



EXOTIC PET OWNERSHIP:

Drivers and the Role of Zoo Experience

empathy@zoo.org
www.aceforwildlife.org

Exotic Pet Ownership: Drivers and the Role of Zoo Experience

Kelly White-Singleton¹, Jeffrey Skibins²

¹ Integrated Coastal Sciences, East Carolina University, ² Department of Recreation Sciences, East Carolina University

Abstract

Exotic pet ownership is a global phenomenon that has impacts on conservation and animal welfare. Zoos and aquariums (hereafter zoos) are institutions where many people are exposed to exotic species and their corresponding conservation and welfare issues. The purpose of this literature review was to identify drivers of exotic pet ownership and what role the zoo experience plays in influencing exotic pet ownership. Our investigation examined these focus areas in 61 peer-reviewed articles. Results provide empirical support for attitudes toward animals, sociocultural factors, and media impact as primary drivers of desirability of exotic pet ownership. The results do not show a correlation between the zoo visitor experience and increased motivation for exotic pet ownership. Analyses did reveal evidence of the positive influence zoos have on visitor perceptions of attitudes towards animals and animal welfare. Results identified a gap in the literature regarding how zoos can proactively seek to reduce the desire for exotic pets through interpretation. Given the positive impacts zoos can have on visitors, and the corresponding lack of influence on driving exotic pet ownership, zoos could seek to proactively educate visitors on the conservation and animal welfare impacts of exotic pet ownership.

Funding Acknowledgement

This literature review was funded by the Advancing Conservation through Empathy for Wildlife (ACE for Wildlife Network), a learning network that brings together motivated professionals to create and share effective practices to foster empathy for animals and people, leading to conservation actions. The Network was established in 2019 and is staffed by Woodland Park Zoo. For more information or to join the Network, please visit to [the ACE for Wildlife website](https://www.aceforwildlife.org) or email empathy@zoo.org.

Influencing Factors on Exotic Pet Ownership

This literature review was conducted to 1) explore factors attributed to exotic pet ownership and 2) to assess what, if any, correlation exists between the zoo visitor experience and the desire to own exotic animals. Secondly, the influence of the zoo experience on visitors' attitudes towards animals and perceptions of animal welfare were also considered. There is a gap in the literature exploring a potential relationship between zoo visitation and the increased desire to own exotic animals. However, related studies do exist on psychological, sociocultural, and media-based factors that influence or motivate people to become exotic pet owners. Additionally, relevant literature supports evidence of the influence zoos have on visitor perceptions of animal welfare, illustrating an opportunity for zoos to proactively educate visitors on the positive impact zoos have on animal welfare, and the inability of individuals to provide adequate care for exotic pets.

History and Definitions of Exotic Pets

Evidence of exotic animal ownership can be found as early as 2500 BC. Historical records indicate fish were the earliest exotic pet. Egyptians and Romans kept fish as a non-food source, while at approximately the same time, the Chinese began breeding ornamental fish. Ornamental fish are also one of the earliest known exotic pets in the United States, dating back to the late 1800s. The next surge of exotic pet ownership was with reptiles shortly after World War II (Mitchell, 2009).

As pet ownership increased and diversified, within the Western world, the categorization of exotic pet became more plastic. For example, some livestock species became pets, species of owned fish and reptiles diversified, invertebrates gained popularity, and mammals such as chinchillas and primates became more readily available. This growth led to confusion surrounding what qualifies a pet as being "exotic." As these animals were/are considered pets (i.e., owned and cared for by individuals), a practical response to defining "exotic" pet was to consider it through the lens of veterinary applications. This was due, in part, to the fact that ultimately the care of these animals is what defined them as "exotic."

However, even within veterinary applications, the definition of exotic pet varies between countries and organizations. Kieswetter (2017) points out that the Canadian Veterinary Medical Association defines an exotic pet as any animal that is neither a cat nor a dog, while the British Columbia Society for the Prevention of Cruelty to Animals (BCSPCA) defines exotic pets as non-domesticated, non-indigenous wild animals either captured or captive-bred (BCSPCA 2007; CVMA 2012). Similarly, the American Veterinary Medical Association (AVMA) currently classifies exotic pets as "a wide range of pet species other than domestic dogs, cats, and equids, which may be native or nonnative to the United States," (AVMA, n.d.).

As the variation in these definitions demonstrates, several variables could influence "exotic" designation (e.g., history of domestication, level of endemism, breeding practices, and/or taxon). For the purposes of this paper, the definition of exotic pet will be as broad as

possible and follow the intent of the American Veterinary Medical Association. In other words, exotic pets will be any species other than domestic dogs, cats, and equids.

If exotic pets are considered to include any species other than domestic dogs and cats, and equids, then the source of exotic pets should be considered. In general, exotic pets can be obtained through pet brokers, both legally and illegally, as well as wild capture. The procurement of animals for the exotic pet trade is a rapidly growing business, and though some avenues of this trade are legal, “many times animals are captured from the wild illegally to supply demand,” contributing to a world-wide black market of live wildlife sales (Hall, 2019). As the sourcing of exotic pets often encourages illegal activities, one must consider what drives private individuals to seek out exotic pets.

Drivers of Exotic Pet Ownership

Human interest in wild animals has been attributed to a combination of psycho-social factors such as personal values, attitudes, and motivations, as well as cultural contexts. According to Hirshman (1994), the reasons that people choose to own pets typically fall into one of six broad categories: 1) to satisfy a perceived anthropomorphic relationship or bond, 2) to serve a functional purpose, 3) to use for show or for sales, 4) to express status, 5) to promote an aesthetic, or 6) to be an extension of themselves. For both traditional and exotic pet ownership, the most statistically prevalent psycho-social factors reported were the human/animal bond and the desire for a companion relationship (Crowell-Davis, 2008). This finding is corroborated by Hausmann et al., (2023) who found the emotional fulfillment that accompanies caring for an animal as the predominant driver of exotic pet ownership. Other psycho-social factors include status (i.e., reasons 3 – 5) and attitudes towards animal welfare (i.e., reasons 1, 2 & 6).

Emotional Connections

Despite an emotional connection being a primary driver for traditional and exotic pet ownership, the degree of affection toward exotic pets can vary based on the perceived ability of the animal to communicate feelings, reflecting stronger owner/animal bonds within the more “expressive” species such as iguanas (Crowell-Davis, 2008; Hausman et al., 2023). However, a Chinese conservation survey of more than 300 members of the public found that respondents who viewed pets as capable of emotion or as filling an emotional role were less likely to consider exotic pet ownership an acceptable practice (Weldon et al., 2021). The disparity in these findings poses an interesting paradox as to the role of perceived emotions in animals, in that they appear to be a driver for both ownership and prevention. The exploration of those factors was beyond the scope of this study but may hold promising insights for future work.

Additionally, the literature supports mental, physical, and social benefits gained by humans from their emotional connection to animals. Macauley and Chur-Hansen (2022) found health benefits from owning pets, either exotic or traditional, to be equivalent. However, these findings were based primarily on self-report and synthesizing anecdotal data. The parity across type of pet ownership could be used to further encourage traditional pet ownership over exotic. Related research in animal welfare has explored how factors such as pet ownership and

anthropomorphic perceptions can influence human empathy towards animals (Apostol et al., 2013). While there have been far fewer studies on the psychological impact on exotic pet ownership compared to traditional pet ownership, emerging literature suggests the desire for a companionship bond with one's pet is prevalent for both.

Status

Status and prestige are also recognized factors that contribute to the acceptability and desire for exotic pet ownership. For example, Burghardt (2017) suggests venues like state fairs, pet shows, and agribusiness contribute to the novelty factor of exotic pets and provide an outlet for owners to display skills, care, and collections. Exhibition participants gain a sense of pride of ownership as well as cultivate an air of expertise in a little-known field. The normalizing of exotic pet ownership through such venues can increase demand for exotic species. Crowell-Davis (2008) also supports status and exhibition as factors for exotic pet ownership that is closely tied to owners' bond to the animal and increased tolerance for difficult behaviors and costs.

The "big cat" sector of the exotic animal trade is also heavily influenced by the quest for status. Bale (2021) cites cheetahs as being a symbol of status throughout history and culture, including ancient Egypt, the Italian renaissance, and the French jazz age, as well as a modern-day status symbol for the extremely wealthy in the Persian Gulf. Over 3,600 live cheetahs passed through the exotic animal trade black market between 2010 and 2019, with young cubs being particularly vulnerable to being captured and sold as pets in countries like Kuwait, Saudi Arabia, and the United Arab Emirates (Bale, 2021).

Attitudes towards Animal Welfare

Emotional connections to exotic pets can also influence the quality of care they receive from their owner. Owners who viewed their exotic pets as bonded companions were more likely to invest in specialized veterinary care (Klaphake & Smith, 2002). This is also supported by Burghardt (2017) who reports veterinarians needing to expand their practice to include reptiles and amphibians. When surveying Portuguese reptile owners, Azevedo et al., (2022) found that owners' level of attachment to their exotic animals, their commitment to continued ownership, and the reptile-owner bond was not unlike the bond between traditional pets and their owners.

Additionally, the desire to care for/rescue an exotic, possibly endangered, species has been shown to be a key factor for owning exotic pets. Shukhova and MacMillan (2020) interviewed 27 Russian exotic pet owners about their motivations to obtain wild, threatened, or critically endangered animals. The data identified four paths to exotic pet ownership: 1) rescuing animal/forming a companion relationship, 2) seeking unique or new experiences, 3) creating a "collection" of species based on desired features, and 4) "accidental owners," who did not intentionally set out to own an exotic pet. However, these may vary across cultures. Kieswetter (2017) found variation across European countries as to types of preferred species and levels of acceptability for traditional and exotic pet ownership. These factors were compounded by retail availability and misrepresentations about ease of care.

These studies suggest psycho-social drivers (e.g., emotional connection, status, and attitudes towards animal welfare) and related outcomes (e.g., companionship and bonding) for exotic pet ownership parallel those for traditional pet ownership. And, while the principal driver of seeking a human-animal bond is high for exotic pet ownership, secondary factors may have a mediating affect. Furthermore, while these outcomes can be achieved from exotic pet ownership, data reveal variation based on species and context (Grant et al., 2017).

Cultural Contexts and Conservation Impacts of Exotic Pet Ownership

In addition to the above-mentioned psycho-social drivers of exotic pet ownership, several cultural and contextual factors have emerged as having an influence on the desire to own exotic pets. For example, one's sense of self or personal identity (such as cultural, religious, historical, and socioeconomic status) have been shown to powerfully influence the desire to own exotic pets (Alexander et al., 2023).

Data is emerging from several countries (e.g., India, Hong Kong, Taiwan, and China), demonstrating how owning an exotic pet(s) can increase social status (see preceding section) and be seen as an enviable luxury (Spee et al., 2019). This is particularly evident within biodiversity hotspots and locations with concentrations of endemic rare and endangered species, such as ornamental fish in developed Asian nations (Harrington et al., 2022). Oftentimes the demands within local markets for rare endemic species, as owned pets, is a greater threat to biodiversity than international trade¹ (Challender et al., 2023).

The presence of exotic animals within regional natural areas can also impact local demand for exotic pets. Duarte-Quirgoa and Estrada (2003) conducted a survey of primate pet owners in Mexico City. Data showed 12 different species were owned across 179 respondents. Of that, 10 species were native to the region. Owners cited empathy for the primates' loss of natural habitat, the satisfaction of possessional ownership, and desire to increase social status (see preceding section) as primary motivations for exotic pet ownership.

High demand within local markets may also create a normalizing affect for exotic pet ownership. This normalization can lead to broader shifts within communities wherein people begin to view animals (e.g., parrots, snakes, and primates in neotropical countries) simply as objects within one's environment, as opposed to a member of one's family or household (Daut et al., 2015). This type of normalization can also be seen in several European cities that function as hubs for legal and illegal animal trade, primarily amphibian and reptile trade shows and markets (Altherr & Lameter, 2020).

One example of normalization is the emergence of exotic animal cafés. These cafés provide venues for patrons to have direct interactions with exotic species including otters, slow loris, hawks, parrots, snakes, and turtles. The popularity of animal cafés is skyrocketing across Japan, Taiwan, and other parts of Asia. As McMillan et al. (2021) point out, the ease of access and the casual human-animal interactions within these settings increases the desire amongst patrons to become exotic pet owners. Some have suggested the high demand to stock animal

¹ *N.B.* this is not inclusive of the current bushmeat crisis.

cafés can improve captive breeding efforts for endangered species. However, it is more likely they compromise the sustainability of the trade market and/or lead to animal laundering (McMillan et al., 2021).

Additionally, animal cafes often fall short of providing adequate animal care, which can have detrimental effects on the species within the venue. Exotic birds are a frequently housed species, and improper flight restriction, social interaction within their species, and overexposure to hand-rearing cause severe distress and subsequent deterioration of the animals, significantly decreasing animal welfare, and further hampering conservation efforts (Grant et al., 2017).

However, many exotic pet owners report a strong conservation ethos, linked to empathy, as a key driver of wanting to own exotic pets. Many view themselves, and by extension the exotic pet community, as doing the “right” thing for the animals. Contina et al., (2021) conducted a global survey of the general public (N = 882, 7 continents) asking whether exotic pet ownership was an acceptable method of conservation, or the animal trade was hindering conservation progress. The study found younger respondents with less education were more likely to view exotic pet ownership as acceptable relative to older respondents with a graduate degree. There was no influence based on geographic location.

Exotic pet owners may consider themselves as conservation actors, particularly when they reside in biodiversity hotspots. This perception poses an interesting conservation paradox. On the one hand, exotic pet owners are investing a tremendous amount of time and money into what they perceive to be a conservation behavior. On the other hand, they are stimulating demand for endangered species, potentially contributing to additional pressure on already declining populations. Additionally, they may not be able to adequately care for the individual animal, thus decreasing the animal’s overall quality of life. Furthermore, it is questionable whether routine care of exotic pets is an acceptable substitute for life in the wild.

Media and Social Media Factors

Long before the social media revolution, people's perceptions of what makes a "suitable" pet were driven by how animals were depicted in entertainment programming and traditional media outlets. The ability of mass media to alter perceptions of “suitability” and desire for exotic pets can be seen in animated movies such as *Rio* and *Finding Nemo*. The release of each occurred alongside a spike in demand for the species featured in each respective film (Bush et al., 2014). Cronin et al., (2022) suggests mass media has long influenced “public interest in non-domesticated pet ownership.”

However, Megias et al., (2017) asserted that while such claims have long been circulated, the notion that popular entertainment legitimately increased exotic pet ownership needed to be documented. Using the *Harry Potter* series as a case study, they investigated owl ownership in the United Kingdom while the series was active, monitored owl sanctuary relinquishment after the series concluded, and gathered data from multiple owl brokers and registries. The study failed to identify any definitive causal relationship between the *Harry Potter* movies and owl ownership. However, the authors posit the movie industry does possess the ability to

potentially impact the interests of its viewers, and as such, its impact on exotic pet ownership should continue to be monitored.

More specifically, wildlife-based entertainment media has also been cited as an influence on exotic pet ownership. O'Connor & Vonk (2023) studied viewership (N = 675) of the streaming documentary *Tiger King: Murder, Mayhem, and Madness*. Respondents were asked to self-report on items related to perspective taking, fantasy, empathy, and distress. They found that for viewers with high levels of empathy, unaccredited zoos and the concept of exotic animal ownership was perceived as negative. Conversely, viewers low in empathy and high in narcissism held a positive perception of both unaccredited zoos and exotic pet ownership despite having witnessed the animal exploitation depicted in the documentary series.

Alongside traditional media, social media is increasingly cited in motivation to own exotic pets. Photos and videos of wild animals as pets are plentiful across social media platforms such as Facebook, Instagram, TikTok, and YouTube. Sherman (2022) asserts that even seemingly innocuous "sharing" or "liking" of these posts can be dangerous, as it further perpetuates a narrative that exotic pets are desirable. While interactions and responses to exotic animal media are generally positive, posts depicting casual human/animal interactions can also convey the message that the featured exotic species are somehow "less endangered" in the wild than it may appear (Kitson & Nekaris, 2017).

Further complicating the issue, many mainstream social media companies do not intervene when content depicts the exploitation of exotic animals, or when illegal ownership is being shared through their service. This tacit acceptance serves to inadvertently condone these behaviors as acceptable (Kitson & Nekaris, 2017), which can have tremendous impact given the volume of social media use. For example, YouTube has more than two billion users worldwide and approximately 3 billion searches per month, making it the second-largest search engine in the world behind Google (Wagner, 2017). However, the streaming platform (and the greater social media industry) remains poorly regulated regarding content guidelines around exotic pets. This leads to worldwide consumption of "cute" but misleading videos that subsequently erroneously influence public perceptions surrounding exotic pet ownership (Moloney et al., 2021).

Social media "influencers" are also a contributing factor to potential misconceptions of exotic pet ownership within social media use. In a study exploring YouTube's potential influence on otter ownership, Harrington et al. (2019) considered the reach of YouTube influencers who were exotic pet owners and included their pet otters in video content. The influencers' original otter content was re-shared globally, posted to national television channels, and received hundreds of thousands of views around the world.

A similar study by Spee et al. (2019) investigated public perception of male Middle Eastern celebrities and well-known figures who featured endangered, exotic animals as pets on their social media pages. Results revealed an overwhelmingly positive response to celebrity exotic pet ownership, even with growing awareness of animal trade laws and penalties in the

Middle East. Ongoing research on social media as a general platform confirms its power to influence its users (Moloney et al., 2021).

The Role of Zoos in Perceptions of Exotic Pets

Research on human-animal interactions (i.e., where a reciprocal action or communication occurs between human and animal (Spooner et al., 2021)) has shown that positive animal experiences can increase feelings of well-being in humans. This includes zoo experiences where there is little to no physical interaction (Clements et al., 2019). However, public interest in visiting zoos remains high, as corroborated by the Association of Zoos and Aquariums (AZA and the World Association of Zoos and Aquariums (WAZA) accredited zoological parks and aquariums hosting more than 700 million visitors per year globally (D'Cruze et al., 2019).

Accredited zoos must constantly balance conservation and visitation objectives. Zoos have predominantly shifted their mission from solely entertainment purposes, to adopting broad conservation initiatives such as mitigating extinction threats, protecting endangered species, and expanding public knowledge and support for wildlife endeavors (AZA, n.d.; Rhoads & Goldsworthy, 1979). Additionally, as Spooner et al., (2021) point out, zoos must find an equilibrium between ensuring the welfare of the animals, encouraging connection with the visitors, and advancing public wildlife education.

While many visitors support these conservation initiatives, there is growing concern over animal welfare (Woods, 2002). Veasey (2022) contends that measuring the success of animal welfare strategies presents challenges in zoo management, as there is not a universally accepted standard or definition. Alternatively, visitors' assessment of successful animal welfare is more instinctive, as it is based on the perception of animal happiness or well-being during the visitor's zoo experience.

Citing a study by Ross (2011) where chimpanzees were perceived to be desirable pets when photographically depicted within human environments, Jacobson et al. (2017) contended that how animals were presented within a zoo environment had the potential to influence visitor perception of their welfare, endangered status, and unsuitability as pets. Zoos should be mindful that neither the habitat nor interactive experiences promote misconceptions about exotic animals.

Similarly, zoo-led visitor/animal experiences can influence patron perceptions of animal behavior. When an exotic animal's natural behavior (such as fear of people) is altered through their participation in visitor interactions, patrons may form a misconception about the tameness of a wild animal (Spooner et al., 2021). However, despite this potential risk, none of the 19 peer-reviewed studies explored by Spooner et al. (2021) noted any such correlation. Furthermore, the findings from the literature review were mixed across studies, and no clear trend emerged supporting or discouraging the use of animal experiences.

Alternatively, the use of ambassador animals in visitor interactions is widely supported by WAZA as a means of promoting conservation education. A similar study by Spooner and

Stride (2021) considered the impact of photographs containing both animals and humans (referred to as “two-shot” photos, and often utilized in zoo advertising) on the public’s attitude regarding animal welfare, conservation, and exotic pet ownership. They sought to address the concern that “two-shot” photographs may inadvertently promote desire for exotic species as pets (Spooner and Stride, 2021). The results of the study indicated that “two-shot” zoo-related photos (both zoo selfies and zookeeper images), elicited a negative desire for having the animal as a pet. This may be due, in part, to the professionalism conveyed by the presence of uniformed staff.

Zoo theatre is also increasingly utilized to influence visitors’ understanding of wildlife and perceptions of animal welfare. Penn (2009) studied the impact of full-length productions, at exhibit performances, and children’s zoo performances at the Central Park Zoo in New York. Results support that the productions had positive impacts on visitor knowledge of environmental and wildlife issues for children and adults. Similar theatre productions have been employed to convey the realities of the animal trade and related animal welfare. See the case study below for details around a zoo theater production concerning primates.

Future Zoo Messaging Considerations

Zoos are uniquely positioned to address all factors discussed in this paper related to exotic pet ownership. Psychological, sociocultural, and media influences all fall under the purview of zoos’ strategic conservation missions. Zoos have the ability to redirect the perceived positive actions of exotic pet owners (i.e., investment of time and money), into more effective conservation behaviors. Simultaneously, zoos will need to point out the negative impact the global pet trade has on conservation, and the limitations of individuals to adequately care for exotic pets.

This messaging segues well into topics of animal welfare and empathy for wildlife, which are key initiatives for AZA and WAZA institutions. Zoos can highlight the high quality of care they provide for their animals, which surpasses that of most, if not all, individual pet owners. Additionally, messaging can show how empathy can be better focused to achieve conservation goals.

Similarly, the aims of zoo theatre are to connect visitors emotionally to wildlife, increase knowledge, and influence visitors’ feelings (Penn, 2009). Results from the Finley et al., (1998) study on visitor perceptions indicated that visitors see captive animals as restricted, tame, and passive compared to the same animals in the natural environment, which are seen as free, wild, and active. Zoos could create theatre productions specifically to combat potential demands for exotic pets, challenge perceptions of exotic pet ownership, and connect the impact that exotic pet ownership has on the health and wellbeing of the animal.

Messaging Around Animal Care

Zoos could also highlight how difficult it is for the average visitor to match the extremely high level of care zoos provide for animals in their care, the years of schooling and training of the veterinary and support staff, and the infrastructure support needed to care for

exotic species. Such messaging could help to highlight advantages of traditional pet ownership over exotic pets, as well as highlighting challenges of exotic pets over traditional pets.

Additional programming to deter exotic pet ownership could address the potential human health hazards posed by wildlife ownership. Mild zoonotic diseases like ringworm are common in exotic animals, but severe viruses and disease outbreaks like monkeypox and lyssavirus have also been traced to exotic pets (Chomel et al., 2007). Research on dissuading exotic animal ownership indicates that increased education amongst potential consumers, particularly regarding zoonotic disease threats and treatment requirements, animal trade legalities, costs, and (to a lesser extent) animal welfare could decrease exotic pet demand nearly 40% (Moorhouse et al., 2021). Moorehouse et al. (2021) reached this projection by surveying 1,000 people in the United States, China, Brazil, and Vietnam, asking them to rate their desire to own an exotic animal before and after being presented with information about zoonotic disease, required specialty care, and/or legality issues. Additionally, laws on exotic animal care are sometimes unclear and can lead to precarious situations, as when a pet macaque was not tested for herpesvirus and was permitted to interact with children and other visitors, posing health risks (Hess, 2011). Zoo programming could incorporate information on the potential for zoonotic based illnesses, helping to deter exotic pet ownership.

Zoo programming that conveyed the difficulty of obtaining necessary specialty veterinary care for exotic pets could provide a more complete understanding of exotic pet challenges. Grant et al., (2017) contends that a lack of exotic animal care information, improper animal husbandry, unrealistic owner expectations, lack of proper specialized medical care by both owners and veterinarians can lead to poor outcomes in exotic pets and their respective owners. Exotic animals often have specific nutritional, environmental, and behavioral needs that are difficult to duplicate in a home environment, increasing the importance of proper veterinary care and owner education (Hess, 2011).

Veterinarians also discourage exotic pets. For example, Dr. Rivera (Zoo Atlanta) asserts that exotic animals should not be kept as pets because of their demanding special needs. This is advocated by several veterinarians who actively discourage clients from “non-domesticated” exotic pets/wildlife, and promoting “domesticated” exotic species (birds, small mammals, and reptiles) by providing educational materials about care, diet, and needs for those looking for nontraditional pets (Hess, 2011).

Zoos could create programming that conveys similar messaging regarding the difficulties in providing necessary veterinary care, home care and enrichment, and behavioral management of exotic species in home environments. As a result of such challenges, potential exotic animal owners may not have the knowledge or support required to properly care for exotic pets. Zoo programming aimed at educating patrons on the high level of resources needed in exotic animal care may help discourage exotic pet ownership.

Social Media Messaging

The immediacy and brevity of social media messaging provides zoos a unique opportunity to broadcast their message to a global audience on an unending cycle. Developing

interpretive messages for social media that advance the zoo's mission, while simultaneously correcting misconceptions around exotic pets is no longer optional. Zoos should take a stronger position in the social media universe and strategically capitalize on this free global communication mechanism. Staff involved in AZA initiatives such as NotAPet, Saving Animals from Extinction (SAFE) programs, and Species Survival Plans (SSPs) are all key stakeholders who can be brought together to develop strategic thematic messaging.

While it is not reasonable to expect zoos to be able to un-ring the bell of social media and users' foray into exotic pets, most zoos are active in social media and have a significant number of followers. Thus, they do have the opportunity proactively and intentionally be thought leaders and influencers in the social media universe about inappropriate ownership of exotic pets, responsible pet ownership, and conservation impacts.

This literature review has identified several drivers (e.g., empathy, attitudes towards animal welfare), outcomes (e.g., human-animal bonding), and audiences (e.g., acting as conservationists) of exotic pet owners. Armed with this information, zoos could develop highly targeted and nuanced interpretation messaging that encourages proper outlets for human-animal bonds (e.g., traditional pet ownership, zoo experiences, and ecotourism), and appropriate cultural/status perceptions (e.g., supporting conservation efforts vs. self-collecting) of human-animal relationships. Developing themes around topics such as these, combined with specific behavioral outcomes could produce a highly effective campaign toolbox that could be adopted by any AZA/WAZA institution. Each institution could adapt messaging to target issues most relevant to their location and/or audience. Additionally, as empathy has emerged as a driver of exotic pet ownership, this campaign could blend, where appropriate, with current empathy messaging and Advancing Conservation through Empathy for Wildlife (ACE for Wildlife) (Ace for Wildlife, n.d.) initiatives. This approach also would enact many current best practices for interpretation.

Case Study: Zoo Theater – Muna the Monkey

A collaboration between Barbary Macaque Awareness and Conservation and Monkeys Acting in Schools for Conservation sought to spread community awareness about the exotic pet trade and ownership, and conservation threats through theatre by portraying the journey of a macaque monkey (Iliff, 2012). The play followed Muna (played by a human actor) from living in the wild as a young macaque, to being captured and sold at a local market, to her new owners realizing she was unhappy, and in turn, seeking out zoos and conservation groups to help place Muna into a zoo sanctuary.

Playgoers were meant to understand the animal trade from the point of view of the animal, thereby influencing their perceptions on animal welfare in captivity. Iliff (2012) noted that measuring the success of the production on conservation or animal trade attitudes is challenging, but viewer feedback data indicated that the show was informative and educational.

The success of the play led to its adaptation from its original format for a British audience into a format suited for a Moroccan audience (adjusting content and names to reflect Moroccan cultural values) that has been more exposed to exotic pet trade, illustrating the

potential for similar theatrical adaptations to be geared towards zoo audiences in various educational capacities. In both the original British and reimagined Moroccan versions of “Muna the Monkey,” great care was taken not to glorify the ownership of primates as pets (Iliff, 2012). Similarly, zoo programming would need to ensure that the takeaway messages about discouraging exotic pet ownership were clear to their intended audiences, rather than simply eliciting empathy for the welfare of owned animals.

Conclusion

The purpose of this literature review was to document drivers for exotic pet ownership and evaluate the potential that the zoo experience may influence exotic pet ownership. Understanding these drivers and the role of the zoo experience is critical, as exotic pet ownership continues to increase globally, which negatively impacts wildlife conservation and animal welfare, and fuels the global animal trade. Additionally, as global zoo visitation exceeds half a billion annual visitors, zoos can have a major impact on this conservation issue.

While this literature review into the motivations behind exotic pet ownership was not exhaustive, consensus emerged around several key issues. Psycho-social drivers such as empathy, attitudes towards animal care, and status; cultural drivers such as national identity; and perceptions of animal characteristics are principal drivers behind the desire to own exotic pets. Secondary factors such as education and conservation ethics also influence the desire and acceptability of exotic pet ownership. Media and social media have also been shown to generally contribute to misconceptions of exotic pet ownership and cultivate undesired levels of acceptability.

Literature reviewed for this study did not identify any established correlation between the zoo experience and an increased motivation to own exotic pets. While many zoo experiences can include human-animal interactions, this was not shown to stimulate a desire for exotic pet ownership. The zoo experience has been shown instead positively to influence visitor perceptions of animal wellbeing and welfare as well as increase conservation knowledge and understanding, and public education on wildlife issues. Additionally, zoo media and social media can contribute to visitors’ cognitive and affective knowledge of conservation issues. Taken in concert, this would suggest current zoo experiences, both onsite and online, are not a major contributor to the desire to own an exotic pet.

There is a gap in the literature concerning the direct impact of zoos on the demand for exotic pets. Additionally, studies examining the connection between zoos and the consumer demand for exotic pets are lacking. This highlights an opportunity for zoos to take a proactive approach in deterring exotic pets both within visitors, and globally via social media.

Further research in this domain is essential to understand the potential influence of zoos on the public's perception and desire to acquire exotic animals as pets. Such research may provide insights into the role of zoos in shaping societal attitudes towards exotic pet ownership and help develop informed strategies to promote visitor-based responsible and ethical wildlife conservation practices.

References

- Advancing Conservation through Empathy for Wildlife. (n.d.) *Empathy Resources*.
<https://www.aceforwildlife.org/empathy-resources/>
- Alexander, S. D., Waters, S., Aldrich, B. C., Shane, S., Clarke, T. A., Radford, L., Hansen, M. F., Gnanaolivu, S. D., & Dempsey, A. (2023). The Past, Present, and Future of the Primate Pet Trade. In T. McKinney, S. Waters, & M. A. Rodrigues (Eds.), *Primates in Anthropogenic Landscapes* (pp. 247–266). Springer International Publishing. https://doi.org/10.1007/978-3-031-11736-7_14
- Altherr, S., & Lameter, K. (2020). The rush for the rare: Reptiles and amphibians in the European pet trade. *Animals*, 10(11), 2085. <https://doi.org/10.3390/ani10112085>
- American Veterinary Medicine. (n.d.). *Ownership and/or possession and appropriate disposition of wild and exotic pet species or their hybrids*. American Veterinary Medical Association.
<https://www.avma.org/resources-tools/avma-policies/ownership-and-or-possession-and-appropriate-disposition-wild-and-exotic-pet-species-or>
- Apostol, L., Rebeaga, O. L., & Miclea, M. (2013). Psychological and Socio-demographic Predictors of Attitudes toward Animals. *Procedia - Social and Behavioral Sciences*, 78, 521–525.
<https://doi.org/10.1016/j.sbspro.2013.04.343>
- Association of Zoos and Aquariums. (2023, December 2). *About us*. <https://www.aza.org/about-us>
- Azevedo, A., Guimarães, L., Ferraz, J., Whiting, M., & Magalhães-Sant’Ana, M. (2022). Understanding the human–reptile bond: An exploratory mixed-methods study. *Anthrozoös*, 35(6), 755–772. <https://doi.org/10.1080/08927936.2022.2051934>
- Bale, R. (2021, August 17). *How trafficked cheetah cubs move from the wild and into your Instagram feed*. *Animals*. <https://www.nationalgeographic.com/animals/article/how-trafficked-cheetah-cubs-move-from-the-wild-and-into-your-instagram-feed>
- Beetz, J. (2005). Role of private owners in the conservation of exotic species. *Honors Theses*.
<https://digitalcommons.colby.edu/honorsthesis/26>
- Brown, R. (2006). Exotic Pets Invade United States Ecosystems: Legislative Failure and a Proposed Solution. *Indiana Law Journal*, 81, 713.
<https://heinonline.org/HOL/Page?handle=hein.journals/indana81&id=723&div=&collection=>
- Burghardt, G. M. (2017). Keeping reptiles and amphibians as pets: challenges and rewards. *Veterinary Record*, 181(17), 447–449. <https://doi.org/10.1136/vr.j4912>
- Bush, E. R., Baker, S. E., & Macdonald, D. W. (2014). Global Trade in Exotic Pets 2006-2012: Exotic Pet Trade. *Conservation Biology*, 28(3), 663–676. <https://doi.org/10.1111/cobi.12240>

- Challender, D. W. S., Cremona, P. J., Malsch, K., Robinson, J. E., Pavitt, A. T., Scott, J., Hoffmann, R., Joolia, A., Oldfield, T. E. E., Jenkins, R. K. B., Conde, D. A., Hilton-Taylor, C., & Hoffmann, M. (2023). Identifying species likely threatened by international trade on the IUCN Red List can inform CITES trade measures. *Nature Ecology & Evolution*. <https://doi.org/10.1038/s41559-023-02115-8>
- Chomel, B. B., Belotto, A., & Meslin, F.-X. (2007). Wildlife, Exotic Pets, and Emerging Zoonoses I. *Emerging Infectious Diseases*, 13(1), 6–11. <https://doi.org/10.3201/eid1301.060480>
- Clements, H., Valentin, S., Jenkins, N., Rankin, J., Baker, J. S., Gee, N., Snellgrove, D., & Sloman, K. (2019). The effects of interacting with fish in aquariums on human health and well-being: A systematic review. *PLOS ONE*, 14(7), e0220524. <https://doi.org/10.1371/journal.pone.0220524>
- Contina, A., Anderson, C., Hille, D., Oakley, W., Bridge, E., Kelly, J., Smith, H., Koch, J., & Jervis, L. (2021). Domesticating the exotic? An online survey of attitudes towards the international wildlife pet trade. *Conservation and Society*, 19(3), 184. https://doi.org/10.4103/cs.cs_209_20
- Cronin, K. A., Leahy, M., Ross, S. R., Wilder Schook, M., Ferrie, G. M., & Alba, A. C. (2022). Younger generations are more interested than older generations in having non-domesticated animals as pets. *PLOS ONE*, 17(1), e0262208. <https://doi.org/10.1371/journal.pone.0262208>
- Crowell-Davis, S. (2008). Motivation for pet ownership and its relevance to behavior problems. *University of Georgia*. https://vetfolio-vetstreet.s3.amazonaws.com/mmah/66/040826e58c4dd5af3e7bb9e1f7bf48/filePV_30_08_423.pdf
- Daut, E. F., Brightsmith, D. J., & Peterson, M. J. (2015). Role of non-governmental organizations in combating illegal wildlife–pet trade in Peru. *Journal for Nature Conservation*, 24, 72–82. <https://doi.org/10.1016/j.jnc.2014.10.005>
- D’Cruze, N., Khan, S., Carder, G., Megson, D., Coulthard, E., Norrey, J., & Groves, G. (2019). A Global Review of Animal–Visitor Interactions in Modern Zoos and Aquariums and Their Implications for Wild Animal Welfare. *Animals*, 9(6), 332. <https://doi.org/10.3390/ani9060332>
- Duarte-Quiroga, A., & Estrada, A. (2003). Primates as pets in Mexico City: An assessment of the species involved, source of origin, and general aspects of treatment. *American Journal of Primatology*, 61(2), 53–60. <https://doi.org/10.1002/ajp.10108>
- Finlay, T., James, L. R., & Maple, T. L. (1988). People’s Perceptions of Animals: The Influence of Zoo Environment. *Environment and Behavior*, 20(4), 508–528. <https://doi.org/10.1177/0013916588204008>
- Fiskett, R. A. M. (2005). Increasing Efficiency and Profitability of the Exotic Pet Practice. *Veterinary Clinics of North America: Exotic Animal Practice*, 8(3), 475–486. <https://doi.org/10.1016/j.cvex.2005.04.006>

- Goins, M., & Hanlon, A. J. (2021). Exotic pets in Ireland: I. Prevalence of ownership and access to veterinary services. *Irish Veterinary Journal*, 74(1), 14. <https://doi.org/10.1186/s13620-021-00190-6>
- Gouyon, J.-B. (2019). Wildlife Television, Empathy and the End of the British Empire. In J.-B. Gouyon, *BBC Wildlife Documentaries in the Age of Attenborough* (pp. 69–95). Springer International Publishing. https://doi.org/10.1007/978-3-030-19982-1_4
- Grant, R., Montrose, V., & Wills, A. (2017). ExNOTic: Should We Be Keeping Exotic Pets? *Animals*, 7(12), 47. <https://doi.org/10.3390/ani7060047>
- Hagan, C., Carpenter, J., Ungar, L., & Preotiu-Pietro, D. (2017). Personality Profiles of Users Sharing Animal-related Content on Social Media. *Anthrozoös*, 30(4), 671–680. <https://doi.org/10.1080/08927936.2017.1370235>
- Hall, J. (2019, February 20). *Exotic pet trade, explained*. National Geographic. <https://www.nationalgeographic.com/animals/article/exotic-pet-trade>
- Harrington, L. A. (2015). International commercial trade in live carnivores and primates 2006–2012: response to Bush et al. 2014. *Conservation Biology*, 29(1), 293–296. <https://www.jstor.org/stable/24481602>
- Harrington, L. A., Macdonald, D. W., & D’Cruze, N. (2019). Popularity of pet otters on YouTube: evidence of an emerging trade threat. *Nature Conservation*, 36, 17–45. <https://doi.org/10.3897/natureconservation.36.33842>
- Harrington, L. A., Mookerjee, A., Kalita, M., Saikia, A., Macdonald, D. W., & D’Cruze, N. (2022). Risks associated with the global demand for novel exotic pets: A new and emerging trade in snakehead fish (*Channa* spp.) from India. *Biological Conservation*, 265, 109377. <https://doi.org/10.1016/j.biocon.2021.109377>
- Hausmann, A., Cortés-Capano, G., Fraser, I., & Di Minin, E. (2023). Assessing preferences and motivations for owning exotic pets: Care matters. *Biological Conservation*, 281, 110007. <https://doi.org/10.1016/j.biocon.2023.110007>
- Hergovich, A., Mauerer, I., & Riemer, V. (2011). Exotic Animal Companions and the Personality of Their Owners. *Anthrozoös*, 24(3), 317–327. <https://doi.org/10.2752/175303711X13045914865349>
- Hess, L. (2011). Exotic Animals: Appropriately Owned Pets or Inappropriately Kept Problems? *Journal of Avian Medicine and Surgery*, 25(1), 50–56. <https://doi.org/10.1647/1082-6742-25.1.50>

- Hughes, A., Auliya, M., Altherr, S., Scheffers, B., Janssen, J., Nijman, V., Shepherd, C. R., D’Cruze, N., Sy, E., & Edwards, D. P. (2023). Determining the sustainability of legal wildlife trade. *Journal of Environmental Management*, 341, 117987. <https://doi.org/10.1016/j.jenvman.2023.117987>
- Iliff, J. (2012). “Muna the Monkey” - using theatre as a conservation education medium in Northern Morocco. https://hubble-live-assets.s3.amazonaws.com/psgb/redactor2_assets/files/127/Joy_Iliff_-_MASC_-_Muna_the_Monkey_smaller.pdf
- Jacobson, S. L., Hopper, L. M., Shender, M. A., Ross, S. R., Leahy, M., & McNernie, J. (2017). Zoo visitors’ perceptions of chimpanzee welfare are not affected by the provision of artificial environmental enrichment devices in a naturalistic exhibit. *Journal of Zoo and Aquarium Research*, 5(1), 56–61. <https://doi.org/10.19227/jzar.v5i1.250>
- Kieswetter, S. (2017). *The motivations behind obtaining exotic pets: A discussion paper*. Zoocheck Inc. https://www.zoocheck.com/wp-content/uploads/2017/10/The-Motivations-Behind-Obtaining-Exotic-Pets_September-2017.pdf
- Kitson, H., & Nekaris, K. A. I. (2017). Instagram-fuelled illegal slow loris trade uncovered in Marmaris, Turkey. *Oryx*, 51(3), 394–394. <https://doi.org/10.1017/S0030605317000680>
- Klaphake, E. A., & Smith, J. L. (2002). An Initial Assessment of Exotic-Animal Pet Owners in Utah: A Survey With Special Emphasis on Personal Characteristics and Expenditure Tendencies. *Journal of Avian Medicine and Surgery*, 16(2), 115–122. [https://doi.org/10.1647/1082-6742\(2002\)016\[0115:AIAOEA\]2.0.CO;2](https://doi.org/10.1647/1082-6742(2002)016[0115:AIAOEA]2.0.CO;2)
- Kreger, M. D., & Mench, J. A. (1995). Visitor—Animal Interactions at the Zoo. *Anthrozoös*, 8(3), 143–158. <https://doi.org/10.2752/089279395787156301>
- Krishnasamy, K., & Stoner, S. (2016). *Trading faces: A rapid assessment on the use of Facebook to trade wildlife in Peninsular Malaysia* (PDF, 2.3 MB). <https://policycommons.net/artifacts/1935589/trading-faces/2687359/>
- Lenzi, C., Grasso, C., & Bell Rizzolo, J. (2020). Are exotics suitable pets? *Veterinary Record*, 186(14), 459–460. <https://doi.org/10.1136/vr.m1303>
- Macauley, L., & Chur-Hansen, A. (2022). Human Health Benefits of Non-Conventional Companion Animals: A Narrative Review. *Animals*, 13(1), 28. <https://doi.org/10.3390/ani13010028>
- McMillan, S. E., Dingle, C., Allcock, J. A., & Bonebrake, T. C. (2021). Exotic animal cafes are increasingly home to threatened biodiversity. *Conservation Letters*, 14(1). <https://doi.org/10.1111/conl.12760>
- Megias, D. A., Anderson, S. C., Smith, R. J., & Veríssimo, D. (2017). Investigating the impact of media on demand for wildlife: A case study of Harry Potter and the UK trade in owls. *PLOS ONE*, 12(10), e0182368. <https://doi.org/10.1371/journal.pone.0182368>

- Mitchell, M. A. (2009). History of exotic pets. In *Manual of Exotic Pet Practice* (pp. 1–3). Elsevier. <https://doi.org/10.1016/B978-141600119-5.50004-4>
- Moloney, G. K., Tuke, J., Dal Grande, E., Nielsen, T., & Chaber, A.-L. (2021). Is YouTube promoting the exotic pet trade? Analysis of the global public perception of popular YouTube videos featuring threatened exotic animals. *PLOS ONE*, *16*(4), e0235451. <https://doi.org/10.1371/journal.pone.0235451>
- Moorhouse, T. P., Balaskas, M., D’Cruze, N. C., & Macdonald, D. W. (2017). Information could reduce consumer demand for exotic pets: Information reduces demand for exotic pets. *Conservation Letters*, *10*(3), 337–345. <https://doi.org/10.1111/conl.12270>
- Moorhouse, T. P., D’Cruze, N. C., & Macdonald, D. W. (2021). Information About Zoonotic Disease Risks Reduces Desire to Own Exotic Pets Among Global Consumers. *Frontiers in Ecology and Evolution*, *9*, 609547. <https://doi.org/10.3389/fevo.2021.609547>
- Myers, O. E., Saunders, C. D., & Birjulin, A. A. (2004). Emotional Dimensions of Watching Zoo Animals: An Experience Sampling Study Building on Insights from Psychology. *Curator: The Museum Journal*, *47*(3), 299–321. <https://doi.org/10.1111/j.2151-6952.2004.tb00127.x>
- Nageotte, N. L., Eagle-Malone, R., & Searles, V. (2022). Uncovering Zoo Audience Values Necessary to Create Effective Messaging About Illegal Wildlife Trade. *Journal of Interpretation Research*, *27*(2), 93–112. <https://doi.org/10.1177/10925872221130319>
- Ni, Q., Wang, Y., Weldon, A., Xie, M., Xu, H., Yao, Y., Zhang, M., Li, Y., Li, Y., Zeng, B., & Nekaris, K. A. I. (2018). Conservation implications of primate trade in China over 18 years based on web news reports of confiscations. *PeerJ*, *6*, e6069. <https://doi.org/10.7717/peerj.6069>
- Nijman, V., Morcatty, T., Smith, J. H., Atoussi, S., Shepherd, C. R., Siriwat, P., Nekaris, K. A.-I., & Bergin, D. (2019). Illegal wildlife trade – surveying open animal markets and online platforms to understand the poaching of wild cats. *Biodiversity*, *20*(1), 58–61. <https://doi.org/10.1080/14888386.2019.1568915>
- O’Connor, V. L., & Vonk, J. (2023). “A (tiger) king’s ransom”: Dark personality features predict endorsement of exotic animal exploitation. *Personality and Individual Differences*, *202*, 111956. <https://doi.org/10.1016/j.paid.2022.111956>
- Pasmans, F., Bogaerts, S., Braeckman, J., Cunningham, A. A., Hellebuyck, T., Griffiths, R. A., Sparreboom, M., Schmidt, B. R., & Martel, A. (2017). Future of keeping pet reptiles and amphibians: towards integrating animal welfare, human health and environmental sustainability. *Veterinary Record*, *181*(17), 450–450. <https://doi.org/10.1136/vr.104296>

- Patrick, P. G., Matthews, C. E., Ayers, D. F., & Tunnicliffe, S. D. (2007). Conservation and Education: Prominent Themes in Zoo Mission Statements. *The Journal of Environmental Education*, 38(3), 53–60. <https://doi.org/10.3200/JOEE.38.3.53-60>
- Penn, L. (2009). Zoo theater's influence on affect and cognition: a case study from the Central Park Zoo in New York. *Zoo Biology*, 28(5), 412–428. <https://doi.org/10.1002/zoo.20201>
- Prato-Previde, E., Basso Ricci, E., & Colombo, E. S. (2022). The Complexity of the Human–Animal Bond: Empathy, Attachment and Anthropomorphism in Human–Animal Relationships and Animal Hoarding. *Animals*, 12(20), 2835. <https://doi.org/10.3390/ani12202835>
- Rhoads, D. L., & Goldsworthy, R. J. (1979). The effects of zoo environments on public attitudes toward endangered wildlife. *International Journal of Environmental Studies*, 13(4), 283–287. <https://doi.org/10.1080/00207237908709834>
- Ross, S. R., Vreeman, V. M., & Lonsdorf, E. V. (2011). Specific Image Characteristics Influence Attitudes about Chimpanzee Conservation and Use as Pets. *PLoS ONE*, 6(7), e22050. <https://doi.org/10.1371/journal.pone.0022050>
- Seaboch, M. S., & Cahoon, S. N. (2021). Pet primates for sale in the United States. *PLOS ONE*, 16(9), e0256552. <https://doi.org/10.1371/journal.pone.0256552>
- Sherman, W. (2022). Well-Meaning Animal Lovers May Be Fueling the Exotic Pet Trade in Unexpected Ways. *Conservation Allies*. <https://conservationallies.com/well-meaning-animal-lovers-may-be-fueling-the-exotic-pet-trade-in-unexpected-ways/>
- Shukhova, S., & MacMillan, D. C. (2020). From tigers to axolotls: Why people keep exotic pets in Russia. *People and Nature*, 2(4), 940–949. <https://doi.org/10.1002/pan3.10125>
- Sigaud, M., Kitade, T., & Sarabian, C. (2023). Exotic animal cafés in Japan: A new fashion with potential implications for biodiversity, global health, and animal welfare. *Conservation Science and Practice*, 5(2). <https://doi.org/10.1111/csp2.12867>
- Signal, T., Taylor, N., & Maclean, A. S. (2018). Pampered or pariah: does animal type influence the interaction between animal attitude and empathy? *Psychology, Crime & Law*, 24(5), 527–537. <https://doi.org/10.1080/1068316X.2017.1399394>
- Slater, L. (2014). Wild obsession: the perilous attraction of owning exotic pets. *National Geographic*, 225(4), 96–120. <https://go.gale.com/ps/i.do?p=AONE&sw=w&issn=00279358&v=2.1&it=r&id=GALE%7CA366617877&sid=googleScholar&linkaccess=abs>
- Smith, S. (2008). Talking with exotic pet owners: Exploratory audience research on wildlife television and human-animal interactions. *USF Tampa Graduate Theses and Dissertations*. <https://digitalcommons.usf.edu/etd/504>

- Spee, L. B., Hazel, S. J., Dal Grande, E., Boardman, W. S. J., & Chaber, A.-L. (2019). Endangered exotic pets on social media in the Middle East: Presence and impact. *Animals*, 9(8), 480. <https://doi.org/10.3390/ani9080480>
- Spooner, S. L., Farnworth, M. J., Ward, S. J., & Whitehouse-Tedd, K. M. (2021). Conservation Education: Are Zoo Animals Effective Ambassadors and Is There Any Cost to Their Welfare? *Journal of Zoological and Botanical Gardens*, 2(1), 41–65. <https://doi.org/10.3390/jzbg2010004>
- Spooner, S. L., & Stride, J. R. (2021). Animal-human two-shot images: Their out-of-context interpretation and the implications for zoo and conservation settings. *Zoo Biology*, 40(6), 563–574. <https://doi.org/10.1002/zoo.21636>
- Suzuki, K. (2011). Problems with exotic pets and wildlife conservation. *Japanese Journal of Zoo and Wildlife Medicine*. <https://www.cabdirect.org/cabdirect/abstract/20113333578>
- Veasey, J. S. (2022). Differing animal welfare conceptions and what they mean for the future of zoos and aquariums, insights from an animal welfare audit. *Zoo Biology*, 41(4), 292–307. <https://doi.org/10.1002/zoo.21677>
- Vonk, J., Patton, C., & Galvan, M. (2016). Not So Cold-blooded: Narcissistic and Borderline Personality Traits Predict Attachment to Traditional and Non-traditional Pets. *Anthrozoös*, 29(4), 627–637. <https://doi.org/10.1080/08927936.2016.1228762>
- Vučinić, M., Hajzler, I., Terzin, J., Nenadović, K., Janković, L., Voslarova, E., & Vučićević, M. (2019). Reptile Ownership in Balkan Countries: Demographics and Reliance on Veterinary Advice. *Anthrozoös*, 32(1), 129–139. <https://doi.org/10.1080/08927936.2019.1550287>
- Wagner, A. (2017). *Council post: Are you maximizing the use of video in your content marketing strategy?* Forbes. <https://www.forbes.com/sites/forbesagencycouncil/2017/05/15/are-you-maximizing-the-use-of-video-in-your-content-marketing-strategy/>
- Warwick, C. (2014). The Morality of the Reptile “Pet” Trade. *Journal of Animal Ethics*, 4(1), 74–94. <https://doi.org/10.5406/janimaethics.4.1.0074>
- Warwick, C., Pilny, A., Steedman, C., Howell, T., Martínez-Silvestre, A., Cadenas, V., & Grant, R. (2023). Mobile Zoos and Other Itinerant Animal Handling Events: Current Status and Recommendations for Future Policies. *Animals*, 13(2), 214. <https://doi.org/10.3390/ani13020214>
- Warwick, C., & Steedman, C. (2021). Exotic pet trading and keeping: Proposing a model government consultation and advisory protocol. *Journal of Veterinary Behavior*, 43, 66–76. <https://doi.org/10.1016/j.jveb.2021.03.002>
- Warwick, C., Steedman, C., Jessop, M., Arena, P., Pilny, A., & Nicholas, E. (2018). Exotic pet suitability: Understanding some problems and using a labeling system to aid animal welfare,

environment, and consumer protection. *Journal of Veterinary Behavior*, 26, 17–26.

<https://doi.org/10.1016/j.jveb.2018.03.015>

Weldon, A., Campera, M., Zhang, X., Ni, Q., Zhu, W., Nijman, V., & Nekaris, K. (2021). Perceptions of animal welfare and exotic pet ownership in China. *Animal Welfare*, 30(2), 169–178. <https://doi.org/10.7120/09627286.30.2.169>

Whitehead, M., & Forbes, N. (2013). Keeping exotic pets. *Veterinary Record*, 173(22), 558–558. <https://doi.org/10.1136/vr.f7212>

Woods, B. (2002). Good zoo/bad zoo: Visitor experiences in captive settings. *Anthrozoös*, 15(4), 343–360. <https://doi.org/10.2752/089279302786992478>

Yarmoska, J. L. B. (2014). *A survey of unwanted exotic pet species offered to public aquariums, pet stores and rescue facilities in the United States* - ProQuest [Western Illinois University]. <https://www.proquest.com/docview/1549546073>

Table I Articles by Topic

Topic	Articles
Attitudes Towards Animals	Contina, A., Anderson, C., Hille, D., Oakley, W., Bridge, E., Kelly, J., Smith, H., Koch, J., & Jervis, L. (2021); Iliff, J. (n.d.); Gouyon, J.-B. (2019); Apostol, L., Rebege, O. L., & Miclea, M. (2013); Azevedo, A., Guimarães, L., Ferraz, J., Whiting, M., & Magalhães-Sant’Ana, M. (2022); Nageotte, N. L., Eagle-Malone, R., & Searles, V. (2022).
Animal Trade	Alexander, S. D., Waters, S., Aldrich, B. C., Shanee, S., Clarke, T. A., Radford, L., Hansen, M. F., Gnanaolivu, S. D., & Dempsey, A. (2023); Altherr, S., & Lameter, K. (2020); Bush, E. R., Baker, S. E., & Macdonald, D. W. (2014); Challender, D. W. S., Cremona, P. J., Malsch, K., Robinson, J. E., Pavitt, A. T., Scott, J., Hoffmann, R., Joolia, A., Oldfield, T. E. E., Jenkins, R. K. B., Conde, D. A., Hilton-Taylor, C., & Hoffmann, M. (2023); Contina, A., Anderson, C., Hille, D., Oakley, W., Bridge, E., Kelly, J., Smith, H., Koch, J., & Jervis, L. (2021); Daut, E. F., Brightsmith, D. J., & Peterson, M. J. (2015); Harrington, L. A., Mookerjee, A., Kalita, M., Saikia, A., Macdonald, D. W., & D’Cruze, N. (2022); Hughes, A., Auliya, M., Altherr, S., Scheffers, B., Janssen, J., Nijman, V., Shepherd, C. R., D’Cruze, N., Sy, E., & Edwards, D. P. (2023); Moloney, G. K., Tuke, J., Dal Grande, E., Nielsen, T., & Chaber, A.-L. (2021); Spee, L. B., Hazel, S. J., Dal Grande, E., Boardman, W. S. J., & Chaber, A.-L. (2019)
Animal Welfare	Grant, R., Montrose, V., & Wills, A. (2017); D’Cruze, N., Khan, S., Carder, G., Megson, D., Coulthard, E., Norrey, J., & Groves, G. (2019); Spooner, S. L., Farnworth, M. J., Ward, S. J., & Whitehouse-Tedd, K. M. (2021); Veasey, J. S. (2022); Warwick, C., Pilny, A., Steedman, C., Howell, T., Martínez-Silvestre, A., Cadenas, V., & Grant, R. (2023).
Conservation	Challender, D. W. S., Cremona, P. J., Malsch, K., Robinson, J. E., Pavitt, A. T., Scott, J., Hoffmann, R., Joolia, A., Oldfield, T. E. E., Jenkins, R. K. B., Conde, D. A., Hilton-Taylor, C., & Hoffmann, M. (2023); Hughes, A., Auliya, M., Altherr, S., Scheffers, B., Janssen, J., Nijman, V., Shepherd, C. R., D’Cruze, N., Sy, E., & Edwards, D. P. (2023); Beetz, J. (2005); McMillan, S. E., Dingle, C., Allcock, J. A., & Bonebrake, T. C. (2021).
Exotic Pet Ownership	American Veterinary Medicine. (n.d.); Beetz, J. (2005); Brown, R. (2006); Burghardt, G. M. (2017); Chomel, B. B., Belotto, A., & Meslin, F.-X. (2007); Cronin, K. A., Leahy, M., Ross, S. R., Wilder Schook, M., Ferrie, G. M., & Alba, A. C. (2022); Duarte-Quiroga, A., & Estrada, A. (2003); Goins, M., & Hanlon, A. J. (2021); Grant, R., Montrose, V., & Wills, A. (2017); Harrington, L. A., Macdonald, D. W., & D’Cruze, N. (2019); Hausmann, A., Cortés-Capano, G., Fraser, I., & Di Minin, E. (2023); Hess, L. (2011); Iliff, J. (n.d.); Kieswetter, S. (2017); Kitson, H., & Nekaris, K. A. I. (2017); Klaphake, E. A., & Smith, J. L. (2002); Megias, D. A., Anderson, S. C., Smith, R. J., & Veríssimo, D. (2017); Mitchell, M. A. (2009). History of

	exotic pets. In <i>Manual of Exotic Pet Practice</i> (pp. 1–3); Moorhouse, T. P., Balaskas, M., D’Cruze, N. C., & Macdonald, D. W. (2017); O’Connor, V. L., & Vonk, J. (2023); Sherman, W. (2022); Shukhova, S., & MacMillan, D. C. (2020); Smith, S. (2008); Vučinić, M., Hajzler, I., Terzin, J., Nenadović, K., Janković, L., Voslarova, E., & Vučićević, M. (2019); Weldon, A., Campera, M., Zhang, X., Ni, Q., Zhu, W., Nijman, V., & Nekaris, K. (2021)
Legal & Regulatory	Daut, E. F., Brightsmith, D. J., & Peterson, M. J. (2015); Brown, R. (2006); Hess, L. (2011)
Media & Social Media	Moloney, G. K., Tuke, J., Dal Grande, E., Nielsen, T., & Chaber, A.-L. (2021); Spee, L. B., Hazel, S. J., Dal Grande, E., Boardman, W. S. J., & Chaber, A.-L. (2019); Harrington, L. A., Macdonald, D. W., & D’Cruze, N. (2019); Kitson, H., & Nekaris, K. A. I. (2017); Megias, D. A., Anderson, S. C., Smith, R. J., & Veríssimo, D. (2017); O’Connor, V. L., & Vonk, J. (2023); Sherman, W. (2022); Smith, S. (2008); Hagan, C., Carpenter, J., Ungar, L., & Preotiuc-Pietro, D. (2017).
Motivation & Influences	Burghardt, G. M. (2017); Hausmann, A., Cortés-Capano, G., Fraser, I., & Di Minin, E. (2023); Kieswetter, S. (2017); Moorhouse, T. P., Balaskas, M., D’Cruze, N. C., & Macdonald, D. W. (2017); Shukhova, S., & MacMillan, D. C. (2020); Weldon, A., Campera, M., Zhang, X., Ni, Q., Zhu, W., Nijman, V., & Nekaris, K. (2021); Crowell-Davis, S. (2008); Jacobson, S. L., Hopper, L. M., Shender, M. A., Ross, S. R., Leahy, M., & McNernie, J. (2017).
Psychological Factors	Apostol, L., Rebeaga, O. L., & Miclea, M. (2013); Azevedo, A., Guimarães, L., Ferraz, J., Whiting, M., & Magalhães-Sant’Ana, M. (2022); Crowell-Davis, S. (2008); Hagan, C., Carpenter, J., Ungar, L., & Preotiuc-Pietro, D. (2017); Macauley, L., & Chur-Hansen, A. (2022); Rhoads, D. L., & Goldsworthy, R. J. (1979)
Veterinary Care	American Veterinary Medicine. (n.d.); Chomel, B. B., Belotto, A., & Meslin, F.-X. (2007); Goins, M., & Hanlon, A. J. (2021); Vučinić, M., Hajzler, I., Terzin, J., Nenadović, K., Janković, L., Voslarova, E., & Vučićević, M. (2019).
Zoo Experiences	Clements, H., Valentin, S., Jenkins, N., Rankin, J., Baker, J. S., Gee, N., Snellgrove, D., & Sloman, K. (2019); D’Cruze, N., Khan, S., Carder, G., Megson, D., Coulthard, E., Norrey, J., & Groves, G. (2019); Finlay, T., James, L. R., & Maple, T. L. (1988); Jacobson, S. L., Hopper, L. M., Shender, M. A., Ross, S. R., Leahy, M., & McNernie, J. (2017); McMillan, S. E., Dingle, C., Allcock, J. A., & Bonebrake, T. C. (2021); Nageotte, N. L., Eagle-Malone, R., & Searles, V. (2022); Penn, L. (2009); Spooner, S. L., Farnworth, M. J., Ward, S. J., & Whitehouse-Tedd, K. M. (2021); Spooner, S. L., & Stride, J. R. (2021); Veasey, J. S. (2022); Warwick, C., Pilny, A., Steedman, C., Howell, T., Martínez-Silvestre, A., Cadenas, V., & Grant, R. (2023); Woods, B. (2002)

Table 2 Summary of Reviewed Articles

Total number of articles	57
Years Reviewed	44 years: 1979 – 2023 1979 (1); 1988 (1); 2002 (2); 2003 (1); 2005 (2); 2006; 2007; 2008 (2); 2009 (2); 2011; 2013; 2014; 2015; 2017 (9); 2019 (6); 2020 (2); 2021 (7); 2022 (8); 2023 (5)
Journals	34 separate journals American Journal of Primatology; American Veterinary Medical Association; Animal Welfare; Animals (6); Anthrozoös (4); BBC Wildlife Documentaries in the Age of Attenborough; Biological Conservation (2); Conservation Allies; Conservation and Society; Conservation Biology; Conservation Letters (2); Emerging Infectious Diseases; Environment and Behavior; Exotic Animal Practice; Indiana Law Journal; International Journal of Environmental Studies; Irish Veterinary Journal; Journal for Nature Conservation; Journal of Avian Medicine and Surgery (2); Journal of Environmental Management; Journal of Interpretation Research; Journal of Zoo and Aquarium Research; Journal of Zoological and Botanical Gardens; Manual of Exotic Pet Practice; Nature Conservation; Nature Ecology & Evolution; Oryx; People and Nature; Personality and Individual Differences; PLOS ONE (4); Primates in Anthropogenic Landscapes; Procedia - Social and Behavioral Sciences; Veterinary Record; Zoo Biology (3)