



ADVANCING
CONSERVATION
THROUGH
**EMPATHY FOR
WILDLIFE®**

Empathy and Storytelling Toolkit

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Introduction

Storytelling has become a central practice in conservation and education spaces, and for good reason. As communications professor and media scholar George Gerbner reminds us, “We experience the world through stories. Whoever tells the stories of a culture defines the terms, the agenda, and the common issues we face.” Stories shape how people understand the world, what they value, and how they choose to react.

Across the Advancing Conservation through Empathy for Wildlife (ACE for Wildlife®) Network, we are actively exploring not just *how* to tell stories, but *why* storytelling matters in conservation work. This toolkit is designed to support that exploration. It offers a shared foundation, practical framing guidance, and real-world examples from across the Network to help organizations tell stories that are ethical, engaging, and effective.

Why Do We Tell Stories?

Storytelling is universal. Across cultures and generations people shared verbal stories to make meaning and communicate knowledge, long before written language. Storytelling plays a vital role in evoking empathy, and we see it being woven into signage, keeper chats, social media and so many other forms of knowledge sharing in zoos and aquariums. When we hear a story, we instinctively look for points of connection or moments where we recognize ourselves, our experiences, or our values. In the context of storytelling for wildlife, we see this through activating imagination or inviting guests to consider the perspective of an animal. This relational process makes stories especially powerful tools for conservation communication.

The Case for Telling Stories

Storytelling is not just emotionally compelling; it is evidence-based. Research summarized in [*Why Facts Don't Change Minds: Insights from Cognitive Science for the Improved Communication of Conservation Research*](#)¹ demonstrates why traditional fact-forward approaches often fall short in influencing attitudes, decisions, and behavior.

Despite the strength of conservation science in documenting environmental crises, research alone has had limited impact on policy and practice. One key reason is not *what* information is shared, but *how* it is communicated. Newer models of science communication recognize that decision-making occurs within complex social, cultural, political, and emotional contexts.²

Insights from cognitive science, behavioral psychology, and social network analysis show that people rarely process information through purely logical pathways, especially when issues are complex or emotionally charged. Stories, by contrast, engage different cognitive systems that support understanding, emotional resonance, and action.³



Common Misconceptions About Conservation Communication

Research summarized in *Why Facts Don't Change Minds* and other literature highlights several persistent myths that continue to shape conservation communication and explains why they can limit impact.

Misconception 1: Facts alone change minds

Conservation communication has long relied on the assumption that providing accurate or compelling information will lead to behavior change.⁴ However, cognitive science shows that when people are faced with complex or emotionally charged information, they often rely on mental shortcuts rather than analytical reasoning.⁵ In these moments, increased data can overwhelm audiences and trigger emotional responses that negatively influence the behavior change the communicator is trying to achieve.

Misconception 2: Increasing scientific literacy leads to action

Another common misconception is that improving scientific understanding will naturally increase support for conservation action. Research does not support this assumption, and while scientific knowledge is valuable, studies consistently show a weak relationship between scientific literacy and pro-environmental behavior.⁶ Factors such as worldview, cultural identity, political beliefs, and social norms play a far stronger role in shaping attitudes and actions.⁷

Misconception 3: To change behavior, change individual minds first

Early models of environmental behavior assumed a linear progression from knowledge to awareness to action, but this deficit-based approach has been widely challenged.⁸ Research increasingly demonstrates that behavior is shaped by social, cultural, and systemic contexts, and overemphasizing individual responsibility can obscure the role of collective action and can even reduce motivation to act.⁹

Recognizing these misconceptions allows conservation communicators to move away from purely informational strategies and toward approaches that acknowledge how people actually process information and make decisions.





Why Stories Work

Together, these findings challenge conventional fact-based communication strategies and suggest that emotional engagement, lived experience, and intuition play central roles in decision-making. Stories activate these pathways by encouraging “narrative transportation,” where listeners mentally and emotionally enter the story.¹⁰

Stories are also more memorable or “sticky” than facts alone¹¹ and can reduce resistance to new or challenging information. When evidence is embedded within stories, particularly those centered on characters, it is more likely to inspire empathy and action.¹² This toolkit builds on that evidence to offer practical guidance for conservation of storytelling.

Telling a Story: Consider the Basics

Storytelling appears throughout zoo and aquarium work, from animal care narratives and signage to conservation campaigns and community engagement. While there is no single “right” way to tell a story, the following elements gathered from various models offer a shared foundation for thoughtful storytelling. These elements may not be applicable to all kinds of stories, but may be considered when developing interpretation or sharing conservation stories.

Element 1: Consider Your Audience

Framework Developed by [NNOCC](#)¹³

Effective storytelling begins with understanding who your audience is and what they bring with them into the conversation. Audiences interpret information through existing cultural mindsets shaped by lived experience, media, education, and social context.

Cultural Mindsets

Cultural mindsets are shared cognitive frameworks, or schemas, that help people make sense of the world which can be:

- **Multiple:** Audiences may hold competing or conflicting mindsets at once (e.g., One can be concerned about climate change, but not opt to use public transportation due to time constraints)
- **Durable:** These frameworks can be long-lasting and resistant to change (e.g., Beliefs from family or community that were developed in childhood)
- **Shared:** They can be widely held across communities and cultures (e.g., The belief that climate change is primarily caused by natural environmental shifts rather than anthropogenic causes)



- **Activated by information:** These frameworks can be triggered or reinforced by how information is presented, including specific language, values, emotions, or examples. (e.g., For someone who is triggered by climate change, you may want to highlight the positive health impacts that come from improving our natural environment)

Building on this, storytelling is not just about delivering information, but about intentionally engaging the mindsets that shape how that information is understood. Research shows that people rely on these mental frameworks to interpret new ideas, often filtering or reshaping information to align with existing beliefs.¹⁴ As mentioned earlier, simply presenting facts is unlikely to shift perspectives if those facts activate unproductive or conflicting mindsets. Framing information in ways that connect to shared values and experiences can help activate more constructive ways of thinking.¹⁵ For example, not only talk about, say, protecting local green spaces to help wildlife, but also highlight it as places to spend quality time with one's family, explore new trails and increase property values in the surrounding area.

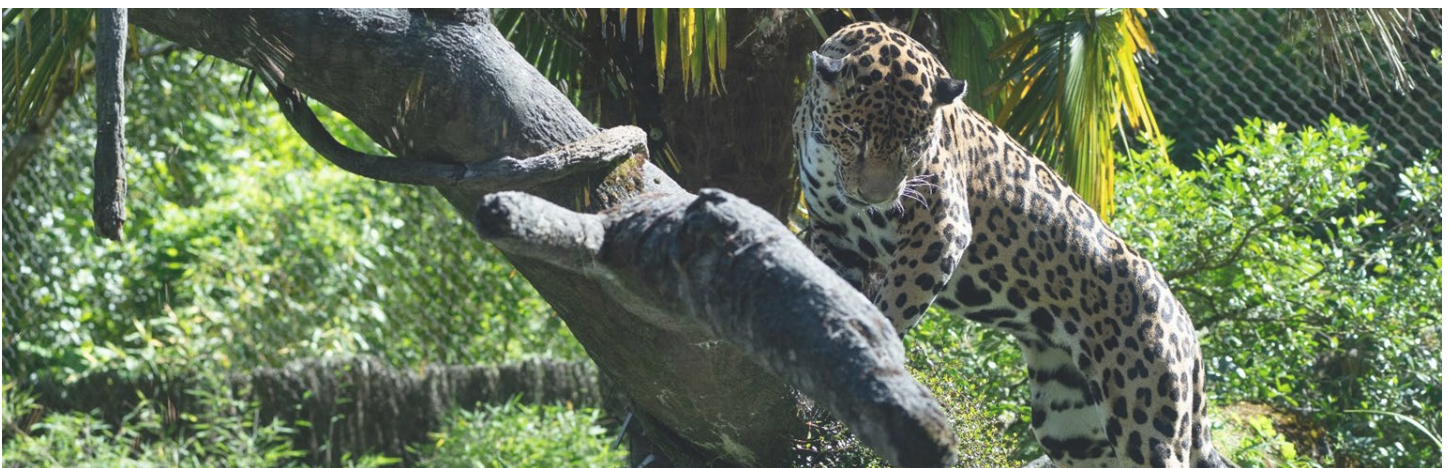
Element 2: Determine What Story You Are Telling

Before crafting a story, it is important to clarify its purpose.¹⁶ We have no shortage of stories to tell in our organizations, for example, you could be sharing:

- The story of a specific animal
- A broader species or conservation story
- A narrative focused on the organization's role in behavior, care, or coexistence

Narrowing your focus helps prevent stories from becoming overwhelming or unfocused,¹⁷ so it is best to choose stories that are relevant to your audience and grounded in place when possible. Helpful framing questions include:¹⁸

- *Who is my audience (specific or general)?*
- *Why does this story matter to them?*
- *What is the one idea or takeaway I want them to remember?*





Element 3: Consider Your Story Arc

Storytellers for Change Framework

Once your audience and purpose are clear, the next step is shaping *how* the story unfolds. During the 2025 Empathy Summit, keynote speaker Luis Ortega from Storytellers for Change shared effective ways to use empathy in storytelling. They emphasized that stories are not just a way to share information but are a way to build empathy through shifting perspective while inviting people to engage with an issue.

Across cultures and contexts, effective stories tend to share common narrative elements: **character, context, challenge, choice, and change**.¹⁹ In conservation storytelling, these elements help audiences understand not just what is happening, but why it matters and where they fit within the story.

Building a Story Arc

A clear story arc provides structure and emotional momentum:

Introduction – Introduce the subject, place, or character. Ground the audience in context and establish relevance.

Challenge – Describe the barrier, threat, or tension. This could be an ecological challenge, a management decision, or a moment of uncertainty.

Choice – Highlight the decisions available in response to the challenge. This step reinforces agency rather than inevitability.

Change – Share outcomes, lessons learned or shifts in understanding. Change may be ongoing rather than resolved.

Closing – End with a takeaway, reflective question, or call to action that reinforces connection and responsibility.²⁰

Strengthening the Arc

- **Focus on concrete details:** Sensory details, visuals, and specific moments help stories feel real and grounded.
- **Balance data and emotion:** Small, digestible data points help support the narrative without overwhelming it.
- **Pause for reflection:** Whether written or spoken, stories benefit from moments that invite audiences to notice what they feel or recognize.
- **Share lived experience:** When appropriate, personal experience can deepen trust and authenticity.²¹



Engaging Critical Hope

Storytellers for Change emphasize the importance of sharing *critical hope* within your stories. This is a concept articulated by educator Jeff Duncan-Andrade and acknowledges real challenges and inequities while still pointing toward possibility. Conservation stories grounded in critical hope avoid false optimism, instead offering realistic pathways forward that honor complexity.²²

Luis Ortega's keynote and deeper exploration of this framework can be [viewed here](#).

Element 4: Consider Traditional Ecological Knowledge

Traditional Ecological Knowledge (TEK) reflects the place-based understandings, practices, and relationships developed by Indigenous and local communities over generations.²³ TEK is not simply a collection of ecological facts, but a dynamic system of knowledge rooted in long-term observation and reciprocal relationships between people and environments.²⁴ It often includes detailed understandings of animal behavior, seasonal cycles, changes in habitat, and interconnections within ecosystems that may not be captured through short-term scientific study alone.

In the context of storytelling, TEK can deepen interpretation by grounding narratives in place, relationship, and lived experience. Rather than presenting species as isolated subjects, TEK-informed storytelling emphasizes interconnectedness, such as how animals, environments, and human communities influence one another over time.²⁵ This approach can create more meaningful and culturally resonant stories, particularly when highlighting local species and ecosystems. Despite its relevance, Indigenous knowledge systems and TEK perspectives remain underrepresented in zoo and aquarium interpretation. Integrating TEK in ethical and collaborative ways can broaden storytelling beyond Western scientific frameworks, offering more holistic narratives that reflect multiple ways of knowing.²⁶

Element 5: Map Out Your Solutions

Framework adapted from NNOCCI²⁷

Many of the stories we share in conservation spaces can be overwhelming. At times, it may feel like we have more challenges than solutions to environmental challenges. However, whenever applicable, it is important that stories move beyond problems toward shared solutions. Effective solution framing:

- Considers community context and existing stressors
- Emphasizes equitable, people-centered approaches
- Highlights collective action and shared benefit
- Makes sustainable choices feel accessible and achievable



Best Practices for Solutions

- **Be specific:** Highlight real programs or actions already underway. Are there organizations you can suggest guests engage with that are working on solutions? Do you have tangible ways that people can get involved in your shared mission?
- **Reinforce solutions with shared values** like protection and responsible management as referenced earlier.
- **Avoid polarizing language**, such as “politics”, “laws”, and “government.” Sometimes, these phrases can lead people to disengage based off their own assumptions of what you will be asking or assuming of them. Instead, you can use language like “civic leaders”, “approaches”, and “programs,” and include inclusive groups such as civic leadership and community collaboration.
- [Check out the ACE for Wildlife Network’s Conservation Action Toolkit for resources, tools and ideas for encouraging guests to take conservation actions.](#)





Anthropomorphism and Storytelling

A key foundation of the ACE for Wildlife Network is that empathy is a key driver of conservation action.²⁸ Empathy relies on the ability to perceive, understand, and care about the experiences or perspectives of another being. Research shows that empathy for animals can encourage people to connect the well-being of individuals to the importance of healthy ecosystems and long-term species survival.²⁹

Within the ACE for Wildlife Network, storytelling often centers animals as individuals, highlighting their behaviors, preferences, and daily experiences while remaining grounded in **biological accuracy**. This approach sometimes draws on *anthropomorphic* language, which has historically been discouraged in zoo and aquarium interpretation. As organizations increasingly integrate empathy into conservation communication, questions about when and how anthropomorphism is appropriate have become more common.

Critical Anthropomorphism

Critical anthropomorphism is a strategic, research-informed approach that uses carefully chosen human-relevant language to support understanding and empathy without misrepresenting animal biology or behavior. Rather than projecting human emotions indiscriminately onto animals, critical anthropomorphism is grounded in scientific knowledge of a species' natural history, cognition, and behavior.

Critical Anthropomorphism and Storytelling

Research examining anthropomorphism in conservation communication has found that, when used intentionally:

- It increases feelings of connectedness with animals³⁰
- It supports the development of empathy³¹
- It can positively shift perceptions of animals³²
- It increases willingness to support conservation action³³

Addressing Common Concerns

Concerns about anthropomorphism often stem from fears of misinformation, oversimplification, or loss of scientific credibility. Critical anthropomorphism addresses these concerns by asking key questions:

- What type of anthropomorphism is being used?
- Is it grounded in observable behavior or scientific evidence?
- Does it increase understanding rather than replace explanation?
- Is it being used to invite empathy, not erase difference?



When used thoughtfully, anthropomorphic framing can act as a bridge, helping audiences relate to animals while still respecting their distinct ways of being. Critical anthropomorphism is also a crucial empathy practice when fostering empathy for species that are labeled as “non-charismatic” (e.g., animals without faces, or animals that may evoke fear such as spiders). Because some groups aren’t naturally drawn to these kinds of species, using familiar language to communicate animal behaviors that are rooted in science can increase people’s emotional connection to animals.³⁴ In the paper [Comparing Empathy for Wildlife Across the Animal Kingdom](#),³⁵ authors reviewed a study that suggested anthropomorphism can be the driving factor in evoking empathy for species across the animal kingdom. This study identified that people are more likely to attribute human-like qualities to animals that are phylogenetically closer to us (animals that share a more recent ancestry), and this tendency is directly linked to higher levels of empathy. In other words, anthropomorphism functions as the mechanism that drives emotional connection, showing that people care more about species they perceive as having human-like thoughts and experiences. This creates an empathy gap, where less “charismatic” or more distantly related species receive less concern. However, this same mechanism can be applied intentionally to highlight relatable, human-like traits in less familiar or less charismatic species, communicators can increase empathy and strengthen public connection to those animals.³⁶

The purpose of this toolkit is not to provide a comprehensive review of anthropomorphism literature. However, our Network has developed a dedicated literature review that explores this topic in greater depth. Readers are encouraged to [consult this review](#) to better understand the role of critical anthropomorphism in ethical, effective conservation storytelling.





Examples from the Network

With a shared understanding of the why and how of storytelling, this section of the toolkit highlights how these practices are already taking shape across the ACE for Wildlife Network. Through learning groups, organizational projects share outs, and Network discussion, storytelling continues to evolve as a core conservation strategy.

Grant Projects – Applications of Storytelling through Signage and Animal Biographies

The following projects were funded by the Advancing Empathy Grant Program and were aimed at creating or updating zoo signage to foster empathy for wildlife. Woodland Park Zoo's Advancing Empathy (AE) Grant Program was launched in 2019 to expand the use of empathy practices and build community and collaboration with other Association of Zoos and Aquarium (AZA)-accredited zoos and aquariums. As part of its AE Initiative, Woodland Park Zoo was privately funded to develop a grant program that builds capacity to foster empathy for wildlife in accredited zoos and aquariums across Alaska, Idaho, Minnesota, Montana, North Dakota, Washington, and Wisconsin. The AE Grant Program supports organizational efforts to plan, build, and/or expand practices and programs that foster empathy for animals and wildlife. Through grant support, recipients are developing the resources and expertise they need to increase the long-term impact of empathy practices and programs at their zoo or aquarium and have a lasting influence on their organization and their peers.

Storytelling can be applied in several ways and is also dependent on several factors such as whose story we are telling, as mentioned previously in this toolkit. Some tell the stories of the individual species, while another may tell the larger story of the conservation of this animal. The following grant projects integrated storytelling into projects interpretive master plans and interpretive elements like signage and primarily focus on highlighting the stories and information on individual animals to differentiate them as unique individuals. There are a vast number of ways to integrate stories into the many facets of our work, and the Network is continuing to explore and share how organizations are engaging with this empathy practice. [You can find the contents of this toolkit here under the signage toolkit button.](#)

We also have two grants that are centered around storytelling that are currently in progress. The first project, *Narratives for Nature: Inspiring Action Through Empathy and Storytelling at the Minnesota Zoo* will train education staff in effective storytelling techniques and certify them as interpretive guides. This training will empower staff to implement best practices in empathy more effectively across programs by sharing the stories on the animals in the zoo's care and their wild counterparts. By incorporating empathy principles into zoo classes, outreach, and wildlife trafficking education, this project ensures more impactful messaging and deeper connections between visitors and the animals at Minnesota Zoo. As a part of this grant,



Minnesota Zoo worked with Learning Unbound to create a Storytelling in Education Literature Scan. [This literature scan](#) includes resources from a diverse perspective that provide examples of how stories can be used throughout different age groups and disciplines.

In addition, *Henry Vilas Zoo's Community Engagement through Conservation Action & Storytelling in a Modular Exhibit Space* plans to empower staff, volunteers, and community members to participate in conservation actions and share their experiences through impactful storytelling. A modular exhibit will transform underutilized spaces into dynamic storytelling hubs, illustrating collective conservation efforts with a replicable model for other organizations.

We look forward to sharing the outcomes and successes of this project with the Network upon their conclusion.

Network Projects – That Showcase the Use of Storytelling

The following project share outs come from organizations within the Network that are working on initiatives related to storytelling for conservation action. Each project was highlighted and featured through our Empathy Matters Newsletter. Want to learn more about any of these projects? Feel free to reach out to us at empathy@zoo.org and we'd be happy to connect you with a contact for these stories. [You can view full newsletters here.](#)

Empathy Matters 2025, page 5: Measuring the Power of Storytelling at Cheyenne Mountain Zoo

Colorado State University student Cammie Murtha and Cheyenne Mountain Zoo test whether story-based keeper talks could inspire stronger emotional engagement and greater conservation action than traditional fact-based presentations.

Empathy Matters 2025, page 18: Fostering Empathy for Tapirs through Storytelling and Science

The Belize Zoo and Tropical Education Center's outreach program combined storytelling, science, and hands-on learning to foster empathy for the Central American tapir.

Empathy Matters 2025, page 19: Raising Future Storytellers

Zoological Society of Milwaukee shares their unique theater camp program that uses theater to bring conservation focused performances to audiences and teaches young performers how to spark empathy in others.

Empathy Matters 2025, page 28: The Power of Empathy in Animal Adoptions

This feature teaches about Grizzly and Wolf Discovery Center's successful animal adoption program that personalizes a traditionally general process to allow donors to sponsor specific animals creating emotional investment and increasing continued support.



Empathy Matters 2025, page 43: Disney's Animal Kingdom: The Magic of Storytelling

Disney's Animal Kingdom showcases their organization's close ties to storytelling, including how staff are trained on communication skills, understanding their audience, engaging with all ages, and incorporating practices such as activating imagination, and critical anthropomorphism.

Empathy Matters 2024, page 11: Connecting Communities to Conservation: Hope for the Wild Video Series

This project showcases Blank Park Zoo's "Hope for the Wild" video series which shares the stories of individual animals in their care and highlights the crucial conservation work being done for them.

Empathetic Storytelling through Social Media

There are numerous ways to include elements of storytelling into social media and communications throughout our organizations. This is something our Network is beginning to explore, and the following resources provide insight into how to approach this application of storytelling.

Resource I: [Learning group – social media and effective empathy practices](#)

During this learning group, Network Members from the International Crane Foundation, Racine Zoo, and ZooMontana share their successes and struggles with infusing empathy practices into their social media pages. *Due to technology issues during the event, some parts of the recording are choppy.

Resource II: Project share out Deep-dive digital messaging that builds lasting connections

The following project share-out highlights The Alaska SeaLife Center's success in their deliberate, narrative-driven social media strategy that highlights the rehabilitation story of individual animals and gives readers a closer look into the ins and outs of conservation partners. *Empathy Matters 2025, page 3*

Resource III: [Learning group: Using empathy to tell better conservation focused stories \(part I and II\)](#)

Part one of this learning group examines how individuals and organizations can determine which conservation stories are the ones they tell, with examples from speakers at the Minnesota Zoo, Racine Zoo, and the Zoological Society of Milwaukee. Part two explores how to exercise empathy in the crafting and telling of the stories themselves.



Sharing Animal Stories: Approaches Across the Network

Many organizations in our Network care for animals and sharing their stories internally and externally can often present challenges. Staff and guests alike benefit from a rich understanding of who is in their care as this helps us better communicate the personalities, needs, and conservation stories that inspire caring action in our audiences. The following organizations in our Network have adapted different versions of animal story sites that help guests or staff learn more about the animals in their care.

Increasing Positive Perception of Disability Through Depictions of Animals with Disabilities Article

This study examined how different kinds of signage influence the public's perception and attitudes towards animals and people with disabilities. Researchers observed how visitors reacted to animals based on no signage, simple signage, or detailed signage. Through an online survey experiment, participants that viewed a short story along with a photo for an animal with a disability led to more emotional connection and positive perceptions toward both people and animals with a disability. The findings conclude that clear and thoughtful communication can be used as a tool for reducing stigma and increasing empathy for wildlife. [You can read the entire article here.](#)

Oakland Zoo's Empathy Guide

Oakland Zoo's "Empathy Guide" is an internal resource that contains a repository of stories about animals in Oakland Zoo's care, presenting their unique personalities, needs, and preferences. This guide has been instrumental in helping internal staff emphasize empathic messaging with zoo guests.

This tool was designed to bridge the knowledge gap between animal care teams and educators, and the creation process began by generating buy-in and trust from the other zoo departments. Through framing, storytelling, and informed perspective taking, interpreters now can present the animals in a more personalized light which can help guests strengthen their ability to empathize with wildlife. You can learn more about the process and development of this resource [through this video.](#)

San Diego Zoo and Wildlife Alliance's Animals & Plants Informational Website

An incredible example of showcasing the animals *and* plants within an organization is the San Diego Zoo and Wildlife Alliance's external website that provides a vast and comprehensive overview of species that can be found at their zoo. Located on their zoo's website, visitors to this site can explore species from categories such as amphibians, arthropods, birds, fish, mammals, and reptiles. While not every page has stories about specific animals, vast biological information can be used as building blocks to tell deeper stories about animals of interest, which can be instrumental in framing animal stories or animal profiles at your own individual zoo. [Visit this page here.](#)



Woodland Park Zoo's Animal Story Site

Developed by the Advancing Empathy Team at Woodland Park Zoo, this internal site is an accessible place to learn more about the zoo's animals and their unique stories. One of their team's goals was to provide staff and volunteers foundational information to encourage staff and volunteers to learn about our animals, how the zoo cares for them, and how people can support our animals in the wild. Once on an individual animal page, viewers can learn anything from biological information, conservation information, and the individual stories and personalities of each animal. To learn more about the process of this creation, you can [watch this video here](#).

Woodland Park Zoo's Animal Stories Site is maintained by Sarah Panciroli (an active team member supporting the ACE for Wildlife Network). For questions concerning this site or if you are interested in building your own via SharePoint, please do not hesitate to reach out to empathy@zoo.org!





Conclusion

It's inspiring to see the Network's engagement with storytelling as empathy practice! From learning groups to literature scans, this work is showing up in many different ways, and we are proud to be sharing the vast number of resources that showcase how different organizations are engaging with this empathy practice. We also look forward to seeing how this practice can evolve and grow, such as diving deeper into telling the stories of our organizations, conservation programs, and beyond. Outside of this toolkit, there are so many other incredible resources and literature that address this initiative. If your organization has a storytelling practice you would like to share or if you have suggestions for other resources to live in this document, we invite you to contribute to future versions of this toolkit by contacting empathy@zoo.org.





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Endnotes

¹Toomey, 2023

²Toomey, 2023

³Toomey, 2023

⁴Kusmanoff et al., 2020

⁵Kahneman, 2011

⁶American Academy of Arts & Sciences, 2019

⁷National Academies of Sciences, Engineering, and Medicine, 2016

⁸Kollmuss et al., 2002

⁹Morris et al., 2019

¹⁰Green et al., 2000

¹¹Heath et al., 2007

¹²Johnson 2012

¹³National Network for Ocean and Climate Change Interpretation (NNOCCI)

¹⁴Kahan et al., 2012

¹⁵Frameworks institute

¹⁶Nisbet, 2009

¹⁷Sweller, 1988

¹⁸National Association for Interpretation (NAI)

¹⁹Storytellers for change

²⁰Storytellers for change

²¹Storytellers for change

²²Duncan-Andrade, 2009

²³Vaccaro et al., 2025

²⁴Berkes 2012

²⁵National Park Service

²⁶Vaccaro et al., 2025

²⁷National Network for Ocean and Climate Change Interpretation (NNOCCI)

²⁸Ardoin et al., 2025

²⁹Burnet et al.,

³⁰Epley et al., 2008; Tam, 2014; Tam et al., 2013; Waytz et al., 2010; Williams et al., 2021

³¹Chan, 2012; Harrison & Hall, 2010; Hill, 1995; Loughnan & Davies, 2020; Mameli & Bortolotti, 2006; Niemyjska et al., 2018; Royzman & Kumar, 2001; Urquiza-Haas & Kotrschal, 2015; Waytz et al., 2010

³²Chan, 2012; Manfredo et al., 2020; Martín-Forés et al., 2013; Niemyjska et al., 2018; Root-Bernstein et al., 2013; Williams et al., 2021

³³Chan, 2012; Manfredo et al., 2020; Martín-Forés et al., 2013; Niemyjska et al., 2018; Root-Bernstein et al., 2013; Tam, 2014; Tam, 2015; Tam et al., 2013; Williams et al., 2021

³⁴Burnet et al., 2024

³⁵Ardoin et al., 2025

³⁶Harrison et al., 2010