broad spectrum of the installations caught visitors' attention and memory. Additionally, two locations or themes were recalled. In these instances, multiple poems matched the criteria given by visitors, preventing a single poem from being identified during coding. No single poem dominated visitor recall, but three were the most frequently mentioned:

Located in the Savannah Blooms, a poem called "Snakes" by Charles Ghigna, "Snakes are clever, / Snakes are fast, / If you see one / Let it pass." (23%, n=7)

In the Australia Garden, a quote from Anne Frank, "I firmly believe that nature brings solace in all troubles." (20%, n=6)



On the glass of the lion habitat, a poem called “In Spring: Drift Creek” by Alison Hawthorne Deming (Jacksonville’s Poet-in-Residence), “And now I am holding that stillness / to give it back to you, because the truth is / so much of the world is broken / and I want to be part of its healing.” (20%, n=6)

Distribution of other poems recalled in interviews is available in Appendix C.

One factor that could have supported the recall of “Snakes” amongst visitors was its clever and bold design. Emerging from the ground next to a path, “Snakes” was printed on brightly colored aluminum shaped into the form of a snake with the text printed to follow the curve of its body. While it was integrated into the landscape, this large poem stood out with its vivid color and playful shape. Additionally, the playful tone and rhyming structure of the poem itself also seemed to contribute to its popularity, with several of those who recalled the poem were also able to recite part or all of the poem.

Author familiarity was another factor that influenced visitor recall of the Anne Frank quote, with nearly all visitors who mentioned this poem also citing the author’s full name. Another factor that seemed to contribute was the content of the poem itself. In addition to recalling Anne Frank’s name, they were also able to talk in depth about what the poem meant to them. The elegant and careful design of the installation could have also enhanced the message of the quote. Printed in large font on clear Plexiglas, this quote was presented against a backdrop of lush vegetation, allowing Anne Frank’s words about the power of nature to be read with nature. Perhaps this juxtaposition gave further depth to the meaning of the poem.

Little Rock Zoo

In exit interviews, 93% (n=42) of groups contained at least one person who recalled seeing or reading some of the poetry installed around the zoo. Survey results indicated a similarly strong level of visitor use of the poetry, with 90% (n=64) of respondents indicating that they read one or more poems during their visit. However, results from the survey also indicated that there was low prior knowledge or awareness of the *Language of Conservation* project among Little Rock Zoo visitors; only 13% (n=9) reported that they had seen, heard, or read media coverage of the poetry installations prior to their visit. This suggests that the high levels of recall of poetry were not strongly influenced by previous knowledge of the overall project.

Of the 42 interview groups who had seen poetry during their visit, 35 groups (83%) were able to identify specifically one or more of the poems and/or its location that they had read during the course of their visit. From visitor comments, 21 different poems (40% of the poems installed) were specifically recalled by one or more groups, indicating that a broad spectrum of the installations was catching visitors’ attention and memory. Additionally, 9 locations or themes were recalled. In these instances, multiple poems matched the criteria given by visitors, preventing a single poem from being identified during coding. No single poem dominated visitor recall, but three were the most frequently mentioned (by 5 groups each, 14% of those who recalled specific poems):

Along the rafters in the Pole Barn, a Yoruba saying, “Whenever a person/ breaks a stick in the forest/ let that person consider/ how it would feel/ to be the one being broken.”



At the gate to the left of the Rhino entry, a poem by Kofi Awoonor, “The path has crossed the river. / The river has crossed the path. / Which is the elder?”

In the African veldt area, a suspended rope installation of a traditional Tshimshian song, “I walk by the river.”

Distribution of other poems recalled in interviews is available in Appendix C.

While visitors’ responses did not indicate any particular factors that could have influenced their ability to recall these poems, their prominent and unique design likely played a role. The Yoruba poem was installed along the rafters of the Pole Barn, each rafter holding a line of text allowing visitors to walk and experience the poem simultaneously. Similarly, “I walk by the river” is also experienced in motion. Suspended from beams of a boardwalk along the river, this large, hanging text seems to float in the sky as visitors “walk by the river.”

Milwaukee County Zoo

In exit interviews, 78% (n=36) of groups contained at least one person who recalled seeing or reading some of the poetry installed around the zoo. Survey results indicated a similarly strong level of visitor use of the poetry, with 81% (n=61) of respondents indicating that they read one or more poems during their visit. However, results from the survey also indicated that there was low prior knowledge or awareness of the *Language of Conservation* project among Milwaukee County Zoo visitors; only with 7% (n=5) reported that they had seen, heard, or read media coverage of the poetry installations prior to their visit. This suggests that the high levels of recall of poetry were not strongly influenced by previous knowledge of the overall project.

Of the 36 interview groups who had seen poetry during their visit, 33 groups (92%) were able to identify specifically one or more of the poems and/or its location that they had read during the course of their visit. From visitor comments, 20 different poems (37% of the poems installed) were specifically recalled by one or more groups, indicating that a moderate spectrum of the installations was catching visitors’ attention and memory. Additionally, 5 locations or themes were recalled. In these instances, multiple poems matched the criteria given by visitors, preventing a single poem from being identified during coding.

At Milwaukee County Zoo, one poem dominated visitor recall with over half (52%, n= 17) mentioning an Navajo Indian poem/saying, “In Beauty May I Walk” (printed below). Installed along the rafters of the Peck Boardwalk, this unexpected and movement-based design approach seemed to be one factor contributing to the high number of groups who recalled this particular poem. The poem was also placed in a pathway where there were no animals or exhibits to distract attention. Moreover, the bold placement contrasted with Milwaukee’s overall installation philosophy which was generally subtle; one person from the design team described their design and placement as positioning poems to be “little secrets that you find.” This poem likely caught visitors’ eyes more than other poems installed.

All other poems were mentioned by only 1 to 3 groups each. (Distribution of other poems recalled in interviews is available in Appendix C.)



In beauty	may I walk
On the trail marked with pollen	may I walk
With grasshoppers about my feet	may I walk
With dew about my feet	may I walk
With beauty	may I walk
With beauty before me	may I walk
With beauty behind me	may I walk
With beauty above me	may I walk
With beauty all around me	may I walk

(Anonymous, Navajo Indian)

Audubon Zoo (New Orleans)

In exit interviews, 78% (n=35) of groups contained at least one person who recalled seeing or reading some of the poetry installed around the zoo. Survey results indicated a similarly strong level of visitor use of the poetry, with 72% (n=50) of respondents indicating that they read one or more poems during their visit. However, results from the survey also indicated that there was low prior knowledge or awareness of the *Language of Conservation* project among Audubon Zoo visitors; only with 8% (n=5) reporting that they had seen, heard, or read media coverage of the poetry installations prior to their visit. This suggests that the high levels of recall of poetry were not strongly influenced by previous knowledge of the overall project.

Of the 35 interview groups who had seen poetry during their visit, 30 groups (86%) were able to identify specifically one or more of the poems and/or its location that they had read during the course of their visit. From visitor comments, 16 different poems (47% of the poems installed) were specifically recalled by one or more groups, indicating that a broad spectrum of the installations caught visitors' attention and memory. Additionally, 7 locations or themes were recalled. In these instances, multiple poems matched the criteria given by visitors, preventing a single poem from being identified during coding.

No single poem dominated visitor recall, but three specific poems and one author (Emily Dickinson) were the most frequently mentioned (each by 6 groups, 20% of those who recalled specific poems):

Hanging from beams in the gazebo in the South America section, a section of the poem "The Negro Speaks of Rivers" by Langston Hughes, "I heard the singing of the Mississippi when Abe Lincoln / went down to New Orleans, and I've seen its muddy / bosom turn all golden in the sunset. / I've known rivers: / Ancient, dusky rivers. / My soul has grown deep like the rivers. "

Painted on the bison fence in the African Savannah, a poem titled "Mississippi Levee" by Langston Hughes, "Levee, levee, / How high have you got to be? / Levee, levee, / How high have you got to be / To keep them cold muddy waters / From washin' over me?"

Carved into a faux rock in the Jaguar exhibit, a Nahuatl poem in Nahuatl and English (translated by David Damrosch):

Xi huel om pehua / ti cuicanitl. / Ma oc xocon tzotzona / moxochihuehueuh. / Ma ic xi quimahuiltia / in tepilhuan / in cuauhtin in ocelo. / Cuel achic tiquitotlanehua.



Make your beginning, / you who sing. / May you beat again / your flowered drum, / may you give joy / to my lords, / the eagles, the jaguars. / Briefly are we here together.

Distribution of other poems recalled in interviews is available in Appendix B. Multiple factors seem to have contributed to visitors' strong recall of the two Langston Hughes poems. One factor was the personal connection between these two poems and the community and environment of New Orleans, with both poems focusing on themes Mississippi River and the levees. Familiarity with this well-known American poet may have also contributed to recall. Finally, placement and design seem likely to have contributed to recall. The excerpt from "The Negro Speaks of Rivers" was printed along rafters of a circular gazebo, requiring movement in order to read. "Mississippi Levee" was printed in large font on a fence along a pathway between two popular exhibit areas, where there were few other exhibits or animals to draw attention. Recall of the Nahuatl poem about the Jaguar was also likely influenced by its unique design and placement, as the bilingual installation was carved into large faux boulders to the side of the animal exhibit. Much larger than many of the poetry installations, many visitors recalled this poem based upon its design of being "carved in the rock." Recall of Emily Dickinson poems seem very likely influenced by familiarity with the author.

Attitudes toward Poetry in the Zoo

The next area of interest was how those visitors who recalled reading the poetry during their visits felt about the zoo's use of this strategy and how it may have enhanced or detracted from their overall zoo-going experience.

Brookfield Zoo

In exit interviews, visitor groups expressed very positive attitudes toward the zoo's use of poetry. Of all groups interviewed (including those who did not read poetry during the visit, but were asked about the project's concept generally), 70% (n=33) contained at least one person who reported liking the idea of poetry use in the zoo, and only 6% (3 groups) contained at least one person who reported disliking the idea. 32% (15 groups) contained at least one person who did not feel strongly about the poetry one way or the other.

When visitors described their reasons for liking the poetry, one dominant theme was, in fact, that it spurred them to engage in conservation thinking (28% of groups, n=13). Another main theme was that it changed the zoo experience in some way (19%, n=9), often by prompting a calm or reflective mindset upon reading the poem. The third major theme was appreciation of this as a novel approach to zoo signage or interpretation (19%, n=9), adding something different to encounter during the day.

When visitors described their reasons for disliking the poetry (19%, n=9), no dominant themes emerged. Some of the factors described by visitors included that they didn't understand the poems, didn't have an interest in poetry, didn't think it was a good fit for the zoo, didn't think anyone would read the poetry, felt there was enough to look at already, only interested in looking at the animals, and only interested in reading interpretation about the animals. Example quotations in these themes are presented below.

Engage in Conservation Thinking

(See next section on Explicit Connections Made between Poetry and Conservation for detail)



Changed the Zoo Experience

“It was calming. I thought it was a good touch... I think as long as you have a stance that is pro-environmental, then it was in line with my beliefs, and so I didn’t find it discouraging in any way.” (Female, Adult, Brookfield Zoo)

Novel Approach to Zoo Signage or Interpretation

“If I was able to read some, I would think that was very enlightening, you know, enlightening, creative. Give people more things to do instead of just staring at the animals. You can stare at the animals and also get a little knowledge as well.” (Male, Adult, Brookfield Zoo)

Disliked or Neutral

“I think it doesn’t really pair in. I don’t think, but I think – I love poetry, you know. I wanted to be an English teacher before that, so I do love poetry, I just don’t think it pairs up with the zoo. I mean if you went to a library and they had poetry on the wall that’d be cool.” (Female, Adult, Brookfield Zoo)

“I don’t think it’s a big deal. I think it’s very nice for some people but I think it’s a minority. I mean the kids may or may not – probably will not connect with it, and I think a lot of adults aren’t looking for it and so they won’t connect with it. So I’m not too excited about that idea, I don’t think it – I think it’s a good thing to do but I don’t think most people will appreciate it.” (Male, Adult, Brookfield Zoo)

These findings were supported by responses to the exit surveys. The average ratings for all five items measuring visitors’ attitudes towards poetry in the zoo were all higher than 5.25 (out of a possible 7), indicating strong positive sentiments about the inclusion of poetry within the Brookfield Zoo (Table 11). Nearly three-quarters of respondents rated strong agreement (a 6 or 7) that the poetry was *appropriate to be in the Zoo* (75%, n=39). Over 60% of visitors rated strong agreement that the poetry was *relevant to what the Zoo is about* (67%, n=35) and was *easy to understand* (62%, n=32). About half of respondents strongly agreed that the poetry *added something positive to the zoo visit* (52%, n=27) and *enjoyed reading the poetry around the Zoo* (50%, n=26).

Table 11. Brookfield: Zoo visitors’ attitudes about poetry in the zoo (1 = strongly disagree, 7 = strongly agree)

	Post (n=52)	
	Mean	Std. Dev.
The poetry I read was appropriate to be in the Zoo.	6.02	1.306
The poetry I read was easy to understand.	5.85	1.211
The poetry I read was relevant to what the Zoo is about.	5.83	1.324
I felt the poetry added something positive to my zoo visit today.	5.38	1.561
I enjoyed reading the poetry around the Zoo.	5.27	1.510

In addition to the findings that there was a generally positive attitude across visitors regarding the inclusion of poetry within the zoo, interviews and anecdotal reports from zoo staff highlighted that, for a smaller subset of individuals, the poetry was felt to be an extremely important addition that fostered deeper personal connection and even stronger positive responses than was seen in the data overall. This indicates that while the poetry was generally positive for many visitors, it provided even greater or unique benefit and depth for some individuals. An example from the visitor interviews at Brookfield Zoo was:

“I did see the Thoreau quote at the bear exhibit. ...Yeah, it makes you stop and think. And I think it’s – you need to have more than just information, other people’s reflections and thoughts on



the animals. You know, it made me think a little bit differently too. Just maybe the statistics and so on [in traditional zoo exhibits]... I hadn't seen anything like that before here, I don't think. Where I walked into an exhibit and there was a – kind of an introduction to it, something artistic like that. I thought that was nice. Rather than just, you know, a picture of the animal and an arrow.” (Male, Adult, Brookfield Zoo)

Jacksonville Zoo and Gardens

In exit interviews, visitor groups expressed very positive attitudes toward the zoo's use of poetry. Of all groups interviewed (including those who did not read poetry during the visit, but were asked about the project's concept generally), 69% (n=31) contained at least one person who reported liking the idea of poetry use in the zoo, and no one reported disliking the idea. 27% (12 groups) contained at least one person who felt neutral or did not feel strongly about the poetry.

When visitors described their reasons for liking the poetry, one dominant theme was, in fact, that it spurred them to engage in conservation thinking (40% of groups, n=18). Another main theme was that it changed the zoo experience in some way (36%, n=16), often by prompting a calm or reflective mindset upon reading the poem. The third major theme was appreciation of this as a novel approach to zoo signage or interpretation (27%, n=12), adding something different to encounter during the day. Only 9% of groups (n=4), described reasons for neutral opinions. Example quotations in these themes are presented below.

Engage in Conservation Thinking

(See next section on Explicit Connections Made between Poetry and Conservation for detail)

Changed the Zoo Experience

“Well, it just made me think about the animals themselves, and so I felt for ourselves to be still and take note of what was there... the stillness of us standing there and looking at the lions and them sitting there watching us as well.” (Female, Adult, Jacksonville Zoo and Gardens)

“You know, you read that and then you see the animals and the plants and all that stuff, it kinda – it makes you feel better inside sometimes, you know... It was more like the spiritual thing. I didn't really think about conservation or anything with it.” (Female, Adult, Jacksonville Zoo and Gardens)

“I think it gives you a little peaceful feeling, so that's what I like about it. That's why we like coming here.” (Male, Adult, Jacksonville Zoo and Gardens)

Novel Approach to Zoo Signage or Interpretation

“It lets the kids experience a different culture besides just the animals.” (Female, Adult, Jacksonville Zoo and Gardens)

“Yeah, 'cause it's really cool. It's funny to read and then it works up a discussion.” (Child, Jacksonville Zoo and Gardens)

These findings were supported by responses to the exit surveys. The average ratings for all five items measuring visitors' attitudes towards poetry in the zoo were all higher than 5.00 (out of a possible 7), indicating strong positive sentiments about the inclusion of poetry within the Jacksonville Zoo and Gardens (Table 12). Sixty percent of respondents rated strong agreement (a 6 or 7) that the poetry was *easy to understand* (60%, n=30) and *enjoyed reading the poetry around the Zoo* (60%, n=30). About half



of respondents strongly agreed that the poetry was *relevant to what the Zoo is about* (54%, n=27), was *appropriate to be in the Zoo* (52%, n=26), and *added something positive to the zoo visit* (48%, n=24)

Table 12. Jacksonville: Zoo visitors’ attitudes about poetry in the zoo (1=strongly disagree; 7=strongly agree)

	Post (n=50)	
	Mean	Std. Dev.
I enjoyed reading the poetry around the Zoo.	5.36	1.675
The poetry I read was easy to understand.	5.36	1.675
The poetry I read was appropriate to be in the Zoo.	5.30	1.717
The poetry I read was relevant to what the Zoo is about.	5.24	1.661
I felt the poetry added something positive to my zoo visit today.	5.00	1.654

In addition to the findings that there was a generally positive attitude across visitors regarding the inclusion of poetry within the zoo, interviews and anecdotal reports from zoo staff highlighted that, for a smaller subset of individuals, the poetry was felt to be an extremely important addition that fostered deeper personal connection and even stronger positive responses than was seen in the data overall. An example from the visitor interviews at Jacksonville Zoo focused on the unique benefits seen by a teacher and relationship to curricula:

“I think it’s a good idea. I think as a teacher, I think it’s very important that they know that there’s poetry, that they know, you know, different quotes and stuff and who they’re by, because it’s part of our curriculum and stuff. So if they can – if we can give them an assignment, they can relate that, ooh, I saw this at the zoo, because you know, they had fun at the zoo. They really don’t have too much fun doing writing and reading and stuff. So you know, it would help them relate, and it’ll activate a lot of prior knowledge, and they can keep it and store it in their brain. So as a teacher, I think it’s a very good idea.” (Male, Adult, Jacksonville)

Little Rock Zoo

In exit interviews, visitor groups expressed very positive attitudes toward the zoo’s use of poetry. Of all groups interviewed (including those who did not read poetry during the visit, but were asked about the project’s concept generally), 69% (n=31) reported liking the idea of poetry use in the zoo, and only 4% (2 groups) reported disliking the idea. Other groups were neutral or did not feel strongly about the poetry.

When visitors described their reasons for liking or disliking the poetry, one dominant theme was, in fact, that it spurred them to engage in conservation thinking (38% of groups, n=17). Another main theme was that it changed the zoo experience in some way (38%, n=17), often by prompting a calm or reflective mindset upon reading the poem. The third major theme was appreciation of this as a novel approach to zoo signage or interpretation (36%, n=16), adding something different to encounter during the day.

Engage in Conservation Thinking

(See next section on Explicit Connections Made between Poetry and Conservation for detail)

Changed the Zoo Experience

“I just thought it was peaceful. It just kind of made it peaceful to read those things. Didn’t it give you a sense of peace and calm... made you think good thoughts.” (Female, Adult, Little Rock Zoo)



“I think it’s just – it’s inspiring. It makes you think about the animals more. It’s just an idea – and the thing I like about it more is it puts thoughts in your head.” (Male, Adult, Little Rock Zoo)

Novel Approach to Zoo Signage or Interpretation

“I thought it was a neat idea to include that as a different level of experience at the zoo, and possibly introduce people to poetry who are not interested in it at all. (Female, Adult, Little Rock Zoo)

“It just like brings an artistic feel to the zoo.” (Child, Little Rock Zoo)

“I think it’s going to help the literacy in Arkansas definitely; we have a huge problem with literacy here. I think they said second graders are ranked nationally in Arkansas being illiterate; second graders are supposed to be able to read, and I think that’ll give them something to look at.” (Female, Adult, Little Rock Zoo)

These findings were supported by responses to the exit surveys. The average ratings for all five items measuring visitors’ attitudes towards poetry in the zoo were all higher than 5.75 (out of a possible 7), indicating strong positive sentiments about the inclusion of poetry within the Little Rock Zoo (Table 13). Nearly three-quarters of respondents rated strong agreement (a 6 or 7) that the poetry was *appropriate to be in the Zoo* (75%, n=48), *relevant to what the Zoo is about* (70%, n=45), and that they *enjoyed reading the poetry around the Zoo* (70%, n=45). Over 60% of visitors rated strong agreement that the poetry was *easy to understand* (66%, n=42) and *added something positive to the zoo visit* (61%, n=39).

Table 13. Little Rock: Zoo visitors’ attitudes about poetry in the zoo (1=strongly disagree; 7=strongly agree)

	Post (n=64)	
	Mean	Std. Dev.
The poetry I read was appropriate to be in the Zoo.	6.08	1.186
I enjoyed reading the poetry around the Zoo.	6.02	1.253
The poetry I read was easy to understand.	5.94	1.067
The poetry I read was relevant to what the Zoo is about.	5.91	1.244
I felt the poetry added something positive to my zoo visit today.	5.75	1.380

In addition to the findings that there was a generally positive attitude across visitors regarding the inclusion of poetry within the zoo, interviews and anecdotal reports from zoo staff highlighted that, for a smaller subset of individuals, the poetry was felt to be an extremely important addition that fostered deeper personal connection and even stronger positive responses than was seen in the data overall. An example from the visitor interviews at Little Rock Zoo highlights the types of new ideas sparked by a visitor in thinking about the experience:

“Again, it’s just while you’re walking to the next exhibit you’ve got kind of a – you know, something you kinda look at and maybe come across [an author] that you have never read before. You’re like, ‘Oh, wow, that’s pretty cool. I’d like to see that again.’ I noticed that one of the quotes – I have to go – I can’t remember it completely, but I was like, ‘Wow!’ It said ‘translated in 1979’ and my thought was, ‘Wow! I wonder what the original work was.’ You know? ... It exposes you to a little literature while you’re also at the zoo. That’s kinda neat. It’s like the library comes to the zoo.” (Male, Adult, Little Rock)



Milwaukee County Zoo

In exit interviews, visitor groups expressed positive attitudes toward the zoo's use of poetry. Of all groups interviewed (including those who did not read poetry during the visit, but were asked about the project's concept generally), 63% (n=29) contained at least one person who reported liking the idea of poetry use in the zoo, and only one group in which someone reported disliking the idea. 33% (15 groups) contained at least one person who felt neutral or did not feel strongly about the poetry.

When visitors described their reasons for liking the poetry, the most dominant theme was appreciation of this as a novel approach to zoo signage or interpretation (39%, n=18), adding something different to encounter during the day. The second most commonly mentioned theme was that it actually spurred them to engage in conservation thinking (35% of groups, n=16). A smaller proportion mentioned that it changed the zoo experience in some way (15%, n=7), often by prompting a calm or reflective mindset upon reading the poem. Only 15% of groups (n=7), described reasons for neutral opinions or disliking the poetry. Example quotes in these themes are presented below.

Engage in Conservation Thinking

(See next section on Explicit Connections Made between Poetry and Conservation for detail)

Novel Approach to Zoo Signage or Interpretation

"Just when you're walking around you can see the different quotes and the different you know, little scripts or whatever around that's something good to read. Cause the only thing you really could read is just like the little signs of the animals. It's good to have something else to read too." (Female, Adult, Milwaukee County Zoo)

"It was just a little more well rounded. I think one of the keys to education is making connections between one thing or another and I think the poems of poets, of notable, even, you know, anonymous Navajo Indians to notable poets is a nice connection between... the study of animals and study of literature." (Male, Adult, Milwaukee County Zoo)

"I think it's a cool way of integrating arts into wildlife." (Female, Adult, Milwaukee County Zoo)

Changed the Zoo Experience

"I know like it's a nice walking along the path from the penguins into the primate house that it's along each of the rafters as you go in so you kind of – you stop and you slow down even there and read it and think as you're walking." (Female, Adult, Milwaukee County Zoo)

"I don't know, I thought they were really lovely and inspirational so I think they contributed to my day." (Female, Adult, Milwaukee County Zoo)

These findings were supported by responses to the exit surveys. The average ratings for all five items measuring visitors' attitudes towards poetry in the zoo were all higher than 5.16 (out of a possible 7), indicating strong positive sentiments about the inclusion of poetry within the Milwaukee County Zoo (Table 14). Over 60% of respondents rated strong agreement (a 6 or 7) that the poetry was *appropriate to be in the Zoo* (69%, n=42) and was *relevant to what the Zoo is about* (62%, n=38). About half of respondents strongly agreed that the poetry was *easy to understand* (57%, n=35), *added something positive to the zoo visit* (46%, n=28), and *enjoyed reading the poetry around the Zoo* (46%, n=28).



Table 14. Milwaukee: Zoo visitors' attitudes about poetry in the zoo (1=strongly disagree; 7=strongly agree)

	Post (n=61)	
	Mean	Std. Dev.
The poetry I read was appropriate to be in the Zoo.	5.93	1.263
The poetry I read was relevant to what the Zoo is about.	5.72	1.213
The poetry I read was easy to understand.	5.64	1.212
I enjoyed reading the poetry around the Zoo.	5.25	1.445
I felt the poetry added something positive to my zoo visit today.	5.16	1.695

In addition to the findings that there was a generally positive attitude across visitors regarding the inclusion of poetry within the zoo, interviews and anecdotal reports from zoo staff highlighted that, for a smaller subset of individuals, the poetry was felt to be an extremely important addition that fostered deeper personal connection and even stronger positive responses than was seen in the data overall. Two examples from the visitor interviews at the Milwaukee County Zoo addressed ways in which visitors connected with the poetry, other experiences in their lives, and thought more deeply about their experiences at the zoo:

Adult Female 2: Well I thought it was a really nice touch. You know I always like seeing that stuff. I was, I've been teaching college English courses for like 11 years so to me that's always, you know, that's always a nice thing to see... I love Walt Whitman, so that was very nice and it just seemed really fitting, and it went along with where it was positioned, so it's just a really nice touch for the zoo definitely.

Interviewer: Did you like that the Zoo placed poetry around the park?

Adult Female 1: I like it a lot. What it made me think of was that the zoo is more in touch with nature and honoring the animals. That's what resonated with me. I can't remember the words but I liked what it said.

(Adults, Milwaukee)

Adult Male: I guess seeing those gives me, it processes in my brain because I know that I appreciate the language of it, and it probably makes me think, you know, maybe even a little more out loud. Like, 'Oh, I didn't think of that before that way' or just new ways of looking at things.

Adult Female: I think it does emphasize the interaction and the interrelationship that people have with animals and with wildlife. That you're seeing the impact it's had on different cultures because you can see that they're coming from Native American; from, you know, some well known American authors; from, I can't even remember all the different sources, but that ... the natural world, animals, and people are all woven together in a web that interacts.

(Adults, Milwaukee)

Audubon Zoo (New Orleans)

In exit interviews, visitor groups expressed very positive attitudes toward the zoo's use of poetry. Of all groups interviewed (including those who did not read poetry during the visit, but were asked about the project's concept generally), 69% (n=31) contained at least one person who reported liking the idea of poetry use in the zoo, and only one group reported disliking the idea. 36% (16 groups) contained at least one person who felt neutral or did not feel strongly about the poetry.

When visitors described their reasons for liking the poetry, the dominant theme was appreciation of this as a novel approach to zoo signage or interpretation (42%, n=19) and that it added something different



to encounter during the day. Beyond that, about a quarter indicated that it spurred them to engage in conservation thinking (24% of groups, n=11). Two other themes, each mentioned by 13% of groups (n=6), were that that it changed the zoo experience in some way and expressing appreciation of the placement and design on the installations. Only 7% of groups (n=3) described reasons for disliking the poetry. Example quotes in these themes are presented below.

Engage in Conservation Thinking

(See next section on Explicit Connections Made between Poetry and Conservation for detail)

Novel Approach to Zoo Signage or Interpretation

“It’s different, it’s something new. Because we’ve been here like every year since I was a kid, so I can see new things.” (Female, Adult, Audubon Zoo)

“It added something to it besides just reading about the animals. The human element, I guess.” (Male, Adult, Audubon Zoo)

“I liked the fact that it’s all about education, so people who might be coming here just to see animals get something else while they’re here. It’s like a bonus.” (Female, Adult, Audubon Zoo)

Changed the Zoo Experience

“I think it heightened your experience because you’d see this poem and then you could cross a deeper emotion when you read it, because it was someone’s experience of that environment or their experience of seeing something like that. So I thought it touched you on a little bit deeper level and added to the whole experience of it.” (Male, Adult, Audubon Zoo)

“I thought about peace and serenity, those kinds of things. It kind of made you vent out for a little bit.” (Male, Adult, Audubon Zoo)

Placement and Design

“They were like surprises around the corner when you’d walk. I mean they were big but they weren’t in bright, screaming, loud, obnoxious colors. They were there for you to find and discover, which is another fun part of it.” (Male, Adult, Audubon Zoo)

These findings were supported by responses to the exit surveys. The average ratings for all five items measuring visitors’ attitudes towards poetry in the zoo were all higher than 5.34 (out of a possible 7), indicating strong positive sentiments about the inclusion of poetry within the Audubon Zoo (Table 15). Around 60% of respondents rated strong agreement (a 6 or 7) that the poetry was *appropriate to be in the Zoo* (62%, n=31) and *enjoyed reading the poetry around the Zoo* (60%, n=30). More than half of respondents strongly agreed that the poetry was *relevant to what the Zoo is about* (59%, n=29), was *easy to understand* (56%, n=28), and *added something positive to the zoo visit* (54%, n=27) .

Table 15. New Orleans: Zoo visitors’ attitudes about poetry in the zoo (1=strongly disagree; 7=strongly agree)

	Post (n=50)	
	Mean	Std. Dev.
I enjoyed reading the poetry around the Zoo.	5.70	1.515
The poetry I read was appropriate to be in the Zoo.	5.68	1.634
The poetry I read was relevant to what the Zoo is about.	5.51	1.745
The poetry I read was easy to understand.	5.50	1.693
I felt the poetry added something positive to my zoo visit today.	5.34	1.880



In addition to the findings that there was a generally positive attitude across visitors regarding the inclusion of poetry within the zoo, anecdotal reports from zoo staff highlighted that there was a smaller subset of individuals for whom the poetry was felt to be an extremely valuable addition that fostered deeper connections and understanding. Visitors in interviews at Audubon Zoo did not provide much detail on these types of connections, however.

Conservation Thinking and Language

A major question of the evaluation was to determine the degree to which the poetry installations influenced visitors' conservation thinking and language, looking both at the explicit connections visitors made between the poetry and conservation ideas and looking for evidence of an overall shift in visitors' conversations (unrelated to the poetry) from pre- to post-installation.

Brookfield Zoo

Explicit Connections between Poetry and Conservation

When reflecting on the connections they consciously made between the poetry read and themes of conservation and the natural world, half (n=14) of those groups who had read the poetry (n=28) reported that the poetry had made them think about one or more of these themes.

In terms of the major Conservation Thinking Categories of interest in this study, the visitors who responded positively to this question gave descriptions of connections between the poetry and conservation ideas that fell into five different categories. The three most common categories were Humans as Wildlife Stewards (50%, n=7), Human Benefit from Wildlife (21%, n=3), and Humans are part of Nature (21%, n=3). The remaining two Conservation Thinking Categories were each mentioned only once (Humans Impact/Threaten Nature and Intrinsic Value of Nature).

Humans as Wildlife Stewards

"It's just to be aware of what you're taking from the environment and to give back, so you've got to be aware of that." (Male, Adult, Brookfield Zoo)

Human Benefit from Wildlife

"Yes, I remember thinking about, well, when I read Edward Muir, I remember thinking we had been to Muir Woods and how extraordinary those trees are." (Female, Adult, Brookfield Zoo)

Humans are part of Nature

Child 1: Well, one of them was talking about how the person was connected to everything on Earth and in the universe, I guess...

Adult Female: It made me feel closer to the animals as they're part of us.
(Child and Female, Adult, Brookfield Zoo)

"Well, it's nice just to be able to read something else about – that kind of solidifies the relationship between the animals and humans, so I think that would be nice instead of just reading statistics, something that invokes your thoughts as opposed to just an information dump." (Female, Adult, Brookfield Zoo)



Change in Conservation Thinking after Poetry Installation

In terms of the implicit impact of the poetry on visitors' conservation thinking during their visit, we looked for changes in the types of conservation themes that visitor groups used when talking about their overall zoo visit (not specifically related to the poetry) before and after poetry was installed. In interviews, groups tended to mention the conservation themes in the same overall pattern from pre to post (Tables 16 and 17), with most groups talking about Humans as Wildlife Stewards, Human Impact on Nature, and Human Benefit from Wildlife. Although there were some slight increases and decreases in the percentages from pre to post, none of these differences was statistically significant (Chi-square, $p < .05$, $df=1$).

Table 16. Brookfield: Percentage of groups who mentioned each conservation theme during interviews.

	Brookfield			
	Pre (n=30)		Post (n=31)	
	Percentage	Count	Percentage	Count
Human Benefit from Wildlife	67%	20	77%	24
Zoo Staff Care about Animals & Want Everyone To Care	43%	13	48%	15
Humans Are Part of Nature	10%	3	0%	0
Humans Impact/Threaten Nature	83%	25	81%	25
Humans as Wildlife Stewards	100%	30	97%	30
Closeness to Humans*	20%	6	16%	5
Intrinsic Value of Nature*	7%	2	19%	6
No Human Interference*	23%	7	16%	5

*These codes were not used in the 2005 Central Park Zoo study.

Table 17. Brookfield: Percentage of groups who mentioned sub-themes of "Human Benefit from Wildlife" during interviews.

	Brookfield			
	Pre (n=30)		Post (n=31)	
	Percentage	Count	Percentage	Count
Human Benefit from Wildlife	67%	20	77%	24
Human Benefit – Survival	3%	1	16%	5
Human Benefit - Awe and Wonder	47%	14	45%	14
Human Benefit - Emotional Affinity	47%	14	61%	19

Interview data were also examined in terms of the average number of times a group made a comment within a given conservation theme over the course of an entire interview (the analysis method used in Condon, 2005). In this analysis the average number of comments per interview was compared between pre and post (ANOVA, $p < .05$, $df=1$), and the difference was only found to be statistically significant for one of the conservation themes, with Human Benefit from Wildlife increasing from an average of 1.60 comments per interview in pre-tests, to 2.94 comments per interview in post-tests. No other changes were significantly different.

Table 18 also presents the percent increase or decrease in these numbers, the analysis technique used by Condon (2005). Due to the nature of percentages, the magnitude of a percent change can be misleading; therefore, we chose to rely more heavily on statistical analysis of these numbers.



Table 18. Brookfield: Average number of comments in each category made by visitor groups.

	Brookfield				Statistically Significant?***	Percent Change
	Pre (n=30)		Post (n=31)			
	Mean	SD	Mean	SD		
Human Benefit from Wildlife	1.60	1.79	2.94	2.69	YES	83% increase
Zoo Staff Care & Want Everyone To Care	.57	.77	.87	1.18	NO	54% increase
Humans Are Part of Nature	.10	.31	.00	.00	NO	
Humans Impact/Threaten Nature	1.53	1.28	1.58	1.34	NO	3% increase
Humans as Wildlife Stewards	3.13	1.50	2.77	1.52	NO	11% decrease
Closeness to Humans*	.30	.70	.19	.48	NO	35% decrease
Intrinsic Value of Nature*	.07	.25	.23	.50	NO	239% increase
No Human Interference*	.23	.43	.16	.37	NO	31% decrease

*These codes were not used in the 2005 Central Park Zoo study.

**ANOVA, $p < .05$, $df=1$

Among survey respondents, visitors rated how strongly they thought about each of the five main themes during that day's visit. Visitors answering the questionnaire reported moderate levels of conservation thinking, in all five scales, during both the pre and post-installation (their mean ratings ranged from 4.47 to 5.92, out of 7). During pre-installation, Brookfield Zoo visitors reported thinking most strongly about how Zoo Staff Care about Animals and Humans as Wildlife Stewards. During post-installation, they thought most strongly about Human as Wildlife Stewards and Humans as Part of Nature. On the other hand, in both pre and post, they thought comparatively less frequently about Human Benefits from Wildlife. All of the ratings increased during post-installation, and in some cases there were statistically significant difference. It is suggested that, post-installation respondents thought more strongly about Human Benefit from Wildlife, Humans Impact/Threaten Nature, and Humans as Wildlife Stewards than did pre-installation respondents (Table 19).

Table 19. Brookfield: Mean ratings of degree to which visitors thought about each conservation theme during that day's zoo visit (1=not at all; 7=a great deal).

	Brookfield				Statistically Significant?*
	Pre (n=43)		Post (n=73)		
	Mean	SD	Mean	SD	
Human Benefit from Wildlife	4.47	1.22	5.24	1.27	YES
Zoo Staff Care & Want Everyone To Care	5.51	1.22	5.51	1.46	NO
Humans Are Part of Nature	5.21	1.19	5.63	1.33	NO
Humans Impact/Threaten Nature	4.70	1.23	5.61	1.25	YES
Humans as Wildlife Stewards	5.28	1.30	5.92	1.25	YES

*ANOVA, $p < .05$, $df=1$

Jacksonville Zoo and Gardens

Explicit Connections between Poetry and Conservation

When reflecting on the connections they consciously made between the poetry read and themes of conservation and the natural world, nearly half ($n=15$) of those groups who had read the poetry ($n=33$) reported that the poetry had made them think about one or more of those themes, while another 9% ($n=3$) reported that they were already thinking about conservation and the poetry hadn't influenced that.



In terms of the major Conservation Thinking Categories of interest in this study, the visitors who responded positively to this question gave descriptions of connections between the poetry and conservation ideas that fell into six different categories. The two most common categories were Humans as Wildlife Stewards (39%, n=7) and Human Benefit from Wildlife (28%, n=5). Humans are part of Nature and Intrinsic Value of Nature were each mentioned by 17% of groups (n=3). The remaining two Conservation Thinking Categories were each mentioned only once (Closeness to Humans and Humans Impact/Threaten Nature).

Humans as Wildlife Stewards

"I enjoyed them because it makes you think. Instead of just walking around and, you know, seeing animals, you actually get to stop and think... 'We are the echo of the future' and it makes you think, okay, what does that mean? What does that have to do if I bring my kids ten years from now to this zoo, what's [this quote] gonna mean to them? (Female, Adult, Jacksonville Zoo and Gardens)

Child 1: I mean it's saying that don't hurt the snake and just leave it be, let it pass, and –
Child 2: Don't throw trash in front of it to like kill 'em or something.
(Children, Jacksonville Zoo and Gardens)

Human Benefit from Wildlife

"I think the one that was the healing, you know. And it made me think of Anne Frank, that one particularly, when she would stare out at the big oak tree, and you know, it makes me appreciate both the beauty of nature and how it can be healing and therapeutic." (Female, Adult, Jacksonville Zoo and Gardens)

Humans are part of Nature

"A lot of them that made reference to the fact that man and the environment is connected, you know, we're part of the environment, you know, which we are. I mean basically a human being is just a higher form of an animal... we're all in the same role, you know." (Male, Adult, Jacksonville Zoo and Gardens)

Intrinsic Value of Nature

"Trout River, actually talks about – it actually goes in and talks about the river and, you know, that they've been around for so long and they've been around longer than blood has flown through our veins and it makes you think, you know. Nature, everything was here before we were, so, you know, it has the right to still be here." (Male, Adult, Jacksonville Zoo and Gardens)

Change in Conservation Thinking after Poetry Installation

In terms of the implicit impact of the poetry on visitors' conservation thinking during their visit, we looked for changes in the types of conservation themes that visitor groups used when talking about their overall zoo visit (not specifically related to the poetry) before and after poetry was installed. In interviews, groups tended to mention the conservation themes in the same overall pattern from pre to post (Tables 20 and 21), with most groups talking about Humans as Wildlife Stewards, Human Benefit from Wildlife, and Human Impact on Nature. Although there were generally slight decreases in the percentages from pre to post, none of these differences was statistically significant (Chi-square, $p < .05$, $df=1$).



Table 20. Jacksonville: Percentage of groups who mentioned each conservation theme during interviews.

	Jacksonville			
	Pre (n=30)		Post (n=30)	
	Percentage	Count	Percentage	Count
Human Benefit from Wildlife	77%	23	70%	21
Zoo Staff Care about Animals & Want Everyone To Care	43%	13	20%	6
Humans Are Part of Nature	17%	5	7%	2
Humans Impact/Threaten Nature	70%	21	57%	17
Humans as Wildlife Stewards	90%	27	87%	26
Closeness to Humans*	20%	6	10%	3
Intrinsic Value of Nature*	20%	6	17%	5
No Human Interference*	13%	4	13%	4

*These codes were not used in the 2005 Central Park Zoo study.

Table 21. Jacksonville: Percentage of groups who mentioned sub-themes of "Human Benefit from Wildlife" during interviews.

	Jacksonville			
	Pre (n=30)		Post (n=30)	
	Percentage	Count	Percentage	Count
Human Benefit from Wildlife	77%	23	70%	21
Human Benefit – Survival	17%	5	10%	3
Human Benefit - Awe and Wonder	63%	19	47%	14
Human Benefit - Emotional Affinity	57%	17	53%	16

Interview data were also examined in terms of the average number of times a group made a comment within a given conservation theme over the course of an entire interview (the analysis method used in Condon, 2005). In this analysis the average number of comments per interview was compared between pre and post (ANOVA, $p < .05$, $df=1$), and the difference was only found to be statistically significant for one of the conservation themes, with Zoo Staff Care and Want Everyone to Care decreasing from an average of 0.73 comments per interview in pre-tests, to 0.27 comments per interview in post-tests (Table 22). No other changes were significantly different.

Table 22. Jacksonville: Average number of comments in each category made by visitor groups.

	Jacksonville					
	Pre (n=30)		Post (n=30)		Statistically Significant?*	Percent Change
	Mean	SD	Mean	SD		
Human Benefit from Wildlife	2.70	2.731	2.33	3.294	NO	14% decrease
Zoo Staff Care & Want Everyone To Care	.73	1.112	.27	.583	YES	64% decrease
Humans Are Part of Nature	.23	.568	.07	.254	NO	71% decrease
Humans Impact/Threaten Nature	1.57	1.431	1.17	1.341	NO	26% decrease
Humans as Wildlife Stewards	2.20	1.424	1.97	1.377	NO	11% decrease
Closeness to Humans*	.30	.651	.23	.817	NO	22% decrease
Intrinsic Value of Nature*	.30	.651	.27	.691	NO	11% decrease
No Human Interference*	.13	.346	.17	.461	NO	25% increase

*These codes were not used in the 2005 Central Park Zoo study. **ANOVA, $p < .05$, $df=1$



Among survey respondents, visitors rated how strongly they thought about each of the five main themes during that day’s visit. Visitors answering the questionnaire reported moderate levels of conservation thinking, in all five scales, during both the baseline and post-installation (their mean ratings ranged from 4.47 to 5.70, out of 7). Although there was a slight increase in the ratings post-installation, these were not statistically significantly different. During pre-installation, Jacksonville Zoo visitors reported thinking most strongly about Humans as Wildlife Stewards and Zoo Staff Care about Animals and Want Everyone to Care. During post-installation, respondents thought most strongly about Humans as Wildlife Stewards and Humans Impact/ Threaten Nature. On the other hand, they thought comparatively less frequently about Human Benefits from Wildlife, both pre and post-installation (Table 23).

Table 23. Jacksonville: Mean ratings of degree to which visitors thought about each conservation theme during that day’s zoo visit (1=not at all; 7=a great deal).

	Jacksonville				Statistically Significant?*
	Pre (n=42)		Post (n=60)		
	Mean	SD	Mean	SD	
Human Benefit from Wildlife	4.47	1.57	4.58	1.30	NO
Zoo Staff Care & Want Everyone To Care	5.25	1.39	5.22	1.30	NO
Humans Are Part of Nature	4.74	1.56	5.11	1.23	NO
Humans Impact/Threaten Nature	4.99	1.54	5.36	1.23	NO
Humans as Wildlife Stewards	5.24	1.59	5.70	1.24	NO

*ANOVA, p<.05, df=1

Little Rock Zoo

Explicit Connections between Poetry and Conservation

When reflecting on the connections they consciously made between the poetry read and themes of conservation and the natural world, half (n=21) of those groups who had read the poetry (n=42) reported that the poetry had made them think about one or more of those themes, while another 10% (n=4) reported that they were already thinking about conservation and the poetry hadn’t influenced that.

In terms of the major Conservation Thinking Categories of interest in this study, the visitors who responded positively to this question gave descriptions connections between the poetry and conservation ideas that fell into five different categories. The three most common categories were Humans as Wildlife Stewards (29%, n=6), Human Benefit from Wildlife (24%, n=5), and Humans are part of Nature (24%, n=5). The remaining two Conservation Thinking Categories were each mentioned only once (Humans Impact/Threaten Nature, Intrinsic Value of Nature).

Humans as Wildlife Stewards

“Like when it said ‘walk with the river,’ like don’t litter in the river, keep oxygen in it, and pretty much put a lot of fish in it is wonderful.” (Child, Little Rock Zoo)

Human Benefit from Wildlife

“It just increased the context of the zoo and enjoying nature and all that. And then you kind of see literature that backs up the experience that you’re having.” (Male, Adult, Little Rock Zoo)

“The poem says when we look at the animals we wonder what they think. And when they look



at us, you know, we still wonder what they're thinking of us. And from what I've seen a lot of them probably are frightened of us. They're away from their home and not used to all these people." (Male, Adult, Little Rock Zoo)

Humans are part of Nature

"It says 'From afar,' and then it says, 'As moon from earth, as star from star,' and that made me think about what the meaning was... It made me think that we are all – you know, we're all things. We're not any different." (Child, Little Rock Zoo)

"It just makes us talk about how important stuff is, about a circle of life, about how important life is and preserving the world we live in, and how people should take better care of it." (Female, Adult, Little Rock Zoo)

Change in Conservation Thinking after Poetry Installation

In terms of the implicit impact of the poetry on visitors' conservation thinking during their visit, we looked for changes in the types of conservation themes that visitor groups used when talking about their overall zoo visit (not specifically related to the poetry) before and after poetry was installed. In interviews, groups tended to mention the conservation themes in the same overall pattern from pre to post (Tables 24 and 25), with most groups talking about Humans as Wildlife Stewards, Human Benefit from Wildlife, and Human Impact on Nature. Although there were generally slight decreases in the percentages from pre to post, none of these differences was statistically significant (Chi-square, $p < .05$, $df=1$).

Table 24. Little Rock: Percentage of groups who mentioned each conservation theme during interviews.

	Little Rock			
	Pre (n=32)		Post (n=30)	
	Percentage	Count	Percentage	Count
Human Benefit from Wildlife	88%	28	80%	24
Zoo Staff Care about Animals & Want Everyone To Care	38%	12	27%	8
Humans Are Part of Nature	19%	6	10%	3
Humans Impact/Threaten Nature	69%	22	50%	15
Humans as Wildlife Stewards	94%	30	80%	24
Closeness to Humans*	22%	7	17%	5
Intrinsic Value of Nature*	25%	8	23%	7
No Human Interference*	13%	4	7%	2

*These codes were not used in the 2005 Central Park Zoo study.

Table 25. Little Rock: Percentage of groups who mentioned sub-themes of "Human Benefit from Wildlife" during interviews.

	Little Rock			
	Pre (n=32)		Post (n=30)	
	Percentage	Count	Percentage	Count
Human Benefit from Wildlife	88%	28	80%	24
Human Benefit - Emotional Affinity	66%	21	63%	19
Human Benefit - Awe and Wonder	53%	17	43%	13
Human Benefit – Survival	0%	0	27%	8



Interview data were also examined in terms of the average number of times a group made a comment within a given conservation theme over the course of an entire interview (the analysis method used in Condon, 2005). In this analysis the average number of comments per interview was compared between pre and post (ANOVA, $p < .05$, $df=1$) and no changes were found to be statistically significant (Table 26).

Table 26. Little Rock: Average number of comments in each category made by visitor groups.

	Little Rock				Statistically Significant? **	Percent Change
	Pre (n=32)		Post (n=30)			
	Mean	SD	Mean	SD		
Humans as Wildlife Stewards	2.34	1.73	1.90	1.35	NO	19% decrease
Human Benefit from Wildlife	2.41	1.64	2.77	2.42	NO	15% increase
Humans Impact/Threaten Nature	1.41	1.70	0.83	1.09	NO	41% decrease
Zoo Staff Care & Want Everyone To Care	0.53	0.84	0.47	0.97	NO	11% decrease
Humans Are Part of Nature	0.19	0.40	0.13	0.43	NO	32% decrease
Closeness to Humans*	0.25	0.51	0.20	0.48	NO	20% decrease
Intrinsic Value of Nature*	0.31	0.59	0.33	0.71	NO	6% increase
No Human Interference*	0.13	0.34	0.07	0.25	NO	46% decrease

*These codes were not used in the 2005 Central Park Zoo study.

**ANOVA, $p < .05$, $df=1$

Among survey respondents, visitors rated how strongly they thought about each of the five main themes during that day's visit. Visitors answering the questionnaire reported moderate levels of conservation thinking, in all five scales, during both the pre and post-installation (their mean ratings ranged from 4.64 to 5.78, out of 7). Although there was a slight increase in the ratings post-installation, these were not statistically significantly different. During both pre and post, Little Rock Zoo visitors reported thinking most strongly about Humans as Wildlife Stewards and Zoo Staff Care about Animals and Want Everyone to Care. On the other hand, they thought comparatively less frequently about Human Benefits from Wildlife.

Table 27. Little Rock: Mean ratings of degree to which visitors thought about each conservation theme during that day's zoo visit (1=not at all; 7=a great deal).

	Little Rock				Statistically Significant?*
	Pre (n=44)		Post (n=72)		
	Mean	SD	Mean	SD	
Human Benefit from Wildlife	4.64	1.47	4.95	1.39	NO
Zoo Staff Care & Want Everyone To Care	5.40	1.35	5.46	1.31	NO
Humans Are Part of Nature	4.99	1.31	5.30	1.36	NO
Humans Impact/Threaten Nature	4.90	1.63	5.37	1.49	NO
Humans as Wildlife Stewards	5.52	1.38	5.78	1.46	NO

*ANOVA, $p < .05$, $df=1$

Milwaukee County Zoo

Explicit Connections between Poetry and Conservation

When reflecting on the connections they consciously made between the poetry read and themes of conservation and the natural world, nearly half (42%, $n=15$) of those groups who had read the poetry ($n=36$) reported that the poetry had made them think about one or more of those themes.



In terms of the major Conservation Thinking Categories of interest in this study, the visitors who responded positively to this question gave descriptions of connections between the poetry and conservation ideas that fell into six of the eight conservation categories. The most common category was Human Benefit from Wildlife (47%, n=7). The remaining five Conservation Thinking Categories were each mentioned one to four times: Humans as Wildlife Stewards (27%, n=4), Humans Impact/Threaten Nature (13%, n=2), Intrinsic Value of Nature (7%, n=1), Humans Are Part of Nature (7%, n=1), and Zoo Staff Care about Animals (7%, n=1).

Human Benefit from Wildlife

"I said to her that all of these things, because we were talking about the beauty all around us that Jehovah God made all these things for us. He created all these things for us to enjoy"
(Female, Adult, Milwaukee County Zoo)

"The boardwalk one, it was... walking with beauty and walking. It was a bunch of different lines. And I was like, ...no one ever like looks around at, I don't know, appreciate kind of what's around you." (Female, Adult, Milwaukee County Zoo)

Humans as Wildlife Stewards

"I guess that's all of our responsibilities to keep it [nature]." (Female, Adult, Milwaukee County Zoo)

Humans Impact/Threaten Nature

"Reading some of them made me think about their habitat, where they live and how we affect some of, you know, what they live in and things like that." (Female, Adult, Milwaukee County Zoo)

Intrinsic value of nature

"Respect of the animals and nature and life cycle and all that stuff." (Female, Adult, Milwaukee County Zoo)

Humans Are Part of Nature

"I think it does emphasize the interaction and the interrelationship that people have with animals and with wildlife that you're seeing. The impact it's had on different cultures because you can see that they're coming from Native American, from you know, some well known American authors from. I can't even remember all the different sources but that it really, worldwide, culture-wide. It again, the natural world, animals and people are all woven together in a web that interacts." (Female, Adult, Milwaukee County Zoo)

Zoo Staff Care about Animals

"What it made me think of was that the zoo is more in touch with nature and honoring the animals. That's what resonated with me. I can't remember the words but I liked what it said."
(Female, Adult, Milwaukee County Zoo)

Change in Conservation Thinking after Poetry Installation

In terms of the implicit impact of the poetry on visitors' conservation thinking during their visit, we looked for changes in the types of conservation themes that visitor groups used when talking about their overall zoo visit (not specifically related to the poetry) before and after poetry was installed. In interviews, groups tended to mention the conservation themes in the same overall pattern from pre to post (Tables 28 and 29), with most groups talking about Humans as Wildlife Stewards, Human Benefit from Wildlife, and Human Impact on Nature. Although there were slight increases and decreases in the



percentages from pre to post, none of these differences was statistically significant (Chi-square, $p < .05$, $df=1$).

Table 28. Milwaukee: Percentage of groups who mentioned each conservation theme during interviews.

	Milwaukee			
	Pre (n=30)		Post (n=31)	
	Percentage	Count	Percentage	Count
Human Benefit from Wildlife	83%	25	84%	26
Zoo Staff Care about Animals & Want Everyone To Care	47%	14	32%	10
Humans Are Part of Nature	17%	5	6%	2
Humans Impact/Threaten Nature	80%	24	74%	23
Humans as Wildlife Stewards	93%	28	94%	29
Closeness to Humans*	17%	5	23%	7
Intrinsic Value of Nature*	27%	8	26%	8
No Human Interference*	10%	3	13%	4

*These codes were not used in the 2005 Central Park Zoo study.

Table 29. Milwaukee: Percentage of groups who mentioned sub-themes of "Human Benefit from Wildlife" during interviews.

	Milwaukee			
	Pre (n=30)		Post (n=31)	
	Percentage	Count	Percentage	Count
Human Benefit from Wildlife	83%	25	84%	26
Human Benefit - Survival	10%	3	13%	4
Human Benefit - Awe and Wonder	67%	20	61%	19
Human Benefit - Emotional Affinity	60%	18	58%	18

Interview data were also examined in terms of the average number of times a group made a comment within a given conservation theme over the course of an entire interview (the analysis method used in Condon, 2005). In this analysis the average number of comments per interview was compared between pre and post (ANOVA, $p < .05$, $df=1$) and no changes were found to be statistically significant (Table 26).

Table 30. Milwaukee: Average number of comments in each category made by visitor groups.

	Milwaukee					
	Pre (n=30)		Post (n=31)		Statistically Significant? **	Percent Change
	Mean	SD	Mean	SD		
Humans as Wildlife Stewards	2.40	1.868	2.58	1.478	NO	8% increase
Human Benefit from Wildlife	3.13	2.862	2.26	1.897	NO	28% decrease
Humans Impact/Threaten Nature	2.17	1.577	2.29	2.163	NO	6% increase
Zoo Staff Care & Want Everyone To Care	.57	.679	.42	.672	NO	26% decrease
Humans Are Part of Nature	.27	.691	.06	.250	NO	76% decrease
Closeness to Humans*	.30	.794	.35	.755	NO	18% increase
Intrinsic Value of Nature*	.37	.718	.29	.529	NO	21% decrease
No Human Interference*	.10	.305	.13	.341	NO	29% increase

*These codes were not used in the 2005 Central Park Zoo study.

**ANOVA, $p < .05$, $df=1$



Among survey respondents, visitors rated how strongly they thought about each of the five main themes during that day’s visit. Visitors answering the questionnaire reported moderate levels of conservation thinking, in all five scales, during both the baseline and post-installation (their mean ratings ranged from 4.18 to 5.44, out of 7). Although there was a slight increase in the ratings post-installation, these were not statistically significantly different (Table 31). During both pre and post, Milwaukee County Zoo visitors reported thinking most strongly about Humans as Wildlife Stewards and Humans Impact/Threaten Nature. On the other hand, they thought comparatively less frequently about Human Benefits from Wildlife.

Table 31. Milwaukee: Mean ratings of degree to which visitors thought about each conservation theme during that day’s zoo visit (1=not at all; 7=a great deal).

	Milwaukee				Statistically Significant?*
	Pre (n=48)		Post (n=75)		
	Mean	SD	Mean	SD	
Human Benefit from Wildlife	4.18	1.23	4.35	1.45	NO
Zoo Staff Care & Want Everyone To Care	4.88	1.46	5.03	1.41	NO
Humans Are Part of Nature	4.65	1.65	4.73	1.59	NO
Humans Impact/Threaten Nature	5.16	1.64	4.99	1.50	NO
Humans as Wildlife Stewards	5.36	1.38	5.44	1.38	NO

*ANOVA, $p < .05$, $df=1$

Audubon Zoo (New Orleans)

Explicit Connections Made between Poetry and Conservation

When reflecting on the connections they consciously made between the poetry read and themes of conservation and the natural world, over a third (n=11) of those groups who had read the poetry (n=30) reported that the poetry had made them think about one or more of those themes, while another 3% (n=1) reported that they were already thinking about conservation and the poetry hadn’t influenced that.

In terms of the major Conservation Thinking Categories of interest in this study, the visitors who responded positively to this question gave descriptions of connections between the poetry and conservation ideas that fell into five different categories. The three most common categories were Humans as Wildlife Stewards (36%, n=4), Human Benefit from Wildlife (27%, n=3), and Humans are part of Nature (27%, n=3). The remaining two Conservation Thinking Categories were each mentioned twice (Humans Impact/Threaten Nature, Intrinsic Value of Nature).

Humans as Wildlife Stewards

“With the butterfly [poem], you need to take care of the air... and with the levee [poem], you need to take care of the water supply and all that stuff.” (Female, Adult, Audubon Zoo)

“[It made me think] save the trees.” (Female, Adult, Audubon Zoo)

Human Benefit from Wildlife

“Just thoughts of beauty, natural beauty, and all that, not anything else really.” (Male, Adult, Audubon Zoo)



"I mean I guess in a sense loving the Earth and things, that it kind of portrayed as – and its background is kind of conservation because if you love the Earth, you wanna conserve it, I guess." (Female, Adult, Audubon Zoo)

Humans are part of Nature

"The interconnections we have with animals and every living thing in the world." (Male, Adult, Audubon Zoo)

Change in Conservation Thinking after Poetry Installation

In terms of the implicit impact of the poetry on visitors' conservation thinking during their visit, we looked for changes in the types of conservation themes that visitor groups used when talking about their overall zoo visit (not specifically related to the poetry) before and after poetry was installed. In interviews, groups tended to mention the conservation themes in the same overall pattern from pre to post (Tables 32 and 33), with most groups talking about Humans as Wildlife Stewards, Human Benefit from Wildlife, and Human Impact on Nature. Although there were slight increases and decreases in the percentages from pre to post, none of these differences was statistically significant (Chi-square, $p < .05$, $df=1$).

Table 32. New Orleans: Percentage of groups who mentioned each conservation theme during interviews.

	New Orleans			
	Pre (n=30)		Post (n=30)	
	Percentage	Count	Percentage	Count
Human Benefit from Wildlife	77%	23	83%	25
Zoo Staff Care about Animals & Want Everyone To Care	37%	11	33%	10
Humans Are Part of Nature	17%	5	10%	3
Humans Impact/Threaten Nature	63%	19	70%	21
Humans as Wildlife Stewards	77%	23	97%	29
Closeness to Humans*	23%	7	13%	4
Intrinsic Value of Nature*	27%	8	13%	4
No Human Interference*	23%	7	17%	5

*These codes were not used in the 2005 Central Park Zoo study.

Table 33. New Orleans: Percentage of groups who mentioned sub-themes of "Human Benefit from Wildlife" during interviews.

	New Orleans			
	Pre (n=30)		Post (n=30)	
	Percentage	Count	Percentage	Count
Human Benefit from Wildlife	77%	23	83%	25
Human Benefit - Survival	17%	5	13%	4
Human Benefit - Awe and Wonder	63%	19	67%	20
Human Benefit - Emotional Affinity	50%	15	57%	17

Interview data were also examined in terms of the average number of times a group made a comment within a given conservation theme over the course of an entire interview (the analysis method used in



Condon, 2005). In this analysis the average number of comments per interview was compared between pre and post (ANOVA, $p < .05$, $df=1$) and no changes were found to be statistically significant (Table 34).

Table 34. New Orleans: Average number of comments in each category made by visitor groups.

	New Orleans				Statistically Significant?***	Percent Change
	Pre (n=30)		Post (n=30)			
	Mean	SD	Mean	SD		
Humans as Wildlife Stewards	1.67	1.373	2.47	1.889	NO	48% increase
Human Benefit from Wildlife	2.33	2.073	2.33	1.988	NO	no change
Humans Impact/Threaten Nature	1.27	1.388	2.00	2.068	NO	58% increase
Zoo Staff Care & Want Everyone To Care	.57	.935	.47	.730	NO	18% decrease
Humans Are Part of Nature	.27	.691	.17	.531	NO	38% decrease
Closeness to Humans*	.37	.809	.13	.346	NO	64% decrease
Intrinsic Value of Nature*	.33	.606	.13	.346	NO	60% decrease
No Human Interference*	.30	.596	.20	.484	NO	33% decrease

*These codes were not used in the 2005 Central Park Zoo study.

**ANOVA, $p < .05$, $df=1$

Among survey respondents, visitors rated how strongly they thought about each of the five main themes during that day's visit. Visitors answering the questionnaire reported moderate levels of conservation thinking, in all five scales, during both the baseline and post-installation (their mean ratings ranged from 4.41 to 5.91, out of 7). During pre and post installation, Audubon Zoo visitors reported thinking most strongly about Humans as Wildlife Stewards and how Zoo Staff Care about Animals and Want Everyone to Care. On the other hand, in both pre and post, they thought comparatively less frequently about Human Benefits from Wildlife. All of the ratings slightly increased during post-installation, and in some cases there were statistically significant differences. It is suggested that, post-installation respondents thought most strongly about Human Benefit from Wildlife and Humans Are Part of Nature than did pre-installation respondents.

Table 35. New Orleans: Mean ratings of degree to which visitors thought about each conservation theme *during that day's zoo visit* (1=not at all; 7=a great deal).

	New Orleans				Statistically Significant?*
	Pre (n=44)		Post (n=72)		
	Mean	SD	Mean	SD	
Human Benefit from Wildlife	4.41	1.40	5.38	1.31	YES
Zoo Staff Care & Want Everyone To Care	5.43	1.39	5.85	1.41	NO
Humans Are Part of Nature	4.78	1.68	5.70	1.25	YES
Humans Impact/Threaten Nature	5.23	1.60	5.66	1.50	NO
Humans as Wildlife Stewards	5.56	1.48	5.91	1.45	NO

Change in Connectedness with Nature

In terms of feelings of connectedness with nature, ratings to the INS Scale were compared from pre to post. Visitors surveyed at all five zoos indicated a moderate level of connectedness with nature, as measure by the INS Scale, ranging from 3.88 (pre-installation at Brookfield Zoo) to 4.67 (pre-installation at Little Rock Zoo) (Table 36). Among visitors at Brookfield Zoo and Audubon Zoo, the INS ratings increased slightly among the post-installation sample, and among visitors at Little Rock Zoo and Milwaukee County Zoo, INS ratings decreased slightly. However, none of these differences were



statistically significant (ANOVA, $p < .05$, $df=1$), indicating the addition of poetry did not substantially influenced visitors' perceptions of their interconnectedness with nature more than a typical zoo visit.

Table 36. Average rating of connectedness with nature on INS Scale (1 to 7 scale).

	Pre			Post			Statistically Significant?*
	Mean	SD	n	Mean	SD	n	
Brookfield Zoo	3.88	1.48	42	4.36	1.50	72	NO
Jacksonville Zoo	4.15	1.46	39	4.16	1.27	61	NO
Little Rock Zoo	4.67	1.66	43	4.42	1.42	69	NO
Milwaukee County Zoo	4.38	1.28	48	4.25	1.34	75	NO
Audubon Zoo	3.93	1.40	43	4.23	1.54	69	NO

*ANOVA, $p < .05$, $df=1$

Attitudes toward Poetry

The final question of interest in the evaluation was if there was a change in visitors' overall attitudes to poetry before and after the installation. At most zoos, there was little change between visitors' reported attitudes about poetry in general, with average ratings showing a neutral attitude overall (most ratings were between 2.5 and the 3.0 neutral midpoint). At only one zoo, Audubon Zoo in New Orleans, was there a significant difference in attitudes toward poetry from pre to post, with average ratings increasing from 2.44 to 2.90 (Table 37).

Table 37. Average rating of attitude towards poetry (1 to 5 scale).

	Pre			Post			Statistically Significant?*
	Mean	SD	n	Mean	SD	n	
Brookfield Zoo	2.66	1.05	43	2.57	1.15	66	NO
Jacksonville Zoo	2.64	1.11	41	2.36	1.06	64	NO
Little Rock Zoo	2.75	1.24	44	2.89	1.16	72	NO
Milwaukee County Zoo	2.54	1.04	48	2.56	1.08	75	NO
Audubon Zoo	2.44	1.03	44	2.90	1.13	70	YES

*ANOVA, $p < .05$, $df=1$



Discussion: Cross-Site Themes

The results of this evaluation indicate that the *Language of Conservation* poetry installations achieved a number of its key outcomes for adding something new to many zoo visitors' experiences, enhancing the visit of a large majority, and promoting conservation thinking or connections among a substantial number of visitors. Although poetry installations were a relatively small portion of the overall signage and experiences that could be encountered in any of the partner zoos, results of both the exit interviews and questionnaires showed a high rate of use and recall of the poetry by visitors at all five partner zoos. Between 75% and 95% of visitors sampled reported that they did recall seeing poetry during their visit. The one exception was among the interviews at Brookfield Zoo, where 60% of respondents recalled seeing the poetry; however, results of the exit questionnaires were much higher at 80%.

In addition, of those who recalled seeing poetry installations, a large number were also able to identify one or more specific poems or poetry locations that they recalled (ranging from 82% to 91% of those who had seen poetry), which covered a wide range of the total poems on exhibit at each zoo. In looking at those poems and locations that were most frequently recalled by visitors, several factors seemed to influence frequent visitor recall of specific poems or installations. One factor was placement and design; across zoos visitors tended to most strongly recall poems that were installed using unconventional placement or design (such as in overhead rafters) and/or prominent, large installations (carved into rocks, sidewalks, etc.). Author familiarity was another factor in recall and identification of specific poems. Two other strong factors in recall emerged uniquely at individual zoos. One was the connection of a poem with the environment or community, a theme that was most strongly seen at the Audubon Zoo in New Orleans, where two of the most frequently recalled poems were focused on the environment and experience of living near the Mississippi River and levees of New Orleans. Another factor, observed for one poem at the Jacksonville Zoo was the power of a rhyme, meter, and brevity, in which one poem led visitors not only to recall the poem, but to even fully recite the work at the end of their visit.

These findings suggest some factors in exhibition design and selection of poetry and excerpts that may promote a larger number of visitors to take notice of an individual poem. That is not to say, however, that these strategies are the only ones that should be used in replicating a project such as this. The findings showed that a broad range of poems and installations were recalled by visitors, representing the full diversity of installation strategies. The factors highlighted above are those that seem to influence attention by a greater number of visitors, but should not be the only factors considered in poetry selection or installation.

Just as the poetry was consistently observed and recalled, visitors on the whole liked the poetry and saw it as a positive addition to their overall zoo experience, with around 70% of groups at each zoo indicating they liked that the inclusion of poetry within the zoo and with very few groups (6% or fewer) indicating that they disliked the poetry. Similarly, the majority of zoos visitors agreed strongly that the poetry was appropriate, relevant, easy to understand, and a positive addition to their zoo visit. Across the five zoos, visitors articulated that the poetry added to their zoo visit experience in three key ways, all of which related to the overall project goals for the *Language of Conservation*. Most strongly, between 24% and 40% of visitors noted that the poems related and/or made them think about conservation themes and ideas. Second, between 13% and 38% of visitors noted that the poetry changed the quality of their zoo experience in some way, prompting a slower, thoughtful, or more reflective experience. Finally, between 19% and 42% of visitors felt that the poetry added something novel to zoo signage, noting the



difference in tone, language, and approach of the poetry to typical fact- and information-based signage. These ratings and positive sentiments were extremely consistent across the five zoos, suggesting that poetry may be perceived as a positive addition in many contexts and communities.

As noted, within these data showing a generally positive response, there was some evidence (as well as anecdotal reports from zoo staff) that a smaller portion of visitors felt deep personal connections and strong positive responses to the poetry. Whether it was individuals who defined themselves more as an “English person” than a “science person” or who just found new ways of thinking about animals raised by the poems, some visitors connected with the poetry as a more personally relevant way of understanding the zoo, nature, and conservation than typical zoo signs. While this strong response may not have been the experience of the majority of visitors, it represents the potential of this approach for reaching some individuals, while providing an overall benefit for the majority.

Another goal of this project was that the poetry would prompt visitors to think about conservation ideas or the natural world through the messages and themes of the poetry included. On the whole, this goal was moderately well achieved, with about half of visitors who read some poetry during their visit reporting that the poems did inspire such thinking (with the exception of New Orleans, where only about a third of visitors drew these explicit connections). Among these visitors, three themes tended to emerge in rather consistently in comments, again in line with the intent of the project: responsibility of humans to act as wildlife stewards; humans as being interconnected with nature; and human benefit from wildlife (primarily reflecting on psychological benefits of awe and wonder that nature inspires). Interestingly, interconnectedness with nature was not a strongly prevalent theme in general comments about the zoo experience, but for several of the zoos was one of the stronger themes heard when visitors spoke about connections made between the poetry and conservation themes.

The examination of implicit changes in visitors’ connections or thinking about conservation themes, however, revealed very few significant changes from pre to post in the types of conservation comments that visitors made when discussing their overall zoo experience (without reference to the poetry installations). Overall, visitors did comment on a number of the five key themes of interest, most notably: human responsibility to act as wildlife stewards; acknowledgement of ways in which humans impact nature; and ways that humans benefit from wildlife (most notably the psychological benefits of awe and wonder). These themes seem to be very strong in the general zoo experience and were reiterated in comments specifically related to the poetry, but were not observed to increase or decrease substantially from levels that existed prior to poetry installation. Similarly, the presence of poetry appeared to have little impact on visitors’ overall attitudes toward poetry generally, which were generally neutral, with their response being more targeted to its impact on the zoo experience.

Comparison to Central Park Zoo Results

In comparison to the results of the Central Park Zoo evaluation, the replication study generally showed that the five replication cities were successful at achieving outcomes in very similar ways to the model project. In terms of visitor response and enjoyment of the poetry, the replication projects had slightly higher levels of visitor use and recall of the poetry around the zoo than Central Park Zoo (which had 70% general recall and 50% recall of specific poems) and had roughly equal levels of visitor enjoyment of the poetry (70% positive response). Much like the Central Park Zoo example, visitors to replication zoos responded to and recalled a wide variety of poetry installations. Influencing factors appeared to be generally similar with placement/design, familiarity, and brevity/memorability all coming into play in this project, as they did at Central Park Zoo.



In terms of impact on conservation thinking, results were similar to the Central Park Zoo study regarding visitors' self-reports of their response to the poetry and its influence on their experience. Condon (2005) found that "visitors commented that the poetry 'brought it [conservation] out,' expressed what the zoo is trying to do, made them think, think differently, or see things from a different perspective...." Comments from visitors about their response to the poetry in the replication studies were similar, with visitors commenting that poetry prompted thinking about conservation themes, a more reflective zoo experience, and appreciation of a different, unique approach to zoo signage.

In contrast to Condon's conclusions, however, the replication studies found minimal evidence of statistically significant differences between the frequency or types of conservation themes mentioned by visitors pre- and post-installation. Condon reported a 21% increase in overall number of conservation comments and greater increases in comments within globally-centered categories than in human-centered categories; statistical comparisons of conservation comments in the present study did not indicate any significant changes.

Two factors may contribute to this difference in conclusion between the two studies. First, as noted in the description of the study's methods, a lack of documentation of the code book from the 2005 study makes it difficult to conclude with certainty that the two code books were fully aligned. In the present study, the code book was developed to be grounded in common expressions used by visitors, assigning a best-fit between visitor language and the conceptual categories within the pre-existing framework. It is possible that some discrepancies existed between our code book and that of the previous study. Second, the two studies used different measures to report significance, with the present study conducting statistical tests to assess significant changes in means between the two conditions and with the 2005 study focusing on a percentage of increase or decrease between the two conditions. In the present study, some of the changes from pre to post were of equal or higher magnitude (in terms of percentage increase or decrease) to those reported in 2005, but statistical tests indicated that these differences were not necessarily significant.



Conclusions

This evaluation indicates that the *Language of Conservation* project was successful in achieving several of its intended goals, primarily by enhancing the experience of zoo visitors, who saw, enjoyed, and felt the poetry added something positive and novel to their visit. In addition, those who read the poetry often drew associations between what they saw and themes related to conservation, human responsibility, and human interconnectedness with nature, explicitly understanding the message that the poetry was trying to communicate. The widespread use of the poetry by visitors, combined with the strongly positive response to the installations and strategy, were some of the strongest outcomes of the project.

And while the project did cause a number of visitors to draw explicit connections between the poetry and conservation, there was little evidence to support that there was a significant change in the types of conservation-related comments that visitors used when describing their overall zoo experience. In considering this finding, it is worth noting that many conservation themes were already strong in visitors' minds prior to the installation. As the study revealed that the addition of poetry appeared to have relatively little impact on the tone, conversation, and thinking about an overall zoo visit, it highlights that any single interpretive element is just one piece of a much larger experience had in a zoo. The content and quality of the interviews conducted in this study were wide-ranging and reflected the complex social, cognitive, and physical experience of any zoo (or museum) visit. Taken together, it can be concluded that poetry provided an enhancement to the overall zoo experience for most visitors, complimenting, but not overwhelming, the experiences and messages that are already core to the institution.



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Appendix A: Interview Guide: Comparison of 2005 and 2010 Studies

Table 38. Comparison of interview guides used in 2005 and 2010 *Language of Conservation* studies

2005 Interview Questions (Condon)	2010 Interview Questions (ILI)
1. Can you tell me something you talked about here today that related to what you saw, what you did, or what you felt? →What were you saying about that?	1. Can you tell me something you talked about today that related to what you saw? → What did you say about that?
2. Did anything you saw or experienced here today really make you stop and think? →Can you tell me about it?	2. Did anything you saw or experienced here today really make you stop and think? → Tell me a little about that. → What did it make you think about?
3. Can you complete the sentence: "Visiting here today helped remind me of something important, which is ..." →Did anything here in particular make you think or feel that?	3. Please complete this sentence: "Visiting here today helped remind me of something important, which was..." → What in particular make you think or feel that?
4. What do you think the zoo is trying to get across to people, to show people? →Where did you see that the zoo trying to show this?	4. What do you think the zoo is trying to get across to people? → What did you see that made you feel the zoo was trying to show this?
5. Do you remember anything from the signs in the zoo? →Anything besides signs like "Keep off the grass?" →Anything else?	5. Do you remember anything from the signs in the zoo? → Anything else?
6. Do you see people as a part of the natural world or as separate from it? →Did being at the Zoo today make you think or feel differently about this? [If yes:] What did you experience that made you think or feel differently, and why?	6. Did anything you saw here make you think about people and the natural world? → What in particular about your visit made you think about that?
7. Do you think people should care about animals? →Why or why not? →Can you tell me about any experiences you had with particular animals here today?	7. What do you feel should be done for animals living in the wild?
8. Did anything you saw here make you think about the places animals live in the world? →Anything in particular? →What did this make you think about or feel?	8. Did anything you saw here make you think about the places animals live in the world? → What in particular about your visit made you think about that?
POST-INSTALLATION QUESTIONS	
9. The WCS has recently placed poetry texts throughout the Zoo to encourage visitors to think more about conservation issues during their visit. Did any poetry you read here today influence how you just answered my questions? →Do you remember parts of any specific poems, and can you tell me what they made you talk about or think about?	9. The Zoo has recently placed new signs with quotes of poetry throughout the park. Do you recall reading any of those signs during your visit today? → Do you remember parts of any specific poems you saw today, and can you tell me what they made you talk about or think about?
	10. Did you like that the Zoo placed poetry around the park? → [If brief answer, probe for depth about why]



11. Did any poetry you read today make you think about conservation?

→ Can you give me an example of that?

12. Did any poetry you read today make you think about the natural world?

→ Can you give me an example of that?



Appendix B: Items from Questionnaire

Table 39. Items Composing Each of the Conservation Thinking and Language Scales

Scale	Items
Human Benefit from Wildlife	A1 - Human survival depends upon a healthy natural system that includes wildlife A2 - Humans rely upon a diversity of wildlife and plants for many life necessities A3 - Human survival depends upon having healthy ecosystems A4 - Thinking about wildlife inspires my respect and wonder A5 - Thinking about wildlife helps me better understand myself A6 - Thinking about wildlife helps me refresh and renew my spirit A7 - Wildlife helps me better understand my place in the world A8 - The beauty and variety of wildlife in the world improves my quality of life
Zoo Staff Care about Animals and Want Everyone to Care	B1 - The zoo's staff cares about wildlife and wilderness B2 - The zoo's staff wants visitors to care about wildlife and wilderness B3 - Scientists who study wildlife care about wildlife and wilderness B4 - Scientists who study wildlife want visitors to care about wildlife and wilderness .
Humans are Part of Nature	C1 - Everything in nature is interconnected, including humans C2 - Humans share the environment with wildlife C3 - Humans are one small part of a larger world C4 - Humans are a part of nature C5 - Humans are part of interdependent ecosystems
Humans Impact/Threaten Nature	D1 - Human actions threaten wildlife and wilderness D2 - Human impact on wildlife has increased rapidly in recent years D3 - Human population growth has major impacts on wildlife D4 - Humans threaten wildlife through habitat destruction .
Humans as Wildlife Stewards	E1 - Humans have a responsibility to protect wildlife and wilderness E2 - Everyone should take action to protect wildlife and wilderness

Table 40. Items Composing the Attitudes Towards Poetry Scale

Scale	Items
Attitudes Towards Poetry Scale	I enjoy reading poetry I frequently read poetry Poetry is easy to understand Poetry is relevant to my life .



Appendix C: Distribution of Poems Mentioned by Visitors

Table 41. Brookfield: Frequency of groups that recalled specific poems or installations, of those who recalled poems (n=23).

Poem	Percentage	Count
Gary Snyder - Along the sidewalk, entrance	26%	6
Henry David Thoreau - South Tunnel Face	22%	5
Carl Sandburg - Inside the bison tunnel	9%	2
John Muir - Inside the bison tunnel	9%	2
Jane Hirshfield - Carved in wooden benches	4%	1
Pablo Neruda - Carved in Boulder, also in audio box	4%	1
Mohawk Blessing - underwater viewing	4%	1
Antonio Porchia - eagle aviary	4%	1
Cheyenne - Bison Prairie Grill Wall	4%	1
Location or theme recalled (Poem mentioned could not be linked to one specific poem)		
Native - Indian - Inuit	9%	2
poems carved in rocks	9%	2
Polar Bear	9%	2
Bears	4%	1
Bison	4%	1
Poem mentioned could not be linked to one specific location	61%	14

NOTE: Groups could mention more than one poem; percentages may total more than 100%



Table 42. Jacksonville: Frequency of groups that recalled specific poems or installations, of those who recalled poems (n=30).

Poem	Percentage	Count
08. Savanna Blooms - Snakes	23%	7
06. Africa (Lion)	20%	6
14. Australia Garden - Anne Frank	20%	6
09. Giraffe Overlook, Kahlil Gibran	10%	3
01. Main Entrance (three panels on top of the kiosk), W. S. Merwin	7%	2
04. Africa (Elephant Plaza)	7%	2
12. Range of the Jaguar (Giant Otter), Nalungiaq	7%	2
18. Main Path (river view), Langston Hughes	7%	2
02. Streambank (milky eagle owl exhibit), Douglas Florian	3%	1
03. Africa (Rhino Overlook), Wendell Berry	3%	1
05. Africa - Vulture by Robinson Jeffers	3%	1
13. Louise Glück (USA)	3%	1
17. On the Dock, Campbell McGrath	3%	1
25. Butterfly Garden, Amy Lowell	3%	1
24. Wild Florida Pavilion, Herman Hesse	3%	1
Location or theme recalled (Poem mentioned could not be linked to one specific poem)		
Africa	3%	1
Jaguar	3%	1
Poem mentioned could not be linked to one specific location	27%	8

NOTE: Groups could mention more than one poem; percentages may total more than 100%



Table 43. Little Rock: Frequency of groups that recalled specific poems or installations, of those who recalled poems (n=35).

Poem	Percentage	Count
17. Pole Barn - Whenever a person breaks a stick	14%	5
19A. African veldt - I walk by the river	14%	5
19C. Rhino Entry - The path has crossed the river.	14%	5
25. Railing up to train - atom from atom - Emerson	9%	3
36. Bench, Spider Monkeys- Only life can give you life	9%	3
40. Great Apes - I wonder what they think of us	9%	3
9. Triangle area - I am this land, this land is me	6%	2
11. Tiger - My child, then put aside your fear;	6%	2
13. Lion area - horse and lion in a chase	6%	2
28. Prarie Dogs - live with the animals - Whitman	6%	2
3. Giraffe - earth loaned by childern	3%	1
6. Reticulated Python - Emily Dickinson	3%	1
18. Cafe Africa - On the last day of the world	3%	1
20. Bears - Owning the wilderness they're not lost	3%	1
26. Children Farm - See the spider and the fly	3%	1
31. Chain link fence just past flamingos	3%	1
33. Elephant House - Yoruba Praise Poem	3%	1
35. Penguin Area - the sea is our mother	3%	1
39. Primate Area - In the summer rain	3%	1
47. Amphitheater	3%	1
48. Penguin Exhibit at Opening	3%	1
Location or theme recalled (Poem mentioned could not be linked to one specific poem)		
Big Cats	6%	2
Elephants	6%	2
Joseph Bruchac	6%	2
Primates	6%	2
Reptiles	6%	2
Gorillas	3%	1
Japanese poems	3%	1
Near train station	3%	1
Rhino	3%	1
Poem mentioned could not be linked to one specific location	17%	6

NOTE: Groups could mention more than one poem; percentages may total more than 100%



Table 44. Milwaukee: Frequency of groups that recalled specific poems or installations, of those who recalled poems (n=33).

Poem	Percentage	Count
10. Peck Boardwalk, Anonymous, Navajo Indian	52%	17
07. Pheasantry Walk – Wendell Berry	9%	3
25. Elk Yard, Linda Hogan	9%	3
47. Farm Bee Hive, Emily Dickinson	9%	3
19. Path in front of Aquatic and Reptile Center, David Wagoner	6%	2
30. Moose Yard, Gerard Manley Hopkins	6%	2
42. Big Cat Country Tiger Wall, Jorge Luis Borges	6%	2
53. Farm Cow Barn, Walt Whitman	6%	2
01. Main Entrance Arbor Garden	3%	1
08. Pheasantry Tree, Micheal Glaser	3%	1
16. Jellies Exhibit, Alison Apotheker	3%	1
21. Small Mammals - Fruit Bats, Theodore Roethke	3%	1
23. Caribou Exhibit, Knud Rasmussen	3%	1
24. Grizzly, Reg Saner	3%	1
26. Lake Evinrude Rock Wall, John Montague	3%	1
28. Lake Evinrude Deck, Walt Whitman	3%	1
40. Pachyderm Mall, John Haines	3%	1
43. Big Cat Entrance, Marilyn Taylor	3%	1
44. Hippo Outside Exhibit, Les Murray	3%	1
45. Farm Bird Show Fence, Virginia Driving Hawk Sneve	3%	1
Location or theme recalled (Poem mentioned could not be linked to one specific poem)		
Giraffe	6%	2
Farm area	3%	1
Indian, Native authors	3%	1
Lake	3%	1
Poems on rocks	3%	1
Poem mentioned could not be linked to one specific location	24%	8

NOTE: Groups could mention more than one poem; percentages may total more than 100%



Table 45. New Orleans: Frequency of groups that recalled specific poems or installations, of those who recalled poems (n=30).

Poem	Percentage	Count
African Savannah - Langston Hughes, Mississippi Levee	20%	6
Jaguars - translated from the Nahuatl	20%	6
South America - Langston Hughes, The Negro Speaks of Rivers	20%	6
Primates and Boardwalk - Pablo Neruda, Some Beasts	13%	4
LARGE CENTRAL FOUNTAIN, Gerard Manley Hopkins, Inversnaid	10%	3
REAR FLAMINGO EXHIBIT – Heron Rises from the Dark	10%	3
MASAI MARA OVERLOOK, Shakespeare, Hamlet	7%	2
SWAMP - hangs from beam near rockers on café deck, Langston Hughes	7%	2
AUSTRAL-ASIAN AVIARY Hanging inside entrance, D. H. Lawrence	3%	1
DISCOVERY WALK - near the sculpture of the boy with turtle	3%	1
Leopards - Emily Dickinson	3%	1
Near AFRICAN SAVANNAH, My heart on a swing touched the sky.	3%	1
Near DINO EXIT, Sidney Lanier, The Marshes of Glynn	3%	1
Old Zoo Entry - Walt Whitman, Song of Myself	3%	1
Swamp Nursery, Darrell Bourque	3%	1
White Alligators, Thomas Heyrick	3%	1
Location or theme recalled (Poem mentioned could not be linked to one specific poem)		
Emily Dickinson	20%	6
Swamp	7%	2
Walt Whitman	7%	2
Africa Area	3%	1
Elephants	3%	1
Oak Trees	3%	1
River poem (multiple river poems)	3%	1
Poem mentioned could not be linked to one specific location	20%	6

NOTE: Groups could mention more than one poem; percentages may total more than 100%



Appendix D: Detailed Demographic Profile of Interview and Questionnaire Respondents

Table 46. Demographic profile of interview respondents, by zoo

	Brookfield		Jacksonville		Little Rock		Milwaukee		New Orleans	
	Pre %	Post %	Pre %	Post %	Pre %	Post %	Pre %	Post %	Pre %	Post %
Area where survey respondents live	n=27	n=47	n=29	n=45	n=31	n=45	n=28	n=45	n=29	n=45
Rural	15	9	38	20	42	36	32	27	28	29
Urban	15	19	10	16	29	24	25	29	34	22
Suburban	70	72	52	64	29	40	43	44	38	49
Frequency of zoo visitation	n=28	n=47	n=29	n=45	n=31	n=45	n=29	n=45	n=29	n=44
First visit	4	4	21	20	32	18	7	13	34	16
Not in many years	11	15	10	18	19	9	7	13	10	23
Once every few years	4	2	3	11	13	18	10	7	14	5
Once a year	14	11	7	4	6	9	10	27	3	16
2-4 times per year	32	26	24	16	19	27	28	7	14	27
5+ times per year	36	43	34	31	10	20	38	33	24	14
Frequency of visitation to public library	n=28	n=33	n=29	n=45	n=31	n=45	n=29	n=45	n=29	n=43
Never	4	6	38	31	23	29	10	9	24	33
Not in many years	7	2	0	2	10	7	0	16	14	12
Once every few years	4	6	0	0	3	4	0	4	7	0
Once a year	7	9	3	4	3	9	3	13	10	14
2-4 times per year	0	6	7	9	10	7	14	16	14	14
5+ times per year	79	70	52	53	52	44	72	42	31	28
Sex	n=29	n=47	n=29	n=45	n=28	n=45	n=29	n=46	n=30	n=45
Male	38	26	34	47	46	38	21	28	50	27
Female	62	74	66	53	54	62	79	72	50	73
Age categories	n=30	n=47	n=30	n=44	n=31	n=44	n=30	n=45	n=30	n=45
Under 30	3	23	20	32	26	16	13	24	30	18
30-49	57	53	60	50	65	70	70	62	47	67
50+	40	23	20	18	10	14	17	13	23	16
Group type	n=29	n=47	n=29	n=38	n=31	n=45	n=30	n=46	n=29	n=45
Family groups	86	74	90	66	71	76	83	85	59	82
All adult groups*	14	26	10	34	29	24	17	15	41	18

*8 individuals visited alone and included in "All adult;" Little Rock Zoo n=2 post; Brookfield Zoo n=2 post; Jacksonville Zoo n=3 post; and New Orleans Zoo n=1 post



Table 47. Demographic profile of questionnaire respondents, by zoo

	Brookfield		Jacksonville		Little Rock		Milwaukee		New Orleans	
	Pre %	Post %	Pre %	Post %	Pre %	Post %	Pre %	Post %	Pre %	Post %
Area where survey respondents live	n=43	n=61	n=41	n=62	n=43	n=71	n=48	n=75	n=44	n=65
Rural	2	15	24	21	56	48	27	33	23	25
Urban	14	11	20	19	19	18	17	17	43	32
Suburban	84	74	56	60	26	34	56	49	34	43
Frequency of zoo visitation	n=42	n=64	n=41	n=64	n=44	n=71	n=48	n=75	n=44	n=69
First visit	2	8	10	28	27	14	2	9	20	16
Not in many years	5	13	7	13	7	11	10	12	11	14
Once every few years	12	17	17	17	9	10	17	17	9	9
Once a year	5	19	12	6	32	17	17	7	11	10
2-4 times per year	26	33	34	20	18	21	31	27	7	28
5+ times per year	50	11	20	16	7	27	23	28	41	23
Frequency of visitation to public library	n=43	n=63	n=41	n=61	n=43	n=67	n=48	n=74	n=44	n=65
Never	7	11	12	11	7	12	2	3	18	14
Not in many years	7	8	12	15	14	10	13	18	11	11
Once every few years	5	10	12	7	14	12	2	7	14	15
Once a year	14	10	12	10	2	10	13	8	5	11
2-4 times per year	19	16	15	18	19	18	15	11	20	12
5+ times per year	49	46	37	39	44	37	56	54	32	37
Sex	n=43	n=71	n=41	n=64	n=43	n=71	n=48	n=75	n=44	n=69
Male	37	28	32	38	30	32	35	27	48	32
Female	63	72	68	63	70	68	65	73	52	68
Age categories	n=41	n=65	n=41	n=61	n=44	n=70	n=47	n=75	n=42	n=67
Under 30	17	15	44	20	39	43	21	41	26	30
30-49	68	51	54	62	46	49	60	40	57	57
50+	15	34	2	18	16	9	19	19	17	13
Group type	n=43	n=68	n=41	n=64	n=44	n=70	n=48	n=75	n=43	n=68
Family groups	84	69	78	77	75	83	65	76	65	79
All adult groups*	16	31	22	23	25	17	35	24	35	21

*7 individuals visited alone and included in "All adult;" Little Rock Zoo n=2, 1 pre and 1 post); Brookfield Zoo n=2 post; Jacksonville Zoo n=1 post; and New Orleans Zoo n=2 pre



Table 48. State of residence of interview respondents, by zoo.

	Pre	Post
	%	%
Brookfield	n=28	n=46
Illinois	93	87
Others combined (Less than 10% each)	7	13
Jacksonville	n=29	n=44
Florida	79	82
Georgia	17	9
Others combined (Less than 10% each)	3	9
Little Rock	n=30	n=45
Arkansas	83	96
Others combined (Less than 10% each)	17	4
Milwaukee	n=30	n=45
Wisconsin	93	71
Illinois	3	16
Others combined (Less than 10% each)	3	13
New Orleans	n=30	n=45
Louisiana	57	71
Mississippi	20	18
Others combined (Less than 10% each)	23	11

Table 49. State of residence of questionnaire respondents, by zoo.

	Pre	Post
	%	%
Brookfield	n=42	n=63
Illinois	98	79
Others combined (Less 10% each)	2	21
Jacksonville	n=40	n=62
Florida	80	65
Georgia	15	8
Others combined (Less 10% each)	5	27
Little Rock	n=43	n=71
Arkansas	72	93
Others combined (Less 10% each)	28	7
Milwaukee	n=48	n=74
Wisconsin	94	88
Others combined (Less 10% each)	6	12
Audubon	n=40	n=67
Louisiana	72	75
California	10	3
Mississippi	5	9
Others combined (Less 10% each)	13	13

