ADVANCING CONSERVATION THROUGH **EMPATHY FOR WILDLIFE™**

Learning Agenda

2025

Content by: Marta Burnet, in consultation with the SLC
Design by: Katie Gibian, Learning & Innovation, Woodland Park Zoo

WOODLAND PARK ZOO

www.zoo.org/empathy

Contact: empathy@zoo.org

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Purpose

Since the creation of the Advancing Conservation through Empathy for Wildlife (ACE for Wildlife™) Network in 2019, many questions have emerged about the role empathy plays in advancing our conservation missions and how there might be unintended consequences of fostering empathy in audiences. To create structure around addressing these questions, the ACE for Wildlife Network has developed a strategic learning agenda to identify the questions most relevant for us to collectively investigate over the next five years.

This document started as an initial springboard, based on feedback from events, surveys, check-ins, interviews, and focus groups from the past three years. It has subsequently been reviewed by the Strategic Learning Committee (SLC), Network participants, Woodland Park Zoo staff, and researchers with subject matter expertise. Throughout this process, we welcomed questions, comments, concerns, and general feedback. We also intend for this learning agenda to be a living document, revisited annually for review and revision based on evolving Network needs and developments.

Goals for Developing the Learning Agenda:

Woodland Park Zoo's Advancing Empathy (AE) team, which staffs the Network, did their best to ensure that:

1. The development of the learning agenda was an inclusive process with input from both Network participants, Association of Zoo and Aquarium (AZA)-related professionals outside the Network and relevant researchers as well.
2. The key questions of the Network learning agenda demonstrate alignment, when possible, with the AZA Social Science Research Agenda.
3. The learning agenda included consideration of both the impact of empathy practices on guest feelings of empathy as well as inspiring guest caring/conservation behaviors.
4. The learning agenda questions centered on fostering empathy for wildlife though empathy for people is also included (see Key Learning Question 4).
5. This document was created throughout 2024, involving the SLC, Network input through the October Meeting/discussion board, AZA input and consultations with academics.
6. The learning agenda will be revisited at least annually to revise or reprioritize as needed.

Goals for Learning Agenda:

This learning agenda will help the Network and the AE team to:

1. Build understanding around use of empathy practices in zoo and aquarium programs (both on and off-site) to determine when, how, and under which conditions each practice is most impactful.
2. Fill gaps in understanding empathy for wildlife, particularly on questions raised by colleagues within the zoo and aquarium field.
3. Support the Network in our efforts to:
    a. Recruit research partners and potentially find funding to investigate questions;
    b. Identify topics for future literature reviews;
    c. Encourage collaborations across multiple sites;
    d. Suggest methodologies to help answer these questions; and
    e. Help generate buy-in for empathy initiatives (through findings from learnings).
4. Align components of Network evaluation capacity building efforts to the learning agenda.

Process and Timeline:

Phase 1: Advancing Empathy Team research and creation by August 1, 2024

The AE Evaluation Specialist reviewed feedback from various evaluation tools to create a list of potential topics of interest from Network Members and Affiliates. The 152 pieces of feedback were coded into 36 common themes and tallied with totals ranging from one to 25 instances of mention. These themes were then consolidated into 21 topics that were then categorized into needs for tools, trainings/events and/or learning questions.

The two top learning questions were:

- *How does the use of empathy practices influence/impact visitors?*
- *How can visitors' feelings of empathy be measured/evaluated effectively? What are the most effective tools for measuring empathy?*

The AE team has identified researchers to work on literature reviews of the research on these two topics to understand what studies have been conducted on these topics and with what results. Both literature reviews will be shared with the Network in early 2025.

The AE Director and Network Specialist consulted the SLC in spring 2024 about how the committee wanted to be involved with this effort and at what stage(s). They indicated an interest in participating in developing this agenda, by providing feedback on the initial springboard and then on the revised draft in Phase 6.

Phase 2: SLC review and input by August 16, 2024

The SLC received the initial springboard document on August 1st in advance of their August 8th meeting. They were asked to review this document and add comments/suggestions. The AE Director attended the SLC meeting to talk through the document and answer any questions. Feedback received from the SLC was integrated into this document.

Phase 3: Input from those outside and/or less involved the Network by September 30, 2024

In August, the AE team developed a few approaches to gather additional information about potential key learning questions, and/or concerns zoo and aquarium professionals may have with the empathy work. At the AZA Annual Conference, the Network had a booth where attendees could select up to three empathy topics they were most interested in (See Appendix A for details). We received 143 votes across 16 topics. We also distributed a survey in September to the Network, AZA and through related professional social media channels to get further input. These individuals came from existing Partners and from the broader AZA population. We received 252 votes from 90 total respondents on 14 topics.[1] See Appendix B for a table of responses and frequencies of each topic. As a result of these two collections, the top 10 most frequently selected topics were chosen for consideration in the October All-Network Meeting breakout sessions.

They were:

1. **Empathy & conservation action**
2. **Measuring empathy in zoo and aquarium audiences**
3. **Fostering empathy for non-mammals**
4. **Empathy for animals at zoos and aquariums & empathy for animals in the wild**
5. **Empathy for wildlife & empathy for people**
6. **Empathy & controversial topics**
7. **Empathy & anthropomorphism**
8. **Fostering empathy through up close animal experiences**
9. **Fostering empathy through exhibit design**
10. **Longevity of empathy activated in zoos and aquariums**

See Context and Background section for more information about these topics.

1. Fostering empathy for non-mammals and empathy & controversial topics were initially accidentally excluded from the virtual survey and were added after most responses were collected. As these were among the highest in-person votes and have projects underway, these will be addressed regardless.

Phase 4: Network Participant Input by October 15, 2024

The AE Director revised this document based on Phase 3 input and shared it with the full Network in early October. At the All-Network Meeting on October 15th, Network attendees participated in 10 break-out sessions to review/refine the proposed overarching learning questions, identify any gaps, and add sub-questions. They also provided input into different audiences for this agenda and strategies for involving them. Those participating in Room 4 felt that the question really was a sub-question of topics one and six, so that question was embedded in those two topics. Room 10, focused on longevity/durability of empathy, had only one participant and so it has been rolled into other questions and added to Appendix D for later consideration. The revised, prioritized questions are listed in the Key Learning Questions section below and additional questions are in Appendix D.

Phase 5: Consultations with Academia by November 30, 2024

Following the All-Network Meeting, the AE Director revised this document based on Network feedback and shared the learning agenda questions and strategies with three academic Affiliates (Alison Bowers, Social Ecology Lab at Stanford University; Bryan Nichols at Florida Atlantic University; and Cam Whitley at Western Washington University) to get their suggestions on the phrasing of learning questions, context and sub-questions, relevant researchers and ways to potentially build studies to start to answer these questions.

Phase 6: Revisions by January 15, 2025

The AE Director further revised the key learning questions based on academic feedback. This revised draft was then made available for the SLC and interested Network participants (the Research Special Interest Group, in particular) to review in December with feedback due January 15th. Final revisions were included by January 31, 2025.

Phase 7: Implementation of Learning Agenda Ongoing in 2025 and Beyond – Current Phase

At the February 2025 Empathy Summit, the AE Director hosted a discussion table during the World Café that delved into Question 3 to prepare for the development of a literature review. Marta will be working with Alison Bowers to scope a literature review on this topic. In March, the AE team and SLC will determine what follow-on activities to do with this learning agenda, such as building out strategies for these different audiences with some thoughts about steps, timing and prioritization. This step will be determined in collaboration with the SLC.

Following the 2025 Empathy Summit, efforts will then be made to determine what learning questions we would like to tackle first and identify ways to start to answer questions on the agenda.

Learning Agenda Questions:

Through this multi-step process, the ACE for Wildlife Network homed in on eight key learning questions (featured below). These eight key questions were prioritized based on interest levels in Phases 1, 3 and 4 (no one participated in the breakout room for Question 10, so it was merged into others as sub-questions and moved as a separate question to Appendix D). Two questions were merged (Question 1 and the impact of empathy practices on actions toward animals in nature), as the latter question was decided to be more of a sub-question of Questions 1 and 5). Five additional questions were considered, but it was determined that they be included as questions to consider later in an effort to keep the learning questions more manageable (featured in Appendix D). With planned annual reviews, the prioritization of questions can be reprioritized if and when the Network finds it necessary to do so.

Key Learning Questions

1. What is the relationship between fostering empathy for wildlife and conservation/caring behavior?
2. How do we measure the impact of zoo/aquarium experiences on empathy for wildlife in audiences?
3. What strategies are most effective at inspiring empathy for animals considered more challenging to empathize with (e.g., invertebrates, commonly feared animals)?
4. How does fostering empathy for animals/wildlife impact empathy for people?
5. What is the role of fostering empathy for wildlife when addressing complex environmental issues (e.g., climate change, human-wildlife conflict) with zoo and aquarium audiences?
6. How should critical anthropomorphism be used in a zoo or aquarium setting?
7. Which empathy for wildlife practices are most effective at achieving intended outcomes (e.g., conservation behavior change, perceptions of animal welfare, and/or caring actions) in up-close experiences?
8. Which empathy for wildlife practices are most effective at achieving intended outcomes (e.g., conservation behavior change, perceptions of animal welfare, and/or caring actions) through exhibit design/signage?

See Appendix C for a list of sub-questions for each of the key learning questions. See Appendix D for five additional questions to be considered at a later date.

The eight key questions span a range of empathy topics from understanding how it can impact actions and behaviors, to how we can measure and understand what makes it effective, to how it can impact empathy for humans and animals in other contexts. Once the key learning questions were identified and refined, the following background descriptions were created to provide context for each of the individual question areas.

Context and Background on Key Questions:

1. What is the relationship between fostering empathy for wildlife and conservation/caring behavior?

As signified in the name – Advancing Conservation through Empathy for Wildlife – learning question one is of primary interest to the Network. It also received the greatest percentage of votes in the learning question rankings during Phase 3. In the fall 2024, the AE team contracted with Social Ecology Lab at Stanford University to conduct a targeted, narrative literature review on this topic. In particular, they examined how empathy experienced and developed during zoo and aquarium visits can lead to conservation intentions and action, as well as caring behavior towards wildlife. The review focused on high-quality research and evaluation in this field, synthesizing key findings for zoo stakeholders. Key findings included research across more than 30 studies that demonstrated a link between empathy and conservation behaviors, with both affective and cognitive components of empathy contributing to conservation action holding true across different cultures and contexts. This report also identified gaps in the research such as the limited number of studies exploring empathy and caring behaviors. In Appendix C, there is a list of sub-questions that have emerged from conversations within the Network and resulting from this report to help us determine how we might build on existing studies to learn more.

While in need of further refinement, we are starting with this basic differentiation between conservation and caring behaviors:

1. Conservation behavior (or at least intent) is defined as the actions people take to protect wild animals and their habitats to benefit animals and nature in general (e.g., buying sustainable goods, reducing carbon footprint and supporting conservation programs). These actions can progress from simple, one-time actions, progressing to behaviors that require a larger investment of time and effort. Typically, these actions focus on population or species-wide support.
2. Caring behavior (both onsite and ideally after the visit as well) is defined as more direct, compassionate treatment of animals and nature in a safe and respectful way (e.g., using quiet voices, gentle touches and slow movements in a zoo setting; not feeding or harming animals in nature). These actions tend to focus on the treatment of an individual animal.

Alignment with the AZA Social Science Research Agenda Key Question Three: What is the role of zoos and aquariums in contributing to social change toward conservation?

Potential follow-on contacts: Alison Bowers, Social Ecology Lab at Stanford University; Bryan Nichols at Florida Atlantic University

2. How do we measure the impact of zoo/aquarium experiences on empathy for wildlife in audiences?

Learning question two is foundational to any other studies in that the Network needs to have effective ways to measure the impact of empathy programs on audiences' empathy for wildlife. It also was ranked second in terms of questions of interest. Dr. Cameron Whitley, Associate Professor at Western Washington University, conducted a comprehensive review in fall 2024 of the literature surrounding the following questions:

- What are the current measurement models and tools commonly used in measurement of empathy towards animals, wildlife, nature or other non-humans? What are the key components of these models and what are the commonalities between these measurement models?
- What indicators and metrics are used to measure empathy towards animals? Are there commonalities in indicators used across studies?
- How have zoos, aquariums, or similar institutions measured empathy towards animals, wildlife or nature? What models or tools have been adapted for these contexts?
- What are the best practices/recommendations for measuring empathy in an informal learning setting?

This review helped to identify what tools exist, where there are gaps, how we might build on existing tools to learn more. Starting in early 2025, the AE team began the Empathy Measurement in Zoo and Aquarium Audiences Project (EMZAAP) with Alaska SeaLife Center, Henry Vilas Zoo, Saint Louis Zoo, Seattle Aquarium and Zoological Society of Milwaukee. This group will work over the course of two to three years to develop and test validated instrument(s) that are designed to be implemented in our unique settings and that support consistent empathy measurement across our organizations and programs.

Alignment with the AZA Social Science Research Agenda Key Question Five: How can zoos/ aquariums maximize their systemic impact on conservation?

Potential follow-on contacts: Lizze Ferrari, Education Programs Supervisor at The Living Desert Zoo; Cameron Whitley, Western Washington University

3. What strategies are most effective at inspiring empathy for animals considered more challenging to empathize with (e.g., invertebrates, commonly feared animals)?

This topic ranked third in the Phase 3 surveys. Typically, in the research, there is a focus on comparing empathy for different species: the higher levels of empathy people tend to have for charismatic and/or cute animals (e.g., small mammals) versus other species. The Social Ecology Lab noted that this was a focus area of interest in research, but the findings did not always confirm this difference. It would be useful to dig into the research on this question to learn more.

In the ACE for Wildlife Implementation of Empathy Practices Report and a forthcoming journal article by Dr. Whitley, we have found that empathy-related behaviors did not follow what research from outside of the zoo and aquarium field would predict for different animal types. Differences between animals were insignificant and more empathy indicators were observed for fish, birds, and invertebrates than the research would predict. Furthermore, on-site evaluations of bug-focused exhibits at Woodland Park Zoo demonstrated that visitors' expressions of empathy for bugs differed between exhibits using different interpretive strategies.

Potential follow-on contacts: Cameron Whitley, Western Washington University, Kaitlin Barriler, Western Washington University (her MA thesis is on promoting empathy for animals without faces)

Potential follow-on examples: Henry Vilas Zoo, Woodland Park Zoo and Zoological Society of Milwaukee shared examples of projects.

4. How does fostering empathy for animals/wildlife impact empathy for people?

Research has shown that empathy for animals fires in similar parts of the brain as empathy for humans. And we know that people are much more likely to feel empathy for someone close to them or seemingly similar rather than those who are different. The Network tends to describe empathy as a muscle, so does developing your empathy for wildlife muscles carryover into empathy for other humans outside one's typical in-group?

The Network has not investigated the research on this topic so far, but Cameron Whitley has done a few studies that may contribute to starting to understand this. Ranked fifth in Phase 3 surveying.

Alignment with the AZA Social Science Research Agenda Key Question: Two (What is the role of zoos and aquariums in communities, including in the context of striving for environmental and social justice?)

5. What is the role of fostering empathy for wildlife when addressing complex environmental issues (e.g., climate change, human-wildlife conflict) with zoo and aquarium audiences?

Ranked sixth in the Phase three surveys, this topic is a challenge that zoo and aquarium professionals must face regardless of where they live. In some states, the complex topic may be tensions between conservationists and ranchers, in another state it may be how to discuss climate change. When a conversation starts out tense, it is harder to get people to connect with animals and with each other. While this topic began as "controversial topics" in the initial phases, it was changed to "complex topics" to avoid alienating some individuals and to include different lenses for approaching these questions.

Emily Bernhardt, Empathy Specialist at Woodland Park Zoo, has been working on a related report, which draws from literature across disciplines and conversations with individuals in the ACE for Wildlife Network to illustrate how lessons from history and social science research can be applied in a zoo setting to craft meaningful messages about North American carnivore conservation. This report should be completed in 2025. Understanding how we can find common ground to get to the point of having a productive conversation is crucial for us to open audiences' minds to taking caring and/or conservation action.

Alignment with the AZA Social Science Research Agenda Key Question Three: What is the role of zoos and aquariums in contributing to social change toward conservation?

6. How should critical anthropomorphism be used in a zoo or aquarium setting?

Generally, anthropomorphism is defined as the attribution of human characteristics, particularly those "believed to be uniquely or typically human", to nonhumans. It is important to keep in mind that anthropomorphism is a normal and natural activity for humans. It is how we try to make sense of the world around us, and we have been doing it for millennia. Critical anthropomorphism (also known as strategic or educational anthropomorphism) is a tool we can use to get guests to a more informed understanding of the animals in our care. This is when you explain animal behaviors and characteristics using approachable language that highlights similarities between human and animal experiences based on scientific research. This approach allows you to convey a sense of similarity when there is one, without misleading audiences.

Research has shown that use of critical anthropomorphism increases connectedness with the being that is anthropomorphized; is closely related to developing empathy for that being; and changes perceptions of that being in a positive way as well as increases a willingness to take action on that being's behalf. This question was ranked seventh in Phase 3 surveying. The AE team conducted a literature review on this topic in 2024 that could inform future studies.

7. Which empathy for wildlife practices are most effective at achieving intended outcomes (e.g., conservation behavior change, perceptions of animal welfare, and/or caring actions) through up-close experiences?

This question was ranked eighth in the Phase 3 surveys. The Network has not yet conducted any review of research on this question. There are a lot of different components to these types of experiences and a lot of possibilities of how to test aspects of this question.

Potential follow-on contacts: Bryan Nichols at Florida Atlantic University; Dr. Harrison Albert

Potential follow-on examples: Henry Vilas Zoo, Wildlife Conservation Society, and Disney's Animal Kingdom

8. Which empathy for wildlife practices are most effective at achieving intended outcomes (e.g., conservation behavior change, perceptions of animal welfare, and/or caring actions) through exhibit design/signage?

These two related questions were ranked ninth and eleventh, respectively, in the Phase three surveys. The Network has not yet conducted any review of research on these questions. There is a lot to unpack in these questions and a lot of possibilities of how to test some of these questions.

Potential follow-on contacts: Bryan Nichols at Florida Atlantic University (developing a taxonomy of encounters/experiences to help classify what makes for impactful ones); Dr. Harrison Albert (swim-with programs impact on conservation behavior & durability of messaging, also interested in how different species may impact retention/durability of empathy)

Potential follow-on examples: Henry Vilas, Wildlife Conservation Society and Disney's Animal Kingdom

Context and Background on Key Questions:

1) **Network Members and Affiliates:** Make sure that they know about the learning agenda and have opportunities to lead and/or participate collaboratively in studies to learn more about these topics through Network Discussion Board and Empathy Matters newsletter announcements.

2) **Researchers:** Identify researchers who might want to investigate some of these topics to ensure that studies are rigorous, consistent, and generalizable. Start with researchers affiliated with the ACE for Wildlife Network and those identified in this brief.

3) **Funders:** In partnership with researchers, identify funders who are interested in supporting learning about these topics. Develop project briefs to share with funders.

4) **AZA:** Align learning agenda with Social Sciences Research Agenda (SSRA), where possible, share out learnings and promote broader involvement of the AZA community in empathy investigations. In the key learning question blocks above, overlap with the SSRA was noted where applicable.

Acknowledgements:

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Photo courtesy of Point Defiance Zoo & Aquarium

APPENDIX A: PRIORITIZING TOPICS RELATED TO EMPATHY IN ZOOS AND AQUARIUMS

Part 1: Feedback at AZA Conference

Location: On a booth poster, through informal conversations and in the business session by QR code

Those staffing the ACE for Wildlife booth at the AZA conference encouraged passersby to use sticky dots to rank up to three top questions about empathy for wildlife (out of 16 possibilities).

- Empathy & conservation action
- Empathy & exotic pet ownership
- Empathy & anthropomorphism
- Empathy & biofacts
- Empathy for wildlife & empathy for people
- Empathy for animals at zoos and aquariums & empathy for animals in the wild
- Fostering empathy through signage
- Fostering empathy through up close animal experiences
- Fostering empathy through exhibit design
- Fostering empathy in children
- Fostering empathy in teens
- Fostering empathy in adults
- Longevity of empathy activated in zoos and aquariums
- Longevity of empathy activated in zoos and aquariums
- Measuring empathy in zoo and aquarium audiences
- Empathy & non-mammals
- Empathy & controversial topics

There was an option to submit additional questions as well. There were three additional responses which mentioned empathy for invertebrates, government and funder support, and opportunities to foster empathy through technology. A QR code electronic version was shared throughout the conference.

Part 2: Feedback outside of AZA conference

Location: Online

AE staff shared a virtual survey through AZA Social Science Research and Evaluation and Conservation Education Committee lists, the Zoo, Aquarium and Gardens Focused Interest Group (ZAFIG) Facebook group, ACE for Wildlife Discussion Board, and Network LinkedIn Group. They also encouraged recipients to share the survey further if they wanted. The two-question survey questions were:

1. Which of the following topics related to empathy in zoos and aquariums interest you the most? Select **up to three** options.
2. What other questions or concerns, if any, do you have about the role of empathy in zoos and aquariums?

APPENDIX B: TABLE OF PRIORITIZED TOPICS RELATED TO EMPATHY IN ZOOS AND AQUARIUMS

Learning Agenda Topic	In-Person Responses	Survey Responses	Total	Frequency
Empathy & conservation action	13	57	70	51%
Measuringempathy in zoo and aquarium audiences	11	34	45	33%
Fostering empathy for non-mammals	18	0*	18	31%*
Empathy for animals at zoos and aquariums & empathy for animals in the wild	17	25	42	30%
Empathy for wildlife & empathy for people	9	30	39	28%
Empathy & controversial topics (e.g., climate change, carnivore conservation)	12	3*	15	26%*
Empathy & anthropomorphism	12	17	29	21%
Fostering empathy through up close animal experiences	8	18	26	19%
Fostering empathy through exhibit design	8	14	22	16%
Longevity of empathy activated in zoos and aquariums	3	16	19	14%
Fostering empathy through signage	8	10	18	13%
Fostering empathy in adults	5	11	16	12%
Empathy & biofacts	7	7	14	10%
Fostering empathy in children	4	10	14	10%
Fostering empathy in teens	4	4	8	6%
Empathy & exotic pet ownership	4	3	7	5%
Total Respondents	~48	90	138	
Total Topic Responses	143	252	387	

*Two topics were unintentionally left off the survey initially and were added after responses had already been collected. For these topics, frequency was calculated based on the number of in-person responses combined with the number of responses collected after the survey was updated to include them (n=58).

APPENDIX C: SUB-QUESTIONS TO THE KEY LEARNING QUESTIONS

Key learning question #1: What is the relationship between fostering empathy for wildlife and conservation/caring behavior?

Sub-Questions:

1. Do we need to consider conservation and caring actions separately?
2. How, if at all, are these two types of actions related?
3. How does fostering empathy impact conservation intentions, in terms of one-time actions and in terms of longer-term behavior change?
4. How does fostering empathy impact caring one-time actions versus longer-term caring behavior change?
5. To what extent does empathy experienced and developed during zoo visits and related free-choice and/or nature-related learning experiences (e.g., visits to national parks, interactions with non-companion animals) influence visitors' conservation actions, intentions, and caring behaviors towards wildlife?
6. How do we determine what actions we want audiences to take?
7. How can we decolonialize what conservation looks like in different communities' contexts? And relatedly, how much of the abundant international research on this topic applicable in the US context?
8. How do we determine what conservation actions look like in different community contexts?
9. How can studies in zoos and aquariums build on empathy and conservation action research that has only previously happened in labs or online?
10. Do formal zoo/aquarium education programs (e.g., nature preschools, partnerships with schools) have a more substantial or lasting impact than brief interactions or programs?
11. How does using empathy practices in zoos and aquariums impact visitors' actions toward animals in nature? If they do, is that in positive or negative ways?
12. What are the factors that prevent empathy from translating into action?
13. What strategies are effective at overcoming empathy fatigue?
14. What is the role of social media in sustaining conservation engagement?
15. What factors sustain empathy-driven conservation engagement?
16. What are the unintended consequences of fostering empathy on caring/conservation actions?
17. What is effective in diminishing the negative ways fostering empathy may impact visitor behavior (e.g., feeding ducks, picking up baby animals that they think have been abandoned)?
18. What is effective in increasing positive ways to impact animals in nature?
19. What is its role in having a lasting impact on people's behavior and decisions?

Key learning question #2: How do we measure the impact of zoo/aquarium experiences on empathy for wildlife in audiences?

Sub-Questions:

1. How can we measure correlations between empathy and conservation behavior change over time?
2. Does the type of setting (e.g., programs, signage, PR, etc.) impact the way we measure empathy?
3. How can we measure empathy for other people especially in relation to messaging around human wildlife conflict or other controversial topics?
4. How can we measure the use of empathy by staff and volunteers?
5. How do we measure outcomes from empathy trainings for staff and volunteers?
    a. Long-term follow-up on implementation of practices
    b. Measuring staff and volunteer awareness and use of empathy practices
6. Are we *effectively* using empathy practices?
    a. How can we measure empathy and behavior intent in response to the use of different practices?
    b. How can we measure the impact of empathy practices?
    c. How can we determine more effective combinations and implementation of practices in the field? Are those context-specific?
7. How does measuring empathy in zoos and aquariums differ from empathy measurement more broadly?
    a. How do our audiences and our settings differ from those where empathy research has been done so far?
8. How do we develop measurement tools that are easy to implement and are useful in a variety of different types and sizes of zoos and aquariums?

Key learning question #3: What strategies are most effective at inspiring empathy for animals considered more challenging to empathize with (e.g., invertebrates, commonly feared animals)?

Sub-Questions:

1. How do we want to define this group of animals? Should this question be broken down into categories (e.g., instill fear or disgust, are taxonomically distant, size, etc)?
2. Do zoo and aquarium visitors' feelings of empathy for animals align with predictions from psychological research conducted outside of these settings?
3. Are there differences in the levels of empathy audiences have for mammals versus birds, reptiles, amphibians and/or invertebrates?
4. What strategies are most effective at inspiring empathy for plants?

5. What animal characteristics influence visitors' expressions/feelings of empathy for animals in zoos and aquariums specifically? Do these differ from the four characteristics (agency, affectivity, coherence, and continuity) identified in prior research?
6. What practices are most effective at increasing empathy for animals that are considered___ more difficult to empathize with/maligned or less charismatic animals?
7. How does the marketing/promotional materials at zoos and aquariums destabilize or enhance empathy for non-charismatic animals?

Key learning question #4: How does fostering empathy for animals/wildlife impact empathy for people?

Sub-Questions:

1. Does fostering empathy for wildlife promote prosocial behaviors, including compassion and altruism towards people?
2. How does fostering empathy for wildlife influence or correlate with empathy for others/people? Does one hinder or amplify the other? Are there barriers to empathy for one group or the other? Is there a difference between the correlation of empathy for people directly involved/impacted by wildlife and wildlife conservation programs (i.e., environmental justice) versus empathy for people in general?
3. What are the similarities or differences in how empathy is developed for both animals and other humans?
4. What does brain science research (e.g., neuropathways) tell us about empathy for animals versus people?
5. Are the abilities and skills the same when fostering empathy for animals and people?
6. How do we leverage empathy practices to build empathy for animals and humans?
7. How does coexistence with wildlife impact one's ability to develop or practice empathy for wildlife?
8. How does empathy for people show up when framing conservation stories and conservation actions when related to human impact on wildlife and wild spaces? Wildlife conservation efforts may intersect with advocating for human rights where local communities are closely linked with natural ecosystems - how does environmental justice show up in these conversations?
9. What are the best practices for utilizing animals with disabilities to engage empathy for humans with disabilities?
10. Should different empathy practices/messages target different groups? For instance, men (particularly conservative, white men) show lower levels of empathy in general – are there ways to strategically address this gender/race/political divide?
11. What are the unintended consequences of fostering empathy for wildlife on empathy for people?

Key learning question #5: What is the role of fostering empathy for wildlife when addressing complex environmental issues (e.g., climate change, human-wildlife conflict) with zoo and aquarium audiences?

Sub-Questions:

1. How can we navigate conversations about contentious topics with respect and understanding?
2. How effective is it to combat negative messages? Do you actually end up drawing more attention to the impact you DON'T want (similar to myth busting, where in myth busting people tend to walk away remembering the myth, not the bust)?
3. What is the role of transparency? Is there a moment where being transparent works against you?
4. How do you test messages to increase the positive impact with audiences?
5. How do you determine what messages to avoid? (e.g., if a zoo is framing it as "ranchers vs. wolves" how much does that expand the conflict, how much does that give the issue more power? Will it leave people with the wrong impression of the conflict and think it's actually more of a problem or threat than it is?) How do you diffuse negative messages?
6. How do you expand these conversations to include underrepresented voices and perspectives?
7. What are some techniques that are best for building connections with partner organizations to align messaging across organizations? (e.g. wildlife managers, conservation partners, etc.)
8. How can we multiply impact and lend expertise to partners? We have a lot of experience in talking to the public, so how can we help community members and partners phrase their message in ways that maximize impact?
9. How does consistent messaging across multiple organizations affect the impact of messaging (versus each organization doing its own thing)?
10. Does proximity to free-living animals impact how people perceive and treat animals they encounter in their daily lives?

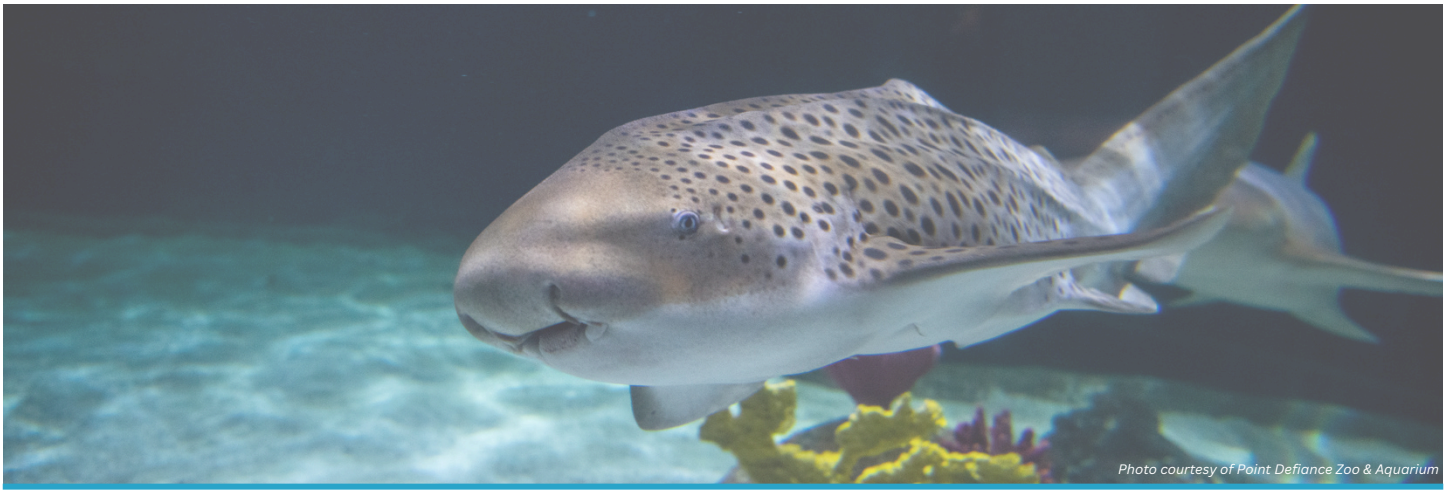

Photo courtesy of Point Defiance Zoo & Aquarium

Key learning question #6: How should critical anthropomorphism be used in a zoo or aquarium setting?

Sub-Questions:

1. Where is the line in balancing critical anthropomorphism as an interpretive tool alongside science content delivery?
2. When is critical anthropomorphism most effective and to what extent should different animals be anthropomorphized?
3. What animal attributes are best to critically anthropomorphize to have an impact?
4. What are the minimum elements of critical anthropomorphism needed to have an impact?
5. How does critical anthropomorphism overlap/differ/complement empathy practices?
6. Does critical anthropomorphism have a greater impact on some species over others?
7. What are the unintended consequences, if any, of using critical anthropomorphism?

Key learning question #7: Which empathy for wildlife practices are most effective at achieving intended outcomes (e.g., conservation behavior change, perceptions of animal welfare, and/or caring actions) through up-close experiences?

Sub-Questions for up-close experiences:

1. Does the impact differ across location/organizational size?
2. What changes occur in our guests after they leave encounters?
3. What is the "durability" of behavior change after up-close experiences?
4. How do we frame programs, and messages within them, to foster the most empathy - which characteristics of programs are most effective?
5. What is the difference between types of encounters like giraffe feed vs. ambassador close-up encounter? Which characteristics are most effective?
6. How do the types of species impact the up-close experience?
7. How do age groups compare in terms of experiences received – are there different practices that are more effective for different age groups?
8. Do encounters with familiar or unfamiliar animals have the greatest impact on fostering empathy for animals?
9. Do encounters with charismatic or less charismatic animals have a greater impact on fostering empathy for animals?
10. What's the balance between captivating audiences and presenting animals in responsible ways (e.g., in ways that do not perpetuate pet perceptions)?
11. Are there differences between informal encounters vs. formal/seated experiences in terms of the effectiveness and/or longevity of that impact?
12. Do entertainment-oriented practices enhance or inhibit empathy for animals in zoo and aquarium environments?
13. How does the perception of zoos and aquariums (as good/bad) enhance or inhibit empathy for animals?

Key learning question #8: Which empathy for wildlife practices are most effective at achieving intended outcomes (e.g., conservation behavior change, perceptions of animal welfare, and/or caring actions) through exhibit design/signage?

Sub-Questions for exhibit design/signage:

1. What is the role of interactives in exhibit design/signage in fostering empathy for animals?
2. What are good design practices that incorporate empathy in early-stage design?
3. How can we influence contractors who build the exhibits/design? How do we balance the importance of privacy for an animal and opportunities for guest interactions?
4. How does organization size/budget impact exhibit design/signage?
5. How can exhibit design be a primer for empathy toward animals? Are there distinctions between indoor vs. outdoor sections?
6. How do we effectively include perspective-taking aspects in exhibit design?
7. How do other aspects of zoos like dining choices and gift shop offerings reflect the mission of the organization/support empathy for animals? And, what is the impact of those offerings on guests' empathy?

APPENDIX D: ADDITIONAL QUESTIONS FOR LATER CONSIDERATION

1. How lasting is empathy activated in zoo/aquarium environments? Is it just situational or does it remain long term? And what might impact that lasting effect?

Status: The Network has not looked into the research on this topic so far. Ranked tenth in Phase 3 surveying.

2. Which empathy for wildlife practices are most effective at achieving intended outcomes? (e.g., conservation behavior change, perceptions of animal welfare, and/or caring actions)

1. With Adults?
2. With Children?
3. With Teens?

Status: The Network has not looked into the research on this topic so far. Ranked twelfth, fourteenth, and fifteenth, respectively, in Phase 3 surveying.

3. What impact does use of biofacts have on audience empathy for wildlife?

1. Does real animal vs. reproductions matter?
2. How does the type of lesson associated with the biofact impact their effectiveness?

Status: Minnesota Zoo conducted a literature review on this topic as part of a Round 4 grant, which is available on the ACE for Wildlife Network website. Ranked thirteenth in Phase 3 surveying.

4. What factors play a role in motivating people to purchase exotic pets?

1. Does empathy, cultivated as result of zoo visit, correlate with visitors purchasing exotic pets?
2. What techniques can zoos and aquariums utilize to reduce interest in exotic pets?
3. And is "exotic pets" the right terminology or do we mean illegally trafficked pets? Or is there another designation we mean?

Status: Literature review conducted on this topic in late 2023. No evidence of empathy from zoo visits correlating with exotic pet purchases, but because no studies on this specific topic were found. Ranked sixteenth in Phase 3 surveying.

5. Which empathy for wildlife practices are most effective at achieving intended outcomes (e.g., conservation behavior change, perceptions of animal welfare, and/or caring actions)…

1. Are they equally important or are some more effective than others?
2. Is there a combination of practices that is more effective?
3. What additional conservational psychology components can leverage empathy practices?

Status: The Network has not looked into the research on this topic so far. Not asked as a separate option as it is more of an umbrella question to several others.