

# MuseumsForward

## Exploration of how zoos are using Instagram to further their conservation education & efforts

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### Abstract

This study explores how and the extent to which zoos are using Instagram as a platform to further their conservation efforts. Document analysis of six zoos' Instagram posts and interviews with museum professionals in charge of posting to the zoo's social media platforms, specifically Instagram, were the two methods employed in this study. The interview results suggested that conservation messaging was not a main priority when posting to Instagram. Rather, zoos' priorities were to build connections between animals and their audiences, drive attendance, and educate their followers when possible. However, when analyzing Instagram posts, conservation-related posts were the third most frequently posted theme, behind anthropomorphic and general posts. Of the conservation-related posts, the most frequent types were educational and action-oriented posts. Educational posts and posts that provided action-oriented steps for audiences to take related to a specific conservation initiative received the most likes out of the conservation-related posts. The results of this study show how zoos and other conservation organizations can utilize Instagram to create greater impact and longevity in their conservation efforts.

### Keywords

Instagram; social media; conservation education; zoos

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## Introduction

The world is facing a climate crisis that is putting increased pressure on the Earth's ecology and climate (Pearson et al., 2016). This crisis has arisen due to human behaviors and lifestyles, an exponentially growing population, pollution, over-exploitation of natural resources, and the burning of fossil fuels (Barongi et al., 2015). These actions have led to dramatic changes in climates around the world and have greatly accelerated species extinction (Pearson et al., 2016). On top of this, the climate and biodiversity crises are often hidden from the majority of populations due to people having little contact with nature in their day-to-day lives (Clayton et al., 2017; Pearson et al., 2014; Grajal et al., 2016; Grajal et al., 2018). These crises have created an urgent need for action to reduce human's impact on the environment. Importantly, while humans are one of the root causes for the climate and biodiversity crises, they are also a crucial asset in perpetuating conservation efforts and pro-environmental behaviors (Barongi et al., 2015). Conservation education provides people opportunities to learn about how their actions impact specific environments and how to adjust their behaviors to help save the planet and its biodiversity by participating in pro-environmental behaviors. For this study, *conservation* is defined as "securing populations of species in natural habitats for the long term" (Barongi et al., 2015, p. 12) and *pro-environmental behaviors* refers to all "environmentally friendly and sustainable behaviors" (Ballew et al., 2015, p. 10622).

For the general public, science-based learning most often happens in free-choice learning environments, such as zoos and aquariums (Grajal et al., 2016). Zoos, therefore, have the opportunity to educate their visitors about conservation, climate change, global biodiversity, and how individuals can act in a pro-environmental manner. The World Association of Zoos and Aquariums (WAZA) and the Association of Zoos and Aquariums (AZA) have identified conservation education and efforts as a main focus for their institutions and affiliated organizations, with AZA-accredited zoos educating over 180 million visitors each year (Falk et al., 2007; International Zoo Educators Association, n.d.).

Research studies have shown that zoo educational programs and exhibits increase visitors' belief that zoos play an important role in conservation, animal welfare, and developing audiences' connection to nature (Falk et al. 2007; Moss & Esson, 2014; Hughes, 2013; Bueddefeld & Van Winkle, 2017; McElroy, 2015; Kelly et al., 2014; Grajal et al., 2016). However, while studies show that zoos are having success educating their visitors in-person, they are running into the issue of their conservation educational impact lacking longevity and consistency once their visitors leave (Hughes, 2013; Bueddefeld & Van Winkle, 2017). A

potential solution to this problem is social media and other outlets for educational content outside of the walls of the zoo. Along with educating their visitors onsite, zoos are using other channels, such as social media, to promote their organization, animals, and conservation efforts to their online audiences. The growth in popularity of social media platforms (i.e., Facebook, Instagram, and Twitter) heightens zoos' potential to promote conservation efforts and education and generate pro-environmental behaviors in the general public (Ballew et al., 2015; Kidd et al., 2019), making it a possible solution in creating longevity and pro-environmental behaviors in zoo audiences.

This research study is situated in the problem of longevity of conservation education in visitors because little research has been done regarding how zoos use social media as a platform for furthering conservation education, and in particular, how Instagram as a platform can help expand the sphere of the zoo's influence. The purpose of this research study is to explore how and the extent to which zoos are using Instagram as a platform to further their conservation efforts. This study is guided by three main research questions:

1. What is the role of Instagram in zoos' conservation strategies? What are their conservation goals when posting to Instagram?
2. What type of conservation-oriented content are zoos posting to Instagram?
3. How are audiences responding to zoos' conservation posts on Instagram?

## Literature Review

To understand the problem area and context of this research study, the literature review focuses on two major sections: conservation and social media, while also looking at how zoos fit into both areas and how they are each interconnected.

### Conservation

Conservation education is the process of positively "influencing people's attitudes, emotions, knowledge, and behaviors about wildlife and wild places" (International Zoo Educators Association, n.d.) and/or improving "natural resource management by helping people become aware of the value of the natural resources, examining the threats... and motivating them to improve environmental management" (Lehnhardt, n.d., p. 1). The goal of conservation education is to help

individuals acquire knowledge and eventually adopt pro-environmental behaviors in their everyday lives (Clayton et al., 2017). Conservation education can be delivered using a variety of techniques and platforms. Traditional conservation messaging uses the knowledge-deficit model which assumes people will adopt a given behavior if they are informed about the benefits it will bring (Kidd et al., 2019; Grajal et al., 2016). This model presumes that telling someone to behave in a certain way and providing reasoning for why they should behave in a certain way directly affects the adoptions of said behavior (Grajal et al., 2016). Psychological studies have shown that this model does not often lead to a change in behavior because motivation is a driving force in behavior change (Schultz, 2011; Grajal et al., 2016). Rather than knowledge alone, people need to be motivated to carry out a specific behavior (Schultz, 2011; Grajal et al., 2016). This is especially true for biodiversity and conservation efforts because, unlike observable and measurable pro-environmental behaviors like energy reduction, which can have an economic benefit to the individual and visible behavior changes, biodiversity conservation efforts and actions may not have a direct individual effort or impact (Kidd et al., 2019), making it more difficult to engage audiences in this behavior.

For conservation messaging and education efforts to be successful and result in pro-environmental behavior, conservation education efforts need to include a motivational element (Schultz, 2011). Motivation needs to be combined with knowledge for visitors to “recognize that a problem exists and to make the conceptual link between threats to biodiversity and their own behavior” (Grajal et al., 2016, p. 324). Recognizing one’s own behavior and *self-efficacy* (the perception that one can successfully complete one’s intended actions) is connected to pro-environmental behavior (Clayton et al., 2017). Describing explicit actions that can be taken in conservation education and messaging can help enhance self-efficacy in audiences and lead to more pro-environmental behavior (Clayton et al., 2017).

Conservation messaging and education also requires that the public reconnect with nature (Barongi et al., 2015). There is currently an increased personal detachment from nature due to increased urbanization (Ballew et al., 2015; Grajal et al., 2016; Grajal et al., 2018; Pearson et al., 2014; Clayton et al., 2017). Increased urbanization results in the causes and consequences of climate change and the biodiversity crisis becoming distant, depersonalized, or all together unknown (Grajal et al., 2016). A growing way to combat the effects of urbanization is to create person-nature connections which increases empathetic and protective feelings towards the natural environment,

which is associated with pro-environmental behaviors (Ballew et al., 2015).

Zoos have the ability to create connections between people, nature, and animals, which is one of their greatest conservation assets (Grajal et al., 2018). As free-choice learning environments, which are places outside of formal education settings in which learning about science and other topics occurs, studies have shown that zoos and aquariums are in a unique position to enhance public understanding of wildlife and conservation because they are able to help their visitors feel more connected to nature through interactions with habitats and animals (Grajal et al., 2016). This then results in encouraging attitude and behavioral changes that aid conservation efforts (Falk et al., 2007). Conservation education in zoos often occurs in the form of “signage, interactive interpretation, public talks and animal demonstrations” (Moss & Esson, 2014, p. 2). These interactions help make visitors experience a stronger connection to nature and consider their role in environmental problems and conservation actions (Falk et al. 2007; Barongi et al., 2015).

While studies have shown that zoos help people feel more connected to nature and aware of conservation efforts, longitudinal studies on this phenomenon show that while visitors state they *intend* to change their behavior and practice pro-environmental behaviors, visitor experiences do not often lead to behavior change post-visit (Hughes, 2013; Bueddefeld & Van Winkle, 2017). A study done by Karen Hughes (2013) showed that the majority of visitors who intended to change their behavior did not, suggesting that it is important for zoos and aquariums to provide post-visit support and continued conservation messaging to promote pro-environmental behaviors. Studies have shown that repeat visitors to zoos retain more conservation information, develop more positive attitudes towards conservation, and participate in more pro-environmental behaviors than first and single-time visitors (Yalowitz, 2004; Lukas & Ross, 2005; Miller et al., 2013; Clayton et al., 2017), further emphasizing the importance of sustained conservation messaging from zoos.

### **Social Media**

Social media has become a popular way for people and organizations to communicate and share with one another. Social media is defined as being a “web-based technology that creates interactive platforms for individuals and communities to share, create, and discuss user-generated content (Kietzmann et al., 2011). As discussed by Ballew et al.

(2015), social media and online communities are important sources for developing relationships and connections, which is key to engaging people in community issues. Social media's functions can be characterized in three ways: (1) *informational*, which involves sharing knowledge; (2) *relational*, creating social connections in online communities; and (3) *experiential*, which are opportunities for active online engagement (Ballew et al., 2015).

One particular issue social media platforms can highlight is conservation and the impact of climate change. Social media platforms are increasingly being used to promote biodiversity and conservation issues (Kidd et al., 2019). A study aimed at researching environmental knowledge of residents in Hong Kong found that nearly half of younger adults listed social media as a source for learning about environmental knowledge (Cheung et al., 2015). More specifically, social media can be used to continue engaging zoo visitors and audiences with conservation education and messaging to help elongate the impact of their conservation efforts (Rose et al., 2018; Hughes, 2013; Falk et al., 2007).

### **Instagram & Conservation**

Instagram is a more visual-based social media platform that appeals to different audiences compared to Facebook and Twitter. As of February 2020, Instagram has more than one billion monthly active users, and more than 500 million daily active users, with more than 90% of users following business and organization related accounts (Tran, 2020). Further, the largest user audience of Instagram is between the ages of 18-29 (Tran, 2020; Perrin & Anderson, 2019). Instagram users tend to be more engaged than the average social media users and produce higher engagement rates for business accounts compared to Facebook and Twitter (Later, 2019). As a platform, Instagram provides the opportunity for relational and experiential opportunities to engage audiences (Ballew et al., 2015)

Zoos have the potential to elicit empathy and greater connection to nature in their followers through the images and videos they post due to Instagram being the most visual-based social media platform. Organizations like the World Wildlife Fund have found that beautiful imagery of wildlife and landscapes are very popular on Instagram, and research done on environmental nonprofits' use of nature imagery showed these images can contribute to finding solutions to environmental concerns (i Team, 2018). Similarly, photographer and filmmaker Sean Gallagher has taken to Instagram to create an

awareness campaign called “Everyday Extinction,” where he uses photographs to educate the public about the significance of biodiversity loss (Belbarbi, 2017). Gallagher states, “Photography has the power to illuminate and highlight issues” and be used as a tool to educate the public (Belbarbi, 2017). Gallagher further explained that Instagram allows for the world to see these impactful photographs and get inspired to take action (Belbarbi, 2017). Conservation photography and imagery are another avenue to combat urbanization and detachment from nature, and to educate the public about environmental realities by making them visible and digestible for audiences to see and understand (Pearson et al., 2016). Instagram’s visual-based platform can be useful for zoos and aquariums to continue educating their audiences on conservation efforts as well as potentially evoke strong emotions that lead to pro-environmental behavior.

## Methodology

This research study used a survey design to broadly assess how zoos are promoting their conservation efforts and education through their Instagram posts. The methodology of this study was adapted from a study done by Rose et al. (2018). In their study, Rose et al. (2018) collected and analyzed the themes of Facebook posts from nine British and Irish Associated Zoos and Aquariums (BIAZA)-accredited zoos in the United Kingdom and Ireland.

For this study, seventeen zoos were identified and contacted to participate. Museum professionals in charge of posting to social media at each of these sites were contacted to see if they would be interested in participating in this research study. Of the seventeen zoos contacted, six zoos were selected for this study. The sites chosen for this research study were selected based on the following criteria, they had: AZA-accreditation, over 500 animals in their care, and had an active Instagram account with at least 3-5 posts/week. These criteria were adapted from Rose et al. (2018). Sites selected for this study also needed to have a strong conservation focus, which was determined by using the AZA's *2019 Annual Report on Conservation and Science (ARCS)* to identify accredited zoos that reported a large number of conservation efforts in field conservation, education programming, green business practices, and mission-focused research (Chace et al., 2019). Lastly, the geographic location of each site was considered to ensure a regional representation of the United States. The following six zoos were selected to participate in this research study.

1. **Birmingham Zoo**, Birmingham, AL  
Mission statement: *Inspiring Passion to Conserve the Natural World.*  
700 animals in their care.
2. **Denver Zoo**, Denver, CO  
Mission Statement: *Inspiring Communities to Save Wildlife for Future Generations.*  
4,125 animals in their care.
3. **Maryland Zoo in Baltimore (MZiB)**, Baltimore, MD  
Mission statement: *To inspire and educate people to join with it in the active support and conservation of wildlife and wild places.*  
1,200 animals in their care.
4. **Oklahoma City Zoo (OKC)**, Oklahoma City, OK  
Mission statement: *Oklahoma's premier destination connecting people and our world's vanishing wildlife and wild places.*  
1,900 animals in their care.
5. **Phoenix Zoo: Arizona Center for Nature Conservation**, Phoenix, AZ  
Mission statement: *Arizona Center for Nature Conservation advances the stewardship and conservation of animals and their habitats while providing experiences that inspire people and motivate them to care for the natural world.*  
3,000 animals in their care.
6. **Woodland Park Zoo (WPZ)**, Seattle, WA  
Mission Statement: *Woodland Park Zoo saves wildlife and inspires everyone to make conservation a priority in their lives.*  
1,098 animals in their care.

Two methods were used to collect data from the six zoos who participated in this study.

### **Document Analysis**

The first method consisted of collecting already existing data from each sites' Instagram accounts to analyze and gain insights for the second

and third research questions. Instagram posts from June–August 2019 were collected and analyzed. This three-month time frame was chosen to ensure the data was stable since it was unlikely that a number of people would interact with year and a half old posts. Further, during this time frame and duration, zoos are usually the busiest with summer programming and events, and post, on average, approximately 3-5 times per week. While not every post was related to conservation, having nearly 100 unique posts from each site provided insight into how these six zoos' conservation efforts fit into their overall social media goals. For each post, a description of the image/video, caption, and follower interaction (e.g., likes and views) were collected.

The Instagram data was “captured” during February to March 2021 and stored as snapshots in PowerPoint slides and Excel to facilitate analysis. The Instagram posts were organized by research site and analyzed using existing and emergent coding rubrics. The coding rubric developed by Rose et al. (2018) was adapted to code the themes of each Instagram post (i.e., behavior; birth, or stories about young animals; death announcement; conservation-related; new arrivals to the zoo; education, visits by educational institutions; health and well-being of animals; anthropomorphic, animal birthdays, personalities, or naming; and general, promotion of zoo events and zoo updates). An emergent coding rubric was then developed to code the animal species/subjects presented in each post (e.g., giraffe, lizard, grizzly bear, flamingo, etc.). Lastly, each animal was given two additional codes, the first based on the International Union for Conservation of Nature (IUCN) (2021) *Red List of Threatened Species* classification, and the second by animal class (mammals, birds, reptiles, amphibians, fish, insects, and invertebrates). Following the coding of each post, each code was given a numeric value in order to provide basic descriptive analysis to find patterns and themes across the data.

## **Interviews**

Interviews were conducted with museum professionals from each site to help answer the first research question and gather more in-depth information on data gathered from the first method of document analysis. Interview participants were in charge of posting to social media, specifically Instagram. Each interview consisted of open-ended questions, which were split up into three overlapping topic areas: conservation, social media, and Instagram. Interview participants were asked about their organization's conservation goals and how they carry out those goals. Related to social media, participants were asked about

the role of social media at their organization and how they are using each platform. Finally, the last part of the interview asked how each organization was using Instagram specifically, who their Instagram audiences were and how they were engaging with posts, what type of content they typically published to Instagram, and how conservation messaging fit into their Instagram goals.

Interviews were conducted during February and March 2021. Due to there being a small number of interviews, emergent coding rubrics were not used to analyze each interview. Instead, the interviews were transcribed using Zoom technology and read through to find individual themes and anecdotal quotes to provide insight to the study's research questions.

## Results

This section describes the data collected from the Instagram posts and interviews from the six sites mentioned above.

### Instagram Data

A total of 608 posts were collected and analyzed from the six zoos chosen for this study. Table 1 shows the number and make up of Instagram followers by each zoo. This is anecdotal data collected from interviewees. Overall, Instagram followers across all six sites are believed to be women between 24 and 44.

**Table 1**

*Instagram audience data from each site*

	Birmingham Zoo	Denver Zoo	MZiB	OKC Zoo	Phoenix Zoo	WPZ
Instagram Audiences	Majority age range is 17-44.	Age: 25-44 (65%) 18-24 (10%)	Majority age range is 22-47 and women.	Age: 25-34 (33%) 35-44 (29%) 75% are women.	Majority age is 25-44. 71.1% are women	Majority age group is millennials and women.

As shown in Table 2, the posts were coded into general themes using an adapted coding rubric from Rose et al. (2018). The most frequent themed posts were anthropomorphic (28%), which were posts featuring well-known animals at the zoo or posts that celebrated animal birthdays, naming of animals, or referred to animals as personalities. General posts (26%), posts that promoted zoo programs or events, and conservation-related posts (26%) were the second most frequent themes posted. Notably, WPZ was the only zoo who had conservation-related posts as their most frequent theme (45%).

**Table 2**

*Instagram posts' general themes by site and overall.*

	Birmingham Zoo n=37	Denver Zoo n=108	MZiB n=95	OKC Zoo n=188	Phoenix Zoo n=94	WPZ n=86	Total n=608
Anthropomorphic	27%	20%	32%	34%	28%	24%	28%
General	54%	11%	32%	29%	15%	34%	26%
Conservation - related	11%	27%	12%	31%	18%	45%	26%
Behavior	5%	35%	18%	3%	28%	6%	15%
Birth	0%	12%	8%	5%	14%	2%	8%
Health & Wellbeing	3%	7%	4%	5%	4%	0%	4%
New Arrivals	3%	2%	0%	2%	2%	2%	2%
Death	3%	1%	0%	1%	1%	0%	1%
Education	0%	1%	0%	0%	0%	0%	>1%

*Note:* Some posts were coded for more than one theme

Conservation-related posts were divided into four subcategories (some posts were coded for more than one conservation category): education, posts that provided information about threats to a species or a specific initiative; action-oriented for the audience, posts which provided actions for Instagram followers to take related to conservation efforts; action-oriented by the zoo, posts describing conservation-fieldwork or

other conservation initiatives the zoo is actively participating in; and other, posts that describe conservation efforts more generally or conservation-related fundraising events. As shown in Table 3, across all six sites, 40% of conservation-related posts focused on educating their audiences about a specific topic. The next most frequent type of conservation-related posts described action-oriented steps the zoo was taking in conservation initiatives (25%). WPZ had the highest percentage of posts that described action-oriented steps for their audience to take related to conservation efforts (38%), and the Phoenix Zoo had the most posts that described their organization’s direct conservation efforts (53%).

**Table 3**

*Break down of Conservation-Related posts by specific theme and percentage (%).*

	Birmingham Zoo n=4	Denver Zoo n=29	MZiB n=11	OKC Zoo n=58	Phoenix Zoo n=17	WPZ n=39	Total n=158
Education	75%	48%	27%	36%	41%	38%	40%
Action-Oriented (by zoo)	25%	24%	27%	22%	53%	18%	25%
Action-Oriented (for audience)	0%	21%	18%	16%	6%	38%	21%
Other	0%	7%	27%	26%	0%	5%	14%

*Note:* Some posts were coded for more than one theme

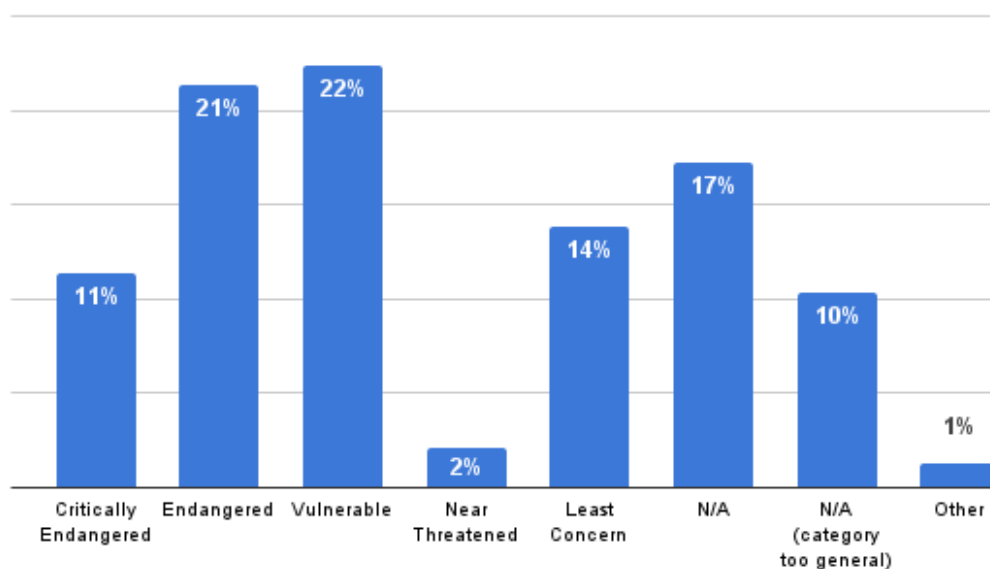
Over 122 different animal species and/or subjects were the topics of the aggregated Instagram posts. Out of the 608 posts, the most frequent species were: giraffes (n=41), lions (n=37), Asian elephants (n=35), orangutans (n=21), red pandas (n=21), and flamingos (n=21). Each species was then combined into their animal classes to allow for cross-examination with other data. Mammals were the dominant animal class (n=388), followed by people/zoo buildings (n=101), and birds (n=65). Fish, invertebrates, reptiles, amphibians, and insects made

up less than 9% of posts' subjects. Mammals were subjects of 59% of conservation-related posts.

Next, each individual animal species was coded based on the IUCN Red List of Threatened Species classification (see Figure 1). Across the 608 posts, 54% of animals were species that are considered critically endangered, endangered, or vulnerable. 22% of conservation-related posts' subjects were categorized as vulnerable, followed by 21% being endangered, and 11% being considered critically endangered.

### Figure 1

*Total counts of post subjects by IUCN Red List of Threatened Species categorizations (n=608).*



The number of likes were collected for each post. The total average of likes across the 608 posts collected was 1,084 likes. Death related posts had highest average of likes ( $\bar{x}$ =2066), followed by new arrivals ( $\bar{x}$ =1598), births ( $\bar{x}$ =1393), and anthropomorphic ( $\bar{x}$ =1270) themed posts. Conservation-related posts had the second lowest average of likes ( $\bar{x}$ =857), above education ( $\bar{x}$ =448) which had the lowest average of likes. The average number of likes for conservation-related posts broken down into subcategories was education ( $\bar{x}$ =947); action-oriented for the audience ( $\bar{x}$ =776); action-oriented by the zoo ( $\bar{x}$ =906); and other ( $\bar{x}$ =800). Conservation posts that focused on educating had the highest average number of likes compared to other conservation-related posts. Lastly, mammals received the highest average number of likes ( $\bar{x}$ =1212) followed by birds ( $\bar{x}$ =979).

## Themes from the Interview Data

A total of six interviews were conducted with museum professionals in charge of posting to social media from each zoo in this study. Each interview was read through for common themes related to the three primary areas discussed in the interviews, which were: conservation, social media, and Instagram.

### *Conservation*

Zoos' conservation missions and goals were the first topic area discussed during the interviews. Three main themes were discussed about how participants' organizations approached conservation and how they are achieving their conservation goals. In general, participants stated their goals were to inspire their zoo audiences about conservation, communicate the zoo's conservation efforts and educate their audiences about conservation initiatives, and to get people (i.e., their audiences) to care about animals in the zoo's care and in the wild.

"Inspiring communities to save wildlife for future generations..."

"Our main goal is to start out with just talking about [conservation]... Communication of conservation is a really important part of doing the work..."

"Our mission is to conserve wildlife in small pieces and educate people..."

"Our conservation goal is to get everyone to care about animals in the wild, globally and also in our backyard..."

### *Social Media*

In terms of each zoo's social media goals, there were four overlapping themes that arose. The two most common themes that were discussed by each site were, first, the goal to have animals be at the center of their posts, and second, to engage people with the zoo when they are not physically visiting.

"Look at social media as a vehicle to engage people with the zoo when they're not at the zoo..."

Another goal discussed was to build connections between their online audiences and animals. This priority could take on different approaches, such as through *storytelling*, continuous exposure to seeing specific animals or species, or creating *empathy*. This goal also included educating audiences about animals and conservation, when possible, and building those connections between specific species and their conservation needs.

“One thing for us is to use [social media] as a tool for exposure and for getting people to connect with the zoo... There is so much fun animal content to be had and it’s important for us to make sure we’re building that connection between the animals, the amazing things they do, and the fact that there’s still a lot of important things you can know about them...”

Anything we can do to educate people on social media is incredibly important. A huge goal of mine every single day is to connect people with the animal so that they will make educated decisions on their behalf...”

“Conservation education and empathy and reminding people that animals exist... We fold education into everything that we do because by the very nature of posting about an animal, you’re teaching people about that species...”

Lastly, interviewees discussed how getting people to come to the zoo was another important goal of social media. This goal was mentioned in relation to building zoo attendance, promoting zoo events, and drawing the connection between attendance revenue and its connection to their organization’s conservation goals.

“I’m trying to build attendance. I want people to support the zoo, want them to donate to the zoo, become a member, come to our events, enroll their children in summer camp, and get out and learn about conservation and how they can help here in their own backyard and how they can help conservation worldwide...”

“My goal is to get people to fall in love with our animals... [and] to reach everyone, educate people on a regular basis, and get people through the gates...”

“Wildlife is part of our social media. We are a physical location, we are an attraction, and we’re a non-profit that drives most of its revenue from visitor ship, so for us [conservation] stories can’t be a priority, but wherever we can, we definitely leave them in. The priority is getting people to come to the zoo and visit so that we can continue to do conservation work...”

### *Use of Instagram as a Platform*

When discussing how each zoo was using Instagram as a platform, two main themes arose. Each site discussed how Instagram is a more visual platform compared to other social media platforms, and the importance of having appealing images and/or videos to connect with their online audience. Further, because Instagram is so visual, interview participants discussed Instagram’s limitations of not being able to link to web pages directly from the captions (requiring their audience to go to their bio to click on a link), and their uncertainty when it came to knowing if their audiences are seeing/reading captions connected with their posts.

“It’s really about being photo-based. On Instagram, I’m educating people on what I just posted. I post photos and give educational facts about animals...”

“Instagram posts aren’t great for certain things because you can’t link out right, so we still use it primarily as a visual medium... So even if we add ten paragraphs below that square, I know that most of our audience isn’t going to take the time to read further than a couple sentences and so that does dictate some of the content we’re sharing...”

The second common theme discussed was related to the type of content being posted to Instagram. Each site discussed how they predominantly take a *fun, positive, and/or light-hearted* approach to each post compared to other social media platforms.

“I try to keep Instagram more fun. I’m mixing in educational content as well, but I think that the audience is very visual and so as much as I can share compelling video content, the more I do...”

“We aim for positivity and optimism, conservation storytelling can be really doomsday, so we really try to give people not just hope, but truly give them action that they can take on...”

### *Audience Engagement with Instagram Posts*

During the interview, participants discussed their observations about engagement with their Instagram posts more generally and then with conservation posts specifically. In general, visually appealing images and/or videos received more engagement (i.e., likes and comments). Content wise, interviewees stated that posts that had animals at the center performed better than general zoo graphics or promotional posts. Lastly, posts that were described as more *fun*, *meme-like*, and *lighthearted* received more engagement than sadder posts.

“Content that is the most engaging is very dependent on the content of the video or the quality of the photography...”

“When we have playful animals or animals with stories... people are always super engaged...”

“Usually fun and engaging content, meme content, anytime animals are born, or when new animals come to the zoo tend to be our most engaging content...”

Audience engagement with conservation-related posts were described by participants as being less positive (i.e., fewer likes and comments) than *fun* posts. In relation to this topic of conservation posts receiving less engagement, interview participants also discussed how conservation posts rely heavily on captions to convey their message and how longer captions influence their engagement rates.

“Posts that are more uplifting and lighthearted perform the best. Conservation posts don’t have as much of a response as lighthearted posts do, but they still get a great response, and the key to getting a great response on Instagram is having that visual asset that will get people’s attention. If [followers] like a photo or video, they’re going to read the caption...”

“I always thought that the quicker the description, the better it would be for people because I felt people didn’t

want to read a long description... But after taking a seminar, I found that if people love it, they want to read about... I get the most engagement on [posts] that have text because there's more story to tell..."

"In general, [people] respond less positively to really meaty conservation storytelling than they do to just for fun posts. It takes a lot more words to talk about conservation, there's a lot you have to set up for people. For conservation storytelling on Instagram, you have to hope someone is reading that caption if they are going to get anything from it..."

## Discussion

These results provided insight into the study's research questions and are discussed in the following section.

### **Research Question #1: What is the role of Instagram in zoos' conservation strategies? What are their conservation goals when posting to Instagram?**

Each zoo in this study had goals to inspire communities and educate their audiences about conservation initiatives. They also had the goal to continuously connect their audiences with animals in their care and in the wild. This approach has been studied by Ballew et al. (2015) and Grajal et al. (2016) and is a suggested technique to combat urbanization and the growing detachment people have with animals and nature. Generally, zoos' conservation tactics, when posting to Instagram, were to have animals at the center of most of their posts and to use Instagram as a way to continue to build connections between animals and their audiences when people weren't physically at the zoo. These six zoos attempted to build connections with animals through progressive storytelling, sharing names and birthdays, and educating their audiences about animal behaviors and conservation needs. These attempts were reflected in anthropomorphic posts being the most frequently posted theme followed by conservation-related posts being the third most frequent theme (see Table 2).

In the interviews, it was expressed that a main goal for Instagram was to encourage people to come visit the zoo in person, and for some zoos, that was priority over sharing conservation-related posts. This is reflected in the Instagram posts that were analyzed as general posts,

which consisted of posts that promoted zoo events and encouraged people to visit the zoo, being the second most frequent theme of posts. However, multiple interviewees discussed that conservation is at the center of their organization's mission, and their use of Instagram to drive attendance to the zoo and its programming provides the zoo revenue and funding to continue doing conservation work and caring for their animals. So, although Instagram is not predominantly being used to promote conservation initiatives and education, zoos' use of Instagram to build connections with animals and encourage zoo attendance connects to their overall conservation goals and strategies because it allows them to continue supporting the animals in their care and the conservation work they are doing in the field.

### **Research Question #2: What type of conservation-oriented content are zoos posting to Instagram?**

Out of the 608 posts collected, anthropomorphic, general, and conservation-related posts were the most common themed posts published to Instagram; death announcements and education posts, which were posts highlighting visits from educational institutions, were the least frequent themes to be published (see Table 2). In the Rose et al. (2018) study, death and conservation posts were least likely to be published. Although conservation was defined differently in this study, based on the findings of this research (see Table 2), conservation posts were tied, with general posts, for the second most likely theme to be posted on zoos' Instagram accounts. Conservation-related posts were divided into four categories: education, action-oriented for the audience, action-oriented by the zoo, and other (see Table 3). Posts explaining and educating about conservation were the most frequent type of conservation-related post, followed by posts explaining the zoo's specific role and efforts in conservation initiatives.

While not all 608 posts were conservation-related, over half the subjects in each post were species that are considered critically endangered, endangered, or vulnerable (see Figure 1). The focus on posting about threatened species and making them visible to followers coincided with interviewees' efforts of building connections with animals on a daily basis. For example, Asian elephants were the third most popular animal posted across all six zoos, appearing as the subjects of 35 posts. 43% of those posts were conservation-related, with 57% being other themed posts (behavior, anthropomorphic, general, etc.). While not every post about Asian elephants was conservation-related, Instagram followers were seeing posts with Asian

elephants multiple times over this three-month period. Continuous exposure to specific animals that are considered critically endangered, endangered, or vulnerable, in posts that are not considered conservation-related, may make conservation-related posts discussing these specific animals more meaningful when they are published.

### **Research Question #3: How are audiences responding to zoos' conservation posts on Instagram?**

Across all six sites, the general demographic makeup of the zoos' Instagram followers were women ages 24-44 (see Table 1).

Death-related posts, new arrivals, and births had the highest average number of likes. Conservation-related posts had the second lowest average of likes out of all the posts' themes. Of the conservation-related posts, posts related to educating followers had the highest average of likes, followed by posts that provided information on ways for followers to take action in a conservation initiative. Notably, as discussed earlier in this article, conservation education and messaging need to include a motivational element to help people have self-efficacy about their own pro-environmental behaviors (Schultz, 2011; Grajal et al., 2016). As discussed by Clayton et al. (2017), providing people specific actions they can take can help enhance feelings of self-efficacy in audiences and lead to pro-environmental behaviors. It may be telling that conservation-related posts that include actions for people to carry out received, on average, more likes than posts explaining the conservation-related actions taken by the zoo itself.

Based on anecdotal information from the interviews, museum professionals in charge of posting to social media have found that their audiences engage more with visually appealing posts overall. Content wise, posts that center animals and that come across as more *fun* and *uplifting* generally receive more likes and comments than conservation-related posts. Due to Instagram being a more visual-based platform, points were made in each interview about the limitations of Instagram, which has an impact on how zoos are able to use Instagram as part of their conservation strategies. Instagram prioritizes the media (image and/or video) of the post rather than showcasing the caption, so it is difficult to know if zoos' audiences are engaging with and reading the captions that go with the media that people see as they are scrolling. This can be problematic for conservation-related posts because it was mentioned that conservation stories and posts take longer captions to explain and educate followers. It is not possible by looking at the likes of a post to know if, for conservation-related posts, followers are

engaging with the entirety of the post. However, as explained by a few interviewees, having a compelling image or video is more likely to make audiences engage with and read the caption. While some of the data collected from Instagram provided insight into how audiences are responding to conservation posts on Instagram via likes, these insights are surface level and do not provide insights into how audiences are reacting, thinking about, or taking action from conservation-related posts.

## Conclusion

The research explored in this study looked at how and the extent to which zoos are using Instagram as a platform to further their conservation efforts. Based on the interviews with six museum professionals in charge of posting to their organization's social media platforms, each zoo had conservation goals that included educating their audiences about conservation initiatives, communicating their conservation efforts, and getting people to care about the animals in their care and in the wild. Zoos' goals for Instagram were to build connections between animals and their audiences, drive attendance to their organizations, and educate their audiences when possible. While publishing conservation-related posts to Instagram may not have been specified as a priority for each organization, it was expressed that their attempts to build connections and continuously expose their audiences to their animals, along with encouraging attendance, connects to each zoo's overall conservation goals because it helps the zoo be able to earn revenue to continue caring for their animals and their conservation fieldwork.

Having an active Instagram account is essential for a zoo, and relatedly, its conservation efforts. Zoos need to take advantage of this visually based platform to share their animals, encourage visitation, and promote conservation education and initiatives. While not all posts studied were specifically conservation-related, over half the subjects of posts were endangered animals. Continuous exposure to these species creates valuable connections between Instagram users and nature. Even if these animals are not always shared in conservation-related posts, frequent exposure to these species may make people feel more connected and familiar with these species and result in conservation-related posts being more impactful with their audiences when they are posted. Active use of Instagram by zoos would not only contribute to their organization's visitation rates, but could also help highlight,

connect, and educate their followers with specific issues when people aren't physically visiting.

If zoos currently have an active Instagram account, it's important to evaluate the themes of their posts and explore how they can integrate the different types of conservation-related posts into their Instagram feeds. Each type of conservation-related post can add to an organization's overall conservation efforts because it continuously provides exposure to these initiatives. Notably, of the two action-oriented conservation posts studied, posts that provided actions and steps for their audience to take on a specific initiative received more likes compared to posts that explained the actions being taken by the zoo. Conservation-related posts that are educational and provide actions for their followers may help zoos' conservation messaging have greater longevity with their audiences because they provide continued exposure and solutions to specific conservation initiatives and problems. Providing audiences with sustained messaging and opportunities for self-efficacy may result in greater longevity of zoos' conservation messaging and lead to the adoption of pro-environmental behaviors.

In this study, engagement of audiences with posts was only understood through the likes and views of a particular post. To gain more insight into how audiences are responding and engaging with conservation-related posts on Instagram, it would be helpful to carry out a future study where researchers interview zoo visitors and/or zoo Instagram followers to gain a better understanding about how they are responding and reacting to conservation-related posts that come across their Instagram feed. This may help zoos understand why their audiences are connecting with and responding positively or negatively to certain themed posts. It could also help zoos and other organizations fine tune their conservation-related posts to create more engagement, and possible adoption of pro-environmental behaviors in their audiences. Further study may also provide zoos with more insight into how Instagram is playing a greater role in their conservation goals and encouraging pro-environmental behaviors in their visitors and followers.

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