



AKJ Animal Keepers' Forum

Discriminating Tastes Prefer...

Quality, Value and Convenience.

Discover what tens of thousands of customers including commercial reptile breeding facilities, veterinarians and some of our country's most respected zoos and aquariums have already learned: with Rodentpro.com®, you get quality AND value! Guaranteed.

RodentPro.com® offers only the highest quality frozen mice, rats, rabbits, guinea pigs, hamsters, gerbils, chickens, quail, live insects, other foods and supplies at prices that are MORE than competitive. We set the industry standards by offering unsurpassed quality, breeder direct pricing and year-round availability.

We are confident that you will be truly pleased with the products and service you receive from RodentPro.com®. We will do whatever it takes to earn your business.

We guarantee it!



Order online!

www.RodentPro.com

It's quick, convenient and guaranteed!

P.O. Box 118
Inglefield, IN 47618-9998

Tel: 812.867.7598

Fax: 812.867.6058

E-mail: info@rodentpro.com



 **RODENT PRO**.COM®
PREMIUM ANIMAL NUTRITION



Taiwan Beauty Snake. Photo by Channing Guest.

117 ABOUT THE COVER

118 FROM THE AAZK BOARD OF DIRECTORS

119 CALENDAR

FEATURED ARTICLES

120-126

**Snake Selection Survey Insights for Zoos:
Leveraging ambassador animal programs
and keeper talks to educate zoo visitors on
conservation and responsible pet ownership**
Lori A. Torrini

128-135

**Sssensational Snakes: Overcoming fear
by inspiring empathy**
Karina Altman

INTERNATIONAL OUTREACH COMMITTEE

136-138

**A Utopia for the Mind and the Pocket:
Report on the AAZK Latin American Travel
Grant (LATG) for Latin American Keepers**

Emiliano Scolese





CONSULTING & DISTRIBUTING, INC.

8620 E. Old Vail Rd., Ste. 100
Tucson, AZ 85747

520.434.8281 | Fax: 520.434.0151

info@athruz.net athruzcad.com

WHEN IT COMES TO ENCLOSURES...

A Thru Z Consulting & Distributing, Inc. strives to enhance animal husbandry through better enclosures for all species that are in our zoological industry.



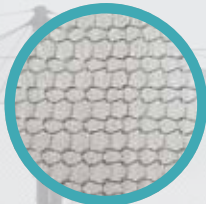
...WE COVER EVERY SIDE OF THE BUSINESS.

ENCLOSURES



NETT'EM

- Handwoven S/S Mesh
- Plain, Black Oxide & Bronze finishes
- Stainless Steel Type 304 & 316
- Diamond openings from 1" - 4"
- Cable diameters 3/64", 1/16", 3/32", & 1/8"
- Custom made rolls or panels



ZOO MESH

- Tightly spun, fine stainless steel knitted with 1/8" opening
- Available in 82" wide by 100' long rolls
- Plain, Black Oxide & Bronze finishes



VANISHING MESH

- Coiled Stainless Steel
- Engineered for visual enhancement
- Plain, Black Oxide & Bronze finishes
- Available in 3/8", 5/8" & 7/8" coils
- Variety of gauges



SYNTHETIC MESH

- Dyneema* (new product)
- Diamond or square construction
- Solution Dyed Polyester, Braided Polyester, Twisted Knotted Polyethylene, and Twisted Knotted Nylon



CLASS ONE

CLASS ONE

- 2" x 2" Tube Steel with 2" x 1/4" Woven Wire Mesh welded to frame
- Stainless Steel or Galvanized Steel finishes



CLASS THREE

CLASS TWO

- 1-1/2" x 1-1/2" Tube Steel with minimum of 1" x 1" x 12.5 ga GAW Welded Wire mesh attached with compression bar and 1/4" Tek Screws every 6"
- Stainless Steel & Galvanized Steel finishes

CLASS THREE

- 1" x 1" Tubing, with minimum of 1/2" x 1" x 16 ga GAW Welded Wire mesh attached with Tek Screw & washers every 6"
- Stainless Steel, Galvanized Steel, & Aluminum finishes

ANIMAL KEEPERS' FORUM

TO CONTACT THE AKF EDITOR:

Shane Good, AKF Editor
P.O. Box 535, Valley City, OH 44280
Shane.Good@aazk.org

AAZK Administrative Office

2820 S. Alma School Rd.
Suite 18 PMB 2057
Chandler, AZ 85286

CHIEF EXECUTIVE/FINANCIAL OFFICER:

Scott Soldat-Valenzuela | Scott.Soldat-Valenzuela@aazk.org

DIRECTOR of PROFESSIONAL DEVELOPMENT and CONFERENCE MANAGEMENT

Bethany Bingham, Bethany.Bingham@aazk.org

ANIMAL KEEPERS' FORUM - EDITOR

Shane Good, Shane.Good@aazk.org

GRAPHIC DESIGNER

Elizabeth Thibodeaux, Elizabeth.Thibodeaux@aazk.org

ENRICHMENT OPTIONS COLUMN COORDINATORS

Ana Frace, Stephanie Chandler, Beth Stark-Posta, Beth Ament-Briggs

TRAINING TALES COLUMN COORDINATORS

Kim Kezer, Jay Pratte, Angela Binney

CONSERVATION STATION COLUMN COORDINATOR

Erica Royer

ANIMAL WELFARE COLUMN COORDINATORS

Ana Frace, Stephanie Chandler, Beth Stark-Posta, Beth Ament-Briggs

BOARD OF DIRECTORS AND OVERSIGHTS

PRESIDENT: Nicole Pepo, Nicole.Pepo@aazk.org

VICE PRESIDENT and Ethics Chair: Joe Nappi, Joseph.Nappi@aazk.org

BOARD MEMBER - Conservation: Sara Bjerklie, Sara.Bjerklie@aazk.org Conservation Committee

Chair: An Nguyen, Conservation@aazk.org

Vice Chair: Kimmy McIntyre

Bowling for Rhinos Program

Program Manager: Frank Verney

Vice Manager: Vacant

Trees for You and Me Program

Program Manager: Christy Mazrimas-Ott, Christy.Mazrimas-Ott@aazk.org

Vice Manager: Hollie David, Hollie.David@aazk.org

BOARD MEMBER - Education: Russell Pharr, Russell.Pharr@aazk.org International Outreach Committee

Chair: Yvette Kemp, Yvette.Kemp@aazk.org

Vice Chair: Noah Shields, IOC@aazk.org

AAZK Resource Committee

Chair: Loren Berry, ARC@aazk.org

Vice Chair: Ana Frace, ARC@aazk.org

BOARD MEMBER - Recognition: Erika Defer, Erika.Defer@aazk.org Awards Committee

Chair: Autumn Lindley, Awards@aazk.org

Vice Chair: Nikki Maticic, Awards@aazk.org

Grants Committee

Chair: Kendall Moore, Grants@aazk.org

Vice Chair: Katie Schachtsick, Grants@aazk.org

BOARD MEMBER - Regulation: Paul Brandenburger, Paul.Brandenburger@aazk.org Safety Committee

Chair: Kathryn Juliano, Safety@aazk.org

Vice Chair: Vacant

Animal Welfare Committee

Chair: Natalie Jones, AWC@aazk.org

Bylaws Program

Chair: Rebecca Filippini, Rebecca.Filippini@aazk.org

BOARD MEMBER - Connection: Sarah Snider, Sarah.Snider@aazk.org Communication Committee

Chair: Joy Kotheimer, Communication@aazk.org

Vice Chair: Tianna Redieck, Communication@aazk.org

National Zoo Keeper Week Program

Program Manager: Tianna Redieck, NZKW@aazk.org

Diversity Committee

Chair: Hilary Colton, Diversity@aazk.org

Vice Chair: Katherine Zimmerman, Diversity@aazk.org



MISSION STATEMENT

The American Association of Zoo Keepers, Inc. exists to advance excellence in the animal keeping profession, foster effective communication beneficial to animal care, support deserving conservation projects, and promote the preservation of our natural resources and animal life.

ABOUT THE COVER

"Guava" is an 18 year-old female green tree python (*Morelia viridis*) at Cleveland Metroparks Zoo. Her keeper describes her as "sassy." Guava is off-exhibit now due to construction, but will be back for viewing when the new Primate Forest habitat opens. These non-venomous snakes are found in the tropical rainforests of New Guinea, eastern Indonesia, and northeast Australia. An interesting note is that Green tree pythons and Emerald tree boas are examples of convergent evolution - when two species develop similar traits to adapt to similar necessities, but are not related or only distantly related - Cleveland Metroparks Zoo has both types of snake. *Photo courtesy of Gina Wilkolak, Cleveland Zoological Society.*

Articles sent to **Animal Keepers' Forum** will be reviewed by the editorial staff for publication. Articles of a research or technical nature will be submitted to one or more of the zoo professionals who serve as referees for **AKF**. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Lengthy articles may be separated into monthly installments at the discretion of the Editor. The Editor reserves the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed, appropriately-sized envelope. Telephone, fax or e-mail contributions of late-breaking news or last-minute insertions are accepted as space allows. E-mail shane.good@aazk.org for more information. If you have questions about submission guidelines, please contact the Editor. Submission guidelines are also found at: aazk.org/akf-submission-guidelines/.

The deadline for each regular issue is the 3rd of the preceding month. Dedicated issues may have separate deadline dates and will be noted by the Editor.

Articles printed do not necessarily reflect the opinions of the **AKF** staff or the American Association of Zoo Keepers, Inc. Publication does not indicate endorsement by the Association.

Items in this publication may be reprinted providing credit to this publication is given and a copy of the reprinted material is forwarded to the Editor. If an article is shown to be separately copyrighted by the author(s), then permission must be sought from the author(s). Reprints of material appearing in this journal may be ordered from the Editor. Regular back issues are available for \$6.00 each. Special issues may cost more.

MEMBERSHIP SERVICES

Animal Data Transfer Forms available for download at aazk.org. AAZK Publications/Logo Products/Apparel available at AAZK Administrative Office or at aazk.org.



NICOLE PEPO
PRESIDENT
EXECUTIVE BOARD OF DIRECTORS

Hello AAZK Membership!

Hello friends and esteemed colleagues!

How are we already in May?! We'll be seeing each other in Phoenix before we know it! Speaking of Phoenix, May 1 was the deadline for Paper and Poster abstracts. We always get such great content from our members and we can't wait to see the final presentations in October. Grant and Award submission deadlines are also complete. As someone who has received a few AAZK Awards in my career, I can vouch that nothing feels more amazing than getting recognition from friends and colleagues at an AAZK Conference (insert gibbon hoot here). That feeling has kept me motivated and empowered through many difficult times. I'm biased (just a little), but I encourage every Animal Care Professional that I encounter to join AAZK and get to an AAZK Conference. So what are YOU waiting for? Go to the Conference website and register to be there in October!

I know these are challenging times for a lot of people. We at AAZK stand by our commitment to you as AAZK Members and friends. We are here to support you and your career growth in any way we can. Please don't hesitate to reach out if we can be of any assistance.

Sending you high fives and/or hugs depending on your preference,

Nicole Pepo

President
AAZK Executive Board of Directors

UPCOMING EVENTS

May 18, 2025 - May 21, 2025

Rhino Keeper Workshop 2025

Omaha's Henry Doorly Zoo & Aquarium
Omaha, NE

www.rhinokeeperassociation.org/coming-soon-01

August 11, 2025 - August 15, 2025

2025 Bear Husbandry Course

All-Day Event
Memphis Zoo | - Memphis, TN

www.aza.org/calendar

July 19, 2025 - July 25, 2025

AZA Felid Taxon Advisory Group

Conference and Husbandry Courses
All-Day Event

Hilton at Short Hills, NJ

www.aza.org/calendar

September 13-18, 2025

2025 AZA Annual Conference

Hosted by The Florida Aquarium,
ZooTampa at Lowry Park, and Busch
Gardens Tampa Bay, Tampa, FL

www.aza.org/calendar



October 5-9, 2025

50th Annual AAZK

National Conference

Phoenix, Arizona

www.azkphoenix2025.com

SUBMIT YOUR EVENTS TO SHANE GOOD AT SHANE.GOOD@AAZK.ORG.

More than just feed.

**The basis of every feed
we make starts with
proper animal nutrition.**



NuZUFeed.com | (815) 732-3338 | 3338 S. Chana Road, Chana, IL 61015

SNAKE SELECTION SURVEY

INSIGHTS FOR ZOOS:

LEVERAGING AMBASSADOR ANIMAL PROGRAMS AND KEEPER TALKS TO EDUCATE ZOO VISITORS ON CONSERVATION AND RESPONSIBLE PET OWNERSHIP

LORI A. TORRINI, MPS, BSC, AAS, UW-AAB, FFCP, CPDT-KA

ABSTRACT

Snakes, as key participants in ambassador animal programs, play a vital role in connecting zoo visitors to wildlife conservation and fostering appreciation for reptiles. These programs also offer an opportunity to educate the public on the responsibilities of reptile ownership, helping to mitigate the challenges associated with exotic pet care. This study surveyed U.S. snake enthusiasts to identify the factors influencing their choice of pet snakes, ranking 20 criteria, including temperament, space requirements, handleability, and wild-caught versus captive-bred status. Findings reveal that temperament, space needs, and captive-bred status are prioritized, while factors like diet, availability, and life expectancy are less important to potential owners. For zookeepers, these insights are valuable in shaping ambassador animal messaging and public education efforts. By addressing visitor misconceptions about snake ownership and highlighting the long-term commitments involved, zookeepers can promote responsible decisions and enhance conservation messaging. The survey results support the integration of welfare-focused

practices into ambassador programs to inspire informed decisions with regard to snake keeping.

INTRODUCTION AND BACKGROUND

Snakes are an integral part of zoological collections, serving not only as engaging ambassador animals but also as effective tools for fostering public understanding of conservation and responsible pet ownership (Fuhrman &

Ladewig, 2008). Through ambassador programs and keeper talks, snakes, like Ball Pythons (aka Royal Pythons, *Python regius*), offer unique opportunities to connect zoo visitors with biodiversity and promote an appreciation for reptiles, a group often misunderstood and undervalued (Fuhrman & Ladewig, 2008; Kirsch et al., 2024). However, their presence in ambassador programs and zoos may also indirectly influence visitor attitudes toward exotic pet ownership (Fuhrman & Ladewig, 2008; Kirsch et al., 2024). Positive interactions with an ambassador snake may unintentionally promote exotic pet ownership by inspiring individuals to consider acquiring a snake as a pet (Kirsch et al., 2024). This makes it critical for zoos to provide accurate and balanced educational messaging about snake and other reptile care and the responsibilities of ownership.

Reptiles, including snakes, already represent a significant and growing category of exotic pets globally (Alves et al., 2019; Robinson et al., 2015; Valdez, 2021; Vigil et al., 2021). In the United States alone, approximately 4.5 million households keep over 9 million individual reptiles, with snakes being among the most popular choices (Vigil



JZ Proctor conducting educational outreach, Colorado.

et al., 2021). Commonly kept species such as Ball Pythons (*Python regius*), Corn Snakes (*Pantherophis guttatus*), and Boa Constrictors (*Boa constrictor*) are often featured in ambassador animal programs. However, their unique biological and behavioral needs do not make them ideal pets for all prospective owners. For example, *Python regius* generally hide frequently during the day, are active at night, and are less active in general than some other python species, which may not be a good fit for people looking to add a snake as an interactive family pet (Hollandt et al., 2021; Skinner et al., 2024). This illustrates the importance of zookeeper-led education initiatives that address these complexities with zoo visitors, especially those considering a snake or other reptile a pet.

While global studies have explored trends in reptile ownership and the motivations behind exotic pet-keeping, there is relatively little research focused on the U.S. context. Studies, including Fuhrman & Ladewig (2008) and Kirsch et al. (2024) suggest that ambassador animal programs could have a nuanced impact on visitor perceptions, with some individuals becoming more knowledgeable about conservation and animal behaviors, while influencing some people to view exotic animals as suitable pets. These findings, and the survey results, emphasize the need for interpretive messaging that carefully balances inspiring interest in reptiles while discouraging impulsive ownership decisions that could lead to long-term poor outcomes for the animal. Unmet expectations regarding reptile behavior, care requirements, or activity levels can lead to dissatisfaction, neglect, or abandonment (Stringham & Lockwood, 2018; Pasmans et al., 2017; Altherr & Lameter, 2020; Warwick et al., 2021).

This study provides preliminary insights into the factors U.S. snake enthusiasts prioritize when selecting pet snakes. By identifying which criteria are most and least important to prospective owners,

this research supports zookeepers in tailoring public education efforts to align with visitor values and address any misconceptions. This can help promote responsible decision-making, well-informed snake ownership, and enhance the welfare of pet snakes. These findings also reinforce the vital role of zookeepers in bridging the gap between visitor curiosity, genuine knowledge, and conservation action to ensure snakes and other reptiles are appreciated not only as fascinating creatures but also as ambassadors for their wild counterparts, some of which, like the Savu Python (*Liasis savuensis*) pictured here, are endangered (Gillespie et al., 2021).

STUDY PURPOSE

The purpose of this study is to provide zookeepers, community educators, and other animal care professionals with valuable insights into the decision-making processes of U.S. snake enthusiasts when selecting pet snakes. By understanding the criteria that potential snake owners prioritize, zookeepers can align their educational efforts with visitor needs and expectations. This not only supports responsible pet ownership but also enhances the educational impact of ambassador animal programs by promoting a deeper understanding of the unique needs, behaviors, and welfare considerations of snakes and other reptiles (Fuhrman & Ladewig, 2008; Veasey, 2022).

Ambassador animal programs provide an unparalleled opportunity to address misconceptions about snakes, encourage thoughtful decision-making, and emphasize the animal welfare and conservation implications of exotic pet ownership, including the importance of captive breeding, ethical importing, and habitat preservation (Kirsch et al., 2024; Stringham & Lockwood, 2018). The survey findings highlight the need to carefully balance inspiring public interest in snakes with discouraging impulsive ownership decisions,



Savu Python under managed care. Photo by Lori Torrini.

particularly when prospective owners fail to fully consider the long-term commitments and responsibilities involved. By incorporating these insights into public education efforts, zookeepers can play a pivotal role in ensuring that snakes and other reptiles, both in captivity and in the wild, are properly understood, appreciated, and cared for (Pasmans et al., 2017; Stringham & Lockwood, 2018).

METHODOLOGY

Ethics Statement

This study involved the anonymous and voluntary participation of U.S.-based snake enthusiasts. Survey questions were designed to gather general preferences and expectations for selecting pet snakes and did not involve sensitive or private topics. No identifiable private information was collected, and the study adhered to ethical standards for research, qualifying for exemption from formal ethical review under U.S. federal regulations (45 CFR 46.102).

Survey Distribution

To explore the criteria influencing snake selection, an online survey was distributed across multiple platforms frequented by snake enthusiasts. These included:

- The New Ball Python Keepers Group (approximately 51,000 members)
- The Boa Emperor – Beyond the Obsession Group (approx. 894 members)
- The Behavior Education private Facebook group (approx. 88 members)
- The Behavior Education public page (approx. 1,800 followers)
- The Behavior Education Patreon community (approx. 198 members)

Participants were also encouraged to share the survey with other snake enthusiasts within their networks. The survey remained open for one week, and submissions were collected via Google Forms. Responses were anonymized before being reviewed by the research team.

Survey Design and Content

Participants were asked to rank 20 pre-determined criteria based on their importance when selecting a pet snake. Each ranking could only be used once, with one (1) indicating the most important criterion and twenty (20) indicating the least important. These criteria included temperament, space requirements, handleability, wild-caught versus captive-bred status, cost, diet, and other factors relevant to snake ownership. See complete survey in the Appendix.

Data Screening and Analysis

Out of several thousand distributed surveys, 75 were returned. After screening for errors such as incomplete responses or duplicate entries, 47 usable surveys remained. Responses were reviewed three times to ensure accuracy and adherence to ranking instructions. Each completed survey was assigned a unique numerical identifier (1–47) for analysis.

The data were compiled into Excel spreadsheets for analysis. For each criterion, the following metrics were calculated:

1. **Mean Rank** – Average ranking across all respondents. Lower means indicate higher importance.
2. **Median Rank** – Middle ranking value for each criterion, providing a robust measure of central tendency.
3. **Frequency of Top Ranks** – Number of times a criterion was ranked in the top five places (1–5) and the frequency of being ranked number one.
4. **Frequency of Bottom Five Ranks** – Number of times a criterion was ranked in the bottom five places (16–20), identifying the factors considered least important.

APPLICATION TO AMBASSADOR ANIMAL PROGRAMS

The survey findings may inform the messaging of ambassador animal programs. Understanding the priorities of potential snake owners allows zoo educators to integrate relevant insights into public education efforts, addressing misconceptions, guiding visitors toward responsible reptile ownership, and emphasizing conservation and welfare considerations.



The author with Ambassador Boreth, *Morelia bredli*

RESULTS

The survey revealed several key patterns in the decision-making processes of U.S. snake enthusiasts. When analyzing the data, temperament, space requirements, and wild-caught versus captive-bred status consistently emerged as the most important criteria. These were prioritized across all three metrics: mean rank, median rank, frequency of top-five rankings, and frequency of bottom-five rankings. Visualizations of data are in Tables 1 – 4 in the Appendix. Key findings include:

- Temperament was ranked in the top five places by 27 respondents and had one of the lowest numerical values (closest to 1), indicating high overall importance.
- Space requirements was the most frequently ranked criterion in the top five (29 times).
- Wild-caught vs. captive-bred status ranked as the number one priority more often than any other criterion.
- In contrast, the least prioritized criteria included factors such as diet, availability, and life expectancy.
- Diet frequently ranked near the bottom, with 18 respondents placing it in the bottom five positions (ranks 16–20).
- Availability ranked in the bottom five by 19 respondents.
- Life expectancy was identified as the least important factor overall, with the highest frequency of rankings in the 20th (least important) position.

Top and Bottom Five Rankings

To contextualize the results, the top (most important) and bottom five (least important) rankings for all criteria were examined. The top five criteria most frequently ranked in positions 1–5 were:

1. Space Requirements (29 responses)
2. Wild-caught vs. Captive-bred Status (28 responses)
3. Temperament (27 responses)
4. Handleability (23 responses)
5. Size (20 responses)

The bottom five criteria most frequently ranked in positions 16–20 were:

1. Life Expectancy (24 responses)
2. Arboreal/Terrestrial Nature (22 responses)
3. Cost to Maintain (20 responses)
4. Availability (19 responses)
5. Diet (18 responses)

It is important to note that the survey did not collect qualitative data to determine the reasoning behind individual rankings. For example, while wild-caught vs. captive-bred status ranked highly, the motivations driving this preference, whether ethical concerns, health considerations, or a preference for wild-caught snakes or a preference for captive bred snakes, remains unknown.

DISCUSSION

The findings from this survey provide insights into the preferences of U.S. snake enthusiasts when selecting pet snakes and have significant implications for zookeepers and educators tasked with delivering impactful public education programs. Ambassador



A visitor at Spirit Keeper Animal Sanctuary interacting with TC, a six-year-old Super Dwarf Reticulated Python whose temperament and affiliative nature with people landed him in the role of Lead Ambassador Snake in the program.

animal programs and keeper talks represent critical opportunities to connect visitors with snakes and other reptiles in ways that can enhance conservation awareness, correct misconceptions about snakes, and promote responsible exotic pet ownership. By aligning educational messages with the decision-making criteria of prospective pet owners, zoo professionals can play a pivotal role in ensuring better outcomes for snakes kept in private care and promote conservation of wild snakes and their importance to their native ecosystems.

Key Findings and Their Educational Implications

The survey results revealed that temperament, space requirements, and the snake's wild-caught versus captive-bred status are the three most important factors for potential snake owners. These preferences provide opportunities for zoo educators to tailor their messaging in ambassador animal programs and keeper talks. The high ranking of temperament may reflect strong interest in how a snake behaves and responds to interactions. For ambassador programs, this highlights the importance of selecting snakes with calm, predictable dispositions, as they are more likely to engage positively with visitors.

Educational messaging should emphasize that temperament is not only a key consideration for ambassador animals but also for prospective pet snakes, as mismatches between owner expectations and a snake's natural behavior can result in owner dissatisfaction, neglect, or abandonment (Stringham & Lockwood, 2018; Pasmans et al., 2017). Educators can further explain that temperament is influenced by species natural history and biology, individual temperament and personality traits, and handling history (Powell & Gartner, 2011; Waters et al., 2017; Skinner, 2022). This is an opportunity to highlight the role of captive breeding and conditioning in promoting temperament traits suitable for pet ownership and fostering responsible choices among potential owners.



Lead Ambassador Snake TC interacting with a visitor at Spirit Keeper Animal Sanctuary, Colorado.

Space requirements were ranked as a frequently considered factor in the top five, indicating that potential snake owners recognize the need to provide appropriate enclosures and living environments. For zookeepers, this is a prime opportunity to educate visitors about snake thermoregulation and natural behaviors while advising on species-specific enclosure needs, including habitat enrichment, appropriate enclosure size, provision of temperature gradients, and environmental complexity. Keeper talks can emphasize that inadequate space and lack of opportunities to express natural behaviors can negatively impact a snake's overall wellbeing, reinforcing the importance of proper planning before acquiring a pet snake (Hoehfurtner et al., 2021; Warwick et al., 2021).

The standout criteria of most importance was placed on wild-caught versus captive-bred status, while not qualitatively explored in this survey, may be indicative of a growing awareness of ethical and welfare considerations in the pet trade (Robinson et al., 2015; Alves et al., 2019; Altherr & Lameter, 2020). However, the lack of qualitative data means it is unclear whether respondents preferred captive-bred snakes for ethical reasons,



health benefits, legal reasons, or other factors; or conversely if respondents valued wild-caught snakes, preferring to acquire their pets from importers. Zoo educators can use this ambiguity to initiate conversations about the conservation and welfare implications of wild-caught snakes, such as habitat depletion, population decline, and stress. Highlighting the benefits of captive breeding by reducing pressure on wild populations and for producing healthier, more adaptable snakes to live as pet family members, can promote responsible sourcing and ownership.

Conversely, an intriguing finding from this study was the low prioritization of life expectancy by survey respondents when selecting a pet snake. Life expectancy consistently ranked among the bottom five criteria, with 24 respondents placing it in the least important position. This raises critical questions about the perceptions and motivations of prospective snake owners. Are respondents aware of the long lifespans of some snake species, or are they assuming that snakes are short-lived pets requiring minimal long-term planning? Alternatively, it may reflect a lack of concern for the longevity of the animal or a misjudgment of how a snake's lifespan aligns with their personal circumstances and commitment level. Snakes, depending on the species, can live anywhere from 10 to over 40 years, particularly when provided with optimal care in captivity

(Austad & Finch, 2022; Warwick et al., 2021). If owners are unaware of or fail to consider a snake's longevity at the time of acquisition, they may find themselves unprepared for the long-term commitment required. Keeper talks and ambassador animal interactions provide ideal opportunities for zookeepers to emphasize the importance of understanding a snake's lifespan and the planning required for long-term care.

Diet was also ranked among the bottom five criteria by the majority of respondents, indicating it is often deprioritized when selecting a pet snake. This finding suggests that potential owners may lack awareness of or undervalue the significance of dietary requirements. The diversity in snake diets, from the specialized needs of egg-eating snakes (*Dasypeltis* spp.) to the large prey requirements of species like Burmese Pythons (*Python bivittatus*), can create challenges for owners who are unprepared for these responsibilities. Again, zoo educators can play a critical role in addressing this gap through ambassador animal programs and keeper talks. Highlighting the natural dietary needs of different species can help visitors better understand what feeding entails and ensure their expectations align with the realities of snake care. For instance, visitors inspired by ambassador snakes may not realize the logistical challenges of sourcing specialized food that, while easily obtained by zoos may be more challenging for private keepers to find. By proactively addressing dietary considerations in educational messaging, zookeepers can help potential snake owners make informed decisions, reducing the likelihood of improper care or abandonment. This targeted outreach supports responsible pet ownership and reinforces the broader conservation and welfare goals of zoos.

Limitations and Future Research

While this study provides valuable insights, it is not without its limitations.

Sample size is a primary limitation, as the survey relied on voluntary participation, yielding 47 usable responses. This relatively small sample size may not fully represent the broader population of U.S. snake owners. Additionally, the study relied solely on quantitative data, lacking qualitative responses that could have offered deeper insights into the reasons behind specific rankings. For example, while wild-caught versus captive-bred status ranked highly, the motivations for this preference were not investigated.

To build on these findings, future studies should consider a larger sample size to make the quantitative data more robust and integrating qualitative methods such as interviews or open-ended survey questions to help uncover the motivations behind rankings, such as why certain criteria like captive-bred status or temperament are prioritized. Additionally, longitudinal studies could examine how owner satisfaction and snake welfare outcomes align with the initial selection criteria over time.

Further research into the impact of ambassador animal programs on public attitudes toward exotic pet ownership is also warranted. For instance, studies could explore whether specific messaging strategies



Lead Ambassador Snake TC with guest.

discourage or encourage snake or other reptile ownership. Collecting data on whether keeper talks effectively address misinformation and misconceptions, dissuade impulsive purchases, and promote responsible ownership. Finally, more detailed investigations into the role of temperament, particularly how it is influenced by captive breeding and early handling, could inform best practices for both private owners and zoos.

CONCLUSION

The findings from this preliminary survey provide actionable insights into factors that may influence snake selection among U.S. enthusiasts, highlighting the importance of temperament, space requirements, and captive-bred status. For zookeepers and educators, this information holds value for shaping ambassador animal programs, keeper talks, and public education initiatives. By aligning messaging with visitor perceptions and expectations, educators can promote responsible ownership, enhance conservation awareness, reduce misconceptions, and inspire thoughtful decision-making. Future research should build on these findings by incorporating qualitative data and exploring the long-term impacts of educational interventions. Ultimately, this study demonstrates an opportunity for zoos to play a pivotal role in bridging the gap between visitor curiosity, animal welfare, and conservation advocacy.

ACKNOWLEDGEMENTS

The author would like to extend gratitude to the individuals and groups that distributed this survey both within and outside of their groups. This included the New Ball Python Keepers Group, Boa Imperator – Beyond the Obsession, and Behavior Education Patrons. Thank you. 🐍

REFERENCES

- Alves, R.R.N., Araújo, B.M.C., Policarpo, I.S., Pereira, H.M., Borges, A.K.M., Vieira, W.L.S., and Vasconcellos, A. 2019. Keeping reptiles as pets in Brazil: Ethnozoological and conservation aspects. *Journal for Nature Conservation*, 49(1):48-56. <https://doi.org/10.1016/j.jnc.2019.02.002>
- Altherr, S., and Lameter, K. 2020. The rush for the rare: Reptiles and amphibians in the European pet trade. *Animals*, 10(2085). <https://doi.org/10.3390/ani10112085>
- Austad, S.N., and Finch, C.E. 2022. How ubiquitous is aging in vertebrates?. *Science*, 376(6600):1384-1385.
- Fuhrman, N.E., and Ladewig, H. 2008. Characteristics of animals used in zoo interpretation: A synthesis of research. *Journal of Interpretation Research*, 13(2): 31-42.
- Gillespie, G., Arida, E. and Reilly, S. 2021. *Liasis savuensis*. The IUCN Red List of Threatened Species 2021: e.T128260706A128260711. <https://dx.doi.org/10.2305/IUCN.UK.2021-2.RLTS.T128260706A128260711.en>.
- Hoehfurtner, T., Wilkinson, A., Walker, M., and Burman, O.H. 2021. Does enclosure size influence the behaviour and welfare of captive snakes (*Pantherophis guttatus*)? *Applied Animal Behaviour Science*, 243, 105435.
- Kirsch, D.G., MacPherson, A.C., Meyers, C.N., Bowser, S.L., and Kross, S.M. 2024. Ambassador Animals Do Not Have a Clear Effect on Visitor Conservation Knowledge and Attitudes Toward Exotic Pets at a Zoo Exhibit. *Zoo Biology*.
- Pasmans, F., Bogaerts, S., Braeckman, J., Cunningham, A.A., Hellebuyck, T., Griffiths, R.A., Sparreboom, M., Schmidt, B.R., and Martel, A. 2017. The future of keeping pet reptiles and amphibians: Towards integrating animal welfare, human health, and environmental sustainability. *Veterinary Record*, 181(7):450. <https://doi.org/10.1136/vr.104296>
- Powell, D.M., and Gartner, M.C. 2011. Applications of personality to the management and conservation of nonhuman animals. From genes to animal behavior: Social structures, personalities, communication by color, 185-199.
- Robinson, J.E., Griffiths, R.A., St. John, F.A.V., and Roberts, D.L. 2015. Dynamics of the global trade in live reptiles: Shifting trends in production and consequences for sustainability. *Biological Conservation*, 184:42-50. <https://doi.org/10.1016/j.biocon.2014.12.019>
- Skinner, M., Brown, S., Kumpan, L.T., and Miller, N. 2022. Snake personality: differential effects of development and social experience. *Behavioral Ecology and Sociobiology*, 76(10):135.
- Skinner, M., Kumpan, T., and Miller, N. 2024. Intense sociability in a "non-social" snake (*Python regius*). *Behavioral Ecology and Sociobiology*, 78(11):113.
- Stringham, O.C., and Lockwood, J.L. 2018. Pet problems: Biological and economic factors that influence the release of alien reptiles and amphibians by pet owners. *Journal of Applied Ecology*, 55(2632-2640). <https://doi.org/10.1111/1365-2664.13237>
- Valdez, J.W. 2021. Trends in the reptile pet trade: Evaluating current and future species popularity using Google Trends. *Animals*, 11(676). <https://doi.org/10.3390/ani11030676>
- Warwick, C., Grant, R., Steedman, C., Howell, T.J., Arena, P.C., Lambiris, A.J., ... and Wilson, A. 2021. Getting It Straight: Accommodating rectilinear behavior in captive snakes—A review of recommendations and their evidence base. *Animals*, 11(5):1459.
- Waters, R.M., Bowers, B.B., and Burghardt, G.M. 2017. Personality and individuality in reptile behavior: Personality in nonhuman animals, 153-184.



The author and her husband Jim while teaching a workshop on reptile enrichment.

APPENDIX

Survey

Snake Criteria Ranking Survey

Choosing a Snake: What's important to YOU?

Create your custom list. When adding a snake to your family, whether for the first time or as an additional family member, what is most important to you? Please rank the following 20 criteria starting with what is the most important to you (number 1) all the way down to what is the least important to you (number 20) when deciding to add a snake family member.

Your personal information will remain anonymous, I am compiling results as a whole to get an idea of what the most important considerations are for people when choosing a snake.

Please rank each criterion from 1 to 20, where: 1 = Most Important and 20 = Least Important. Each number should be used only once.

Criteria	Rank (1-20)
Appearance (color, pattern, morph, physical shape, "how it looks", etc.)	
Arboreality/Terrestriality (how much it climbs or remains on the ground)	
Availability (how easy it the snake species to find and obtain)	
Climate Requirements	
Coping Style/Default Stress Response (how it responds when worried/afraid)	
Cost of Snake (to purchase)	
Cost to Maintain (over its lifetime, may be up to 30 + years)	
Diet (prey type, amount, frozen or live)	
Energy Level (low, moderate, high)	
Exercise Requirements (low, moderate, high)	
Handleability (tolerance of touch, being picked up)	
Life Expectancy (varies, can be approximately 10 – 40 years)	
Size (tiny, small, medium, large, giant, thin, thick, etc.)	
Space Requirements (enclosure size needed, exercise space needed)	
Temperament (Bold-Shy; Curious-Indifferent; Affiliative-Aloof, etc.)	
Time of Day/Night Most Active (day, night, morning, evening, etc.)	
Trainability (type of learner, target or station training, puzzles, impulsivity, etc.)	
Type of Activities Likely to Engage In (foraging, free roaming, perching, hiding)	
Visibility (amount of time spent hiding versus out in the open; able to be seen)	
Wild-caught/Captive-bred Status (was snake bred in captivity or caught in wild)	

Table 1

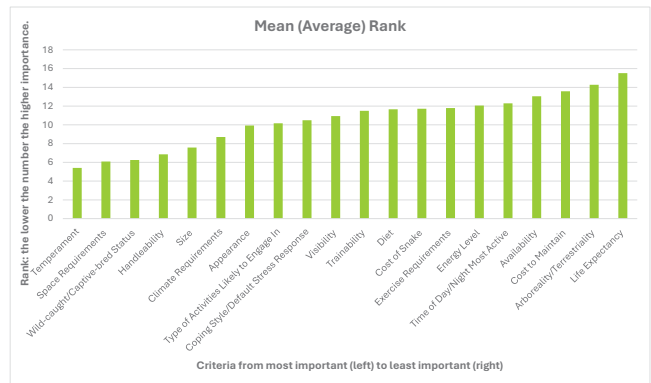


Table 2

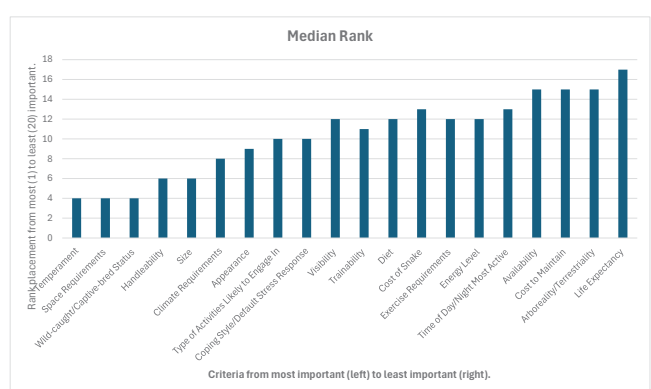
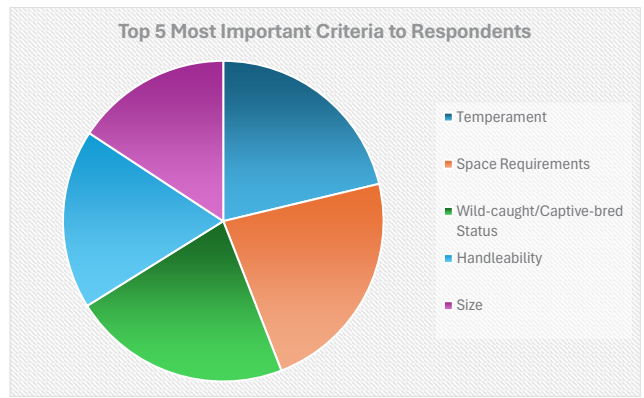


Table 3



learning
partner

ASSOCIATION
OF ZOOS &
AQUARIUMS



ZOO & AQUARIUM SCIENCE

Learn new skills and advance your career with an **Online** education from the Animal Behavior Institute.

- Animal Training
- Behavioral Enrichment
- ZIMS & Recordkeeping
- Health & Nutrition
- Environmental Education
- And much, much more

Start today and earn
your certificate in as
little as six months!

Created by Zoo Keepers for Zoo Keepers



A more personal education

animaledu.com
support@animaledu.com
Toll free: 866-755-0448

SSSENSATIONAL SNAKES: OVERCOMING FEAR BY INSPIRING EMPATHY

KARINA ALTMAN, M.A., ZOO CONTENT MANAGER
ARK ENCOUNTER'S ARARAT RIDGE ZOO
WILLIAMSTOWN, KENTUCKY



Ssensational Snakes presentation. Photo by Karina Altman

INTRODUCTION

“Snakes - why'd it have to be snakes?” Indiana Jones' famous quote and his fearful behavior around snakes reflect many people's negative attitudes toward snakes. Animal phobias are the most persistent mental illness in the world (Polák et al., 2020), and snake phobia is the most prevalent animal fear in the United States (Cerfaco, 2012). Fright makes money in entertainment, and snakes capture human attention faster than other animals (Stanley, 2008), so snakes are often chosen to be sensationally portrayed as scary animals in media. Snake “attacks” and other snake bite statistics are often inaccurately reported (Liordos et al., 2018). Laypeople receive most of their scientific information from mass media sources (Dahlstrom, 2014), so the methods the media uses to present information have a strong impact on the way people understand and then respond to similar scenarios in their

lives (Kusmanoff et al., 2020). Once fear is learned, it is not easy to overcome (Liordos et al., 2018).

The historical persistence of myths, legends, and folklore about snakes has given them one of the worst reputations in the animal kingdom (Liordos et al., 2018). Negative social norms surrounding snakes often stem from beliefs that they threaten humans, spread disease, or conflict with living situations (Jerger et al., 2022). Therefore, the common belief that snakes are evil combined with the prevalent fear of snakes results in the magnitude of snake persecution seen today. Ceriaco's (2012) research demonstrated that belief in folklore increased people's propensity to persecute snakes. Consequently, there is little support for their conservation despite their beneficial ecological functions (da Silva et al., 2021).

Understanding the emotional component of conservation is key to garnering support for snake preservation (Castillo-Huitrón et al., 2020). Unfortunately, 21.1% of reptiles are threatened with extinction - a greater number than mammals or birds (Cox et al., 2022). Primary threats include habitat loss or fragmentation, invasive species and out-competition, pollution or poisoning, and climate change (Ceriaco, 2012). Unfortunately, studies show that snakes are the most aversive type of reptile when it comes to human perceptions and therefore face serious persecution and other anthropogenic threats (da Silva et al., 2021).

The Ararat Ridge Zoo at the Ark Encounter, located in Williamstown, Kentucky, is advocating for snake conservation. Zoo programs are responsible for building empathy and emotional connections with guests (Akerman, 2019). Live animal programs are more effective than print or video media in fostering connections with wildlife (Fuhrman & Ladewig,



Taiwan Beauty Snake. Photo by Channing Guest.

2008). They increase awareness of conservation initiatives, but also to eliminate myths about and emotional distance from wildlife (Jerger et al., 2022). This is particularly true with snakes, one of the most phobic animals in the world (Souchet & Aubret, 2016). However, live animal interactions can elicit positive emotions and reduce fear (Alfandre, 2022; Jerger et al., 2022). This challenge increases at a biblically-based attraction like the Ark Encounter, as many Christians view them as evil (as defined by the Bible as opposition to God and his commands) due to their connection with Satan in the Bible (Liordos et al., 2018).

The Sensational Snakes show was created to debunk sensationalized myths about snakes while revealing sensational truths instead. This philosophy is in line with Ceriaco's (2012) recommendations that snake programs should focus on correcting wrong ideas about snake behavior and highlighting their usefulness to humans. Studies show that fear of snakes can be overcome, especially if a general empathy for nature is encouraged (Stanley, 2008). However, human behavior is not always rational and is instead affected by information, attitudes, beliefs, values, and social

norms (Jerger et al., 2022). Therefore, the show also aims to create empathy for and emotional connections with the snakes by allowing guests to touch them. While positive attitudes about snakes may increase when knowledge is increased, aversion is reduced and stronger emotional bonds are created when physical interaction is incorporated (Alfandre, 2022). For children especially, touch is the most important factor in creating interest in something (Kidd & Kidd, 1994). Additionally, the staff purposefully chose visually-appealing snakes for the collection, as aesthetically pleasing animals encourage attractiveness bias (Alfandre, 2022).

Sensational Snakes is presented in narrative form, as Dahlstrom (2014) reveals that storytelling formats increase long-term comprehension, engagement, and interest in the topics. Staff also utilize gentle anthropomorphism within the show. While this practice tends to be considered taboo in the zoological world as there is a hesitancy to label what is not known for certain, studies show that humans relate more strongly to animals they perceive to be like themselves, and anthropomorphism creates connections between people and wildlife (Akerman,

2019). This show consistently receives the highest attendance among our multiple animal programs, and staff have often heard guests tell them about how their perceptions of snakes improved after watching the show. However, there were no solid data to prove that the Sssensational Snakes show was making a difference. The purpose of this study was to discover if the Ararat Ridge Zoo's Sssensational Snakes show is creating more pro-snake perceptions in Ark Encounter guests.

METHODS

This study involved surveying Ark Encounter guests who watched the Ararat Ridge Zoo's Sssensational Snakes program both before and after the show to determine whether their perceptions of snakes changed after watching the performance. The survey questions were presented in a Google Form. The survey consisted of 15 questions answered before viewing the show and 15 questions answered after viewing the show. The incentive for guests to complete the survey was a free painting done by the zoo's snakes.

This study was conducted from 1 June 2023, through 5 July 2023, and covered 23 Sssensational Snakes shows. An informational poster advertising the survey to guests was placed in the

center of the stage 15 minutes before the start of the show, when zoo staff were setting up props. It contained a QR code linked to the survey and explained that those who complete the survey would receive a free painting done by the snakes upon proof of completion.

After the show was completed, zoo staff moved the poster back to center stage and reminded everyone who took the "before" survey to complete the "after" survey. The announcer would also inform the audience that those who showed proof of completion at the end of the survey would be able to choose a free painting done by the snakes.

All results were recorded within the Google Form and on a connected Google Sheet. If a guest had only completed the "after" survey but not the "before" survey, their response was removed from the analysis, as it did not provide the necessary comparative information.

Three questions related to snake perceptions in the "before" survey were repeated in the "after" survey so their responses could be compared for statistically significant differences. The questions were:

What is your perception of snakes? This was represented pictorially and the

ranks 1 (worst) through 5 (best) were labeled as 1=despise, 2=uncomfortable, 3=indifferent, 4=don't mind, and 5=like. Where would you feel most comfortable with snakes living? The ranks 1 (worst) through 5 (best) were labeled as 1=nowhere near me!, 2=far away, 3=in the area, 4=within visual range of my residence, and 5=anywhere!. How important do you think snakes are to their natural environment? The ranks 1 (worst) through 5 (best) were labeled as 1=unnecessary, 2=harmful, 3=not harmful or helpful, 4=helpful, and 5=necessary.

Mann-Whitney U-tests were run to see if there were significant differences in the "before" and "after" populations, and then the average change was calculated to see if that difference was positive or negative. Additionally, chi-square tests with and without the Yates correction were run to show whether there were significant differences in the number of guests ranking their views as 5 (best) before and after the show.

Ten questions in the before survey and ten questions in the after survey were related to demographics, explanations of responses (such as why they ranked their perceptions of snakes the way they did), and show feedback. These were analyzed to find possible connections between perceptions and demographics, determine the main reasons for people's liking or disliking of snakes, and improve the show for the future.

RESULTS

A total of 349 people who viewed the Sssensational Snakes show at the Ararat Ridge Zoo completed the surveys to the standard needed for proper analysis. People from 38 U.S. states plus Ontario, Canada, completed the survey.

Comparisons of guest perceptions of snakes before and after viewing Sssensational Snakes can be seen in Figure 1.

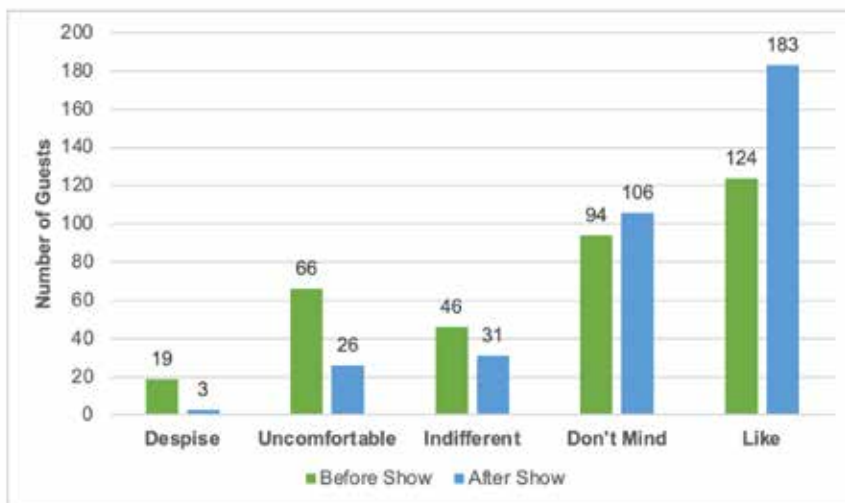


Figure 1. Comparison of Ararat Ridge Zoo guest perceptions of snakes before and after viewing the Sssensational Snakes Show

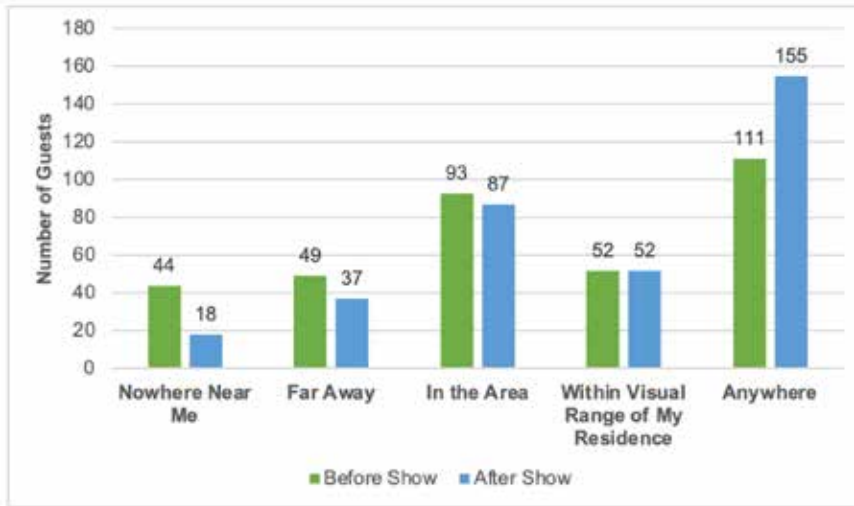


Figure 2. Comparison of where Ararat Ridge Zoo guests would feel most comfortable with snakes living before and after viewing the Ssensational Snakes Show

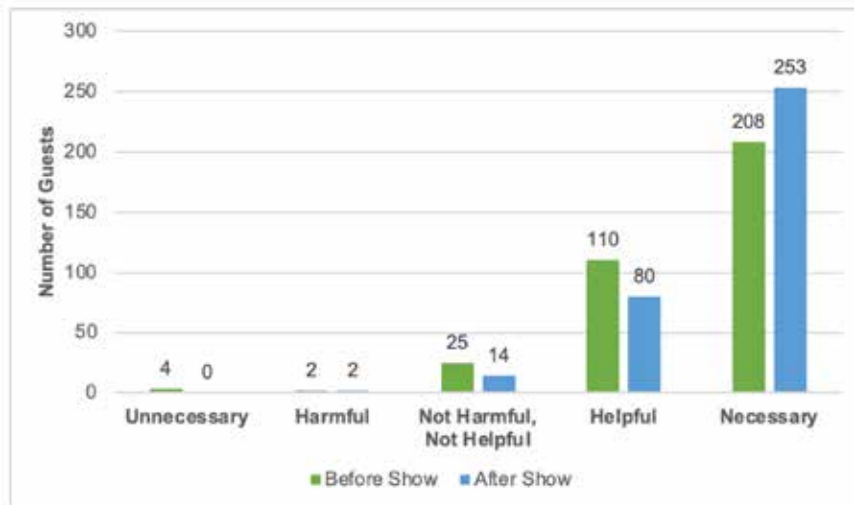


Figure 3. Comparison of how important Ararat Ridge Zoo guests think snakes are for the environment before and after viewing the Ssensational Snakes Show

A Mann-Whitney U-test on guest snake perceptions before and after the show using a 95% level of confidence ($\alpha = .05$) revealed a U statistic of 45683.5. The p -value is 1.11075E-08, making the results significant at $p < 0.05$. The average change in perception between the before and after populations is +0.573065903, meaning there is a significant increase in overall guest snake perceptions following the show. To reveal whether there was a significant difference in the number of people who ranked their perception of

snakes as the most favorable (5 - like) after viewing the show, a chi-square test using a 95% level of confidence ($\alpha = .05$) gave a chi-square statistic of 20.2416. The p -value is <0.00001 , making the results significant at $p < 0.05$. Also, a chi-square test with the Yates correction using a 95% level of confidence ($\alpha = .05$) gave a chi-square statistic of 19.5612. The p -value is <0.00001 , making the results significant at $p < 0.05$.

Comparisons of how comfortable guests feel around snakes before and after

viewing Ssensational Snakes can be seen in Figure 2 .

A Mann-Whitney U-test on guest snake proximity comfort before and after the show using a 95% level of confidence ($\alpha = .05$) revealed a U statistic of 50211.5. The p -value is 5.99648E-05, making the results significant at $p < 0.05$. The average change in comfort level with snake proximity between the before and after populations is +0.438395415, meaning there is a significant increase in overall guest snake proximity comfort following the show. To see whether there was a significant difference in the number of people who ranked their comfort around snakes as the most favorable (5 - anywhere) after viewing the show, a chi-square test using a 95% level of confidence ($\alpha = .05$) gave a chi-square statistic of 11.7597. The p -value is 0.000605, making the results significant at $p < 0.05$. Also, a chi-square test with the Yates correction using a 95% level of confidence ($\alpha = .05$) gave a chi-square statistic of 11.2312. The p -value is 0.000804, making the results significant at $p < 0.05$.

Comparisons of how important guests think snakes are for the environment before and after viewing Ssensational Snakes can be viewed in Figure 3.

A Mann-Whitney U-test on how important guests think snakes are for the environment before and after the show using a 95% level of confidence ($\alpha = .05$) revealed a U statistic of 52668. The p -value is 0.001997, making the results significant at $p < 0.05$. The average change in belief in snake importance to the environment between the before and after populations is +0.191977077, meaning there is a significant increase in overall guest perception of snake environmental roles following the show. To determine whether there was a significant difference in the number of people who ranked the importance of snakes as the most favorable (5 - necessary) after viewing the show, a chi-square test



Carpet Python. Photo by Channing Guest.



California Kingsnake. Photo by Channing Guest.

using a 95% level of confidence ($\alpha = .05$) gave a chi-square statistic of 12.9369. The p -value is 0.000332, making the results significant at $p < 0.05$. Also, a chi-square test with the Yates correction using a 95% level of confidence ($\alpha = .05$) gave a chi-square statistic of 12.3683. The p -value is 0.000437, making the results significant at $p < 0.05$.

Following the program, 67.3 % (235) of guests took photos of the snakes. Feelings when photographing the snakes are reflected in Figure 4.

Additionally, after the show, 49% of respondents (171) said that they touched one of the snakes. Feelings when touching the snakes are reflected in Figure 5.

DISCUSSION

According to Morgan & Gramann (1989), to be considered successful, educational animal programs should result in positive changes in the audience's perceptions and knowledge of wildlife. The Ssensational Snakes show at the Ararat Ridge Zoo can therefore be considered a success, as

it is making significant improvements in Ark Encounter guest perceptions of snakes. Guests are significantly more comfortable around snakes and display significantly more appreciation for their role in the environment after watching the program. The data reveal that even though snakes are one of the most feared and misunderstood creatures in the animal kingdom (Alfandre, 2022), zoos can change people's perceptions of them (Stanley, 2008).

Many respondents mentioned that touching snakes themselves, even if they remained afraid, made a huge difference in their ideas of snakes. We determined that 88% (249) of the people who touched the snakes experienced positive feelings. This may be because informational messages or exposure alone have little effect on fear, but even snake-phobic people have significantly more positive attitudes about snakes after direct contact (Morgan & Gramann, 1989). Physical interaction continues to be one of the most effective methods in changing people's minds about snakes (Morgan & Gramann, 1989). Additionally, many guests said that watching the handlers' calm behavior

around the snakes made a big difference in their perceptions. This coincides with Fuhrman & Ladewig's (2008) findings that models with non-fearful behavior around feared animals can significantly improve people's feelings towards them. The Ssensational Snakes show's method of combining exposure, information, modeling, and direct contact seems to be an ideal approach to combating negative snake stereotypes.

Examination of the reasons why people chose the initial ranking of their perceptions of snakes proved intriguing, as they are consistent with explanations for snake fear in literature. While there are components of snake fear that may be innate, studies reveal it is often a learned behavior (Stanley, 2008). Attitudes, biases, and perceptions about animals are mostly developed during childhood and are a strong indicator of adulthood behavior (Jeger et al., 2022). Infants and young children are not usually afraid of snakes, but they are adept at detecting them quickly (Souchet & Aubret, 2016). However, if they have a bad experience or are shown negative media portrayals of

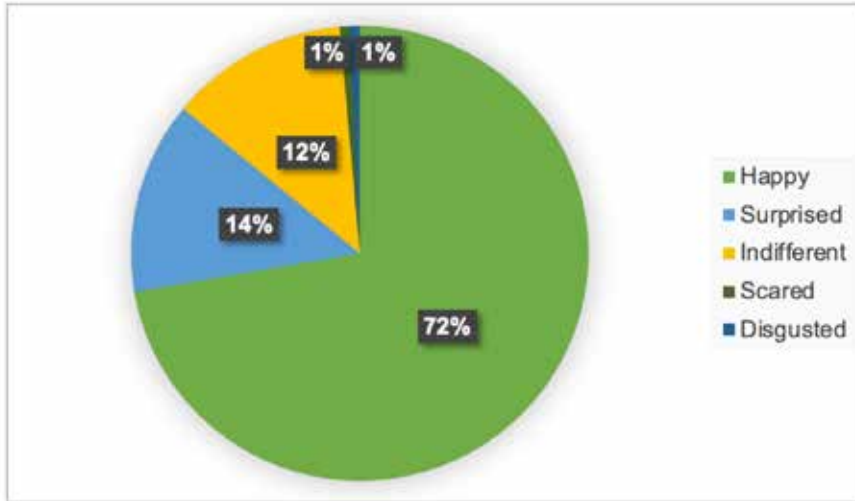


Figure 4. Guest feelings while taking photographs of Ararat Ridge Zoo snakes after viewing the Ssensational Snakes Show

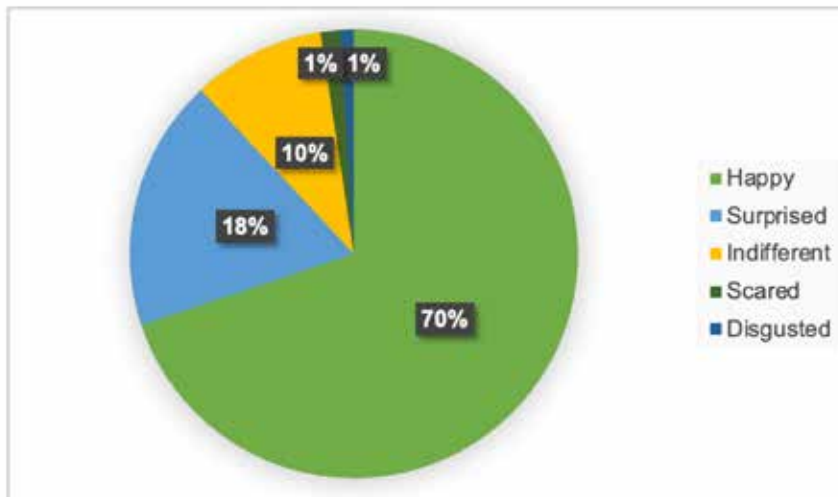


Figure 5. Guest feelings while touching Ararat Ridge Zoo snakes after viewing the Ssensational Snakes Show

snakes, they become predisposed to exhibiting fear responses (Souchet & Aubret, 2016). One of the respondents specifically listed the *Indiana Jones* movies as the reason she despised snakes. Children's attitudes towards snakes are often learned from their parents and can be developed without any snake experience of their own (Ware et al., 1994). Educational programs have the potential to improve children's perceptions of animals and increase their desire to live in harmony with them (Jerger et al., 2022). Several guests admitted that they were raised

or taught to fear snakes, but that seeing the zoo's snakes and their behavior for themselves changed their perceptions of them.

One of the primary reasons listed in the surveys for initial dislike of snakes was the belief they were slimy. This corresponds with Ware et al.'s (1994) disgust-avoidance model, which discovered that people tend to fear animals they find disgusting to protect them from becoming sick. The false perception of snakes being slimy leads to a reaction of disgust and therefore

fear (Ware et al., 1994). When people learned that snakes are not slimy, their ideas about them changed.

Similarly, others referenced other facets of snake anatomy as the reason for their fear. Some mentioned their lack of legs was disconcerting; others mentioned their scales. Several guests mentioned they were bothered by slithering. Interestingly, babies only associate snakes with fear in videos, not photos, which points to snakes' unique movement as a component of fear (Polák et al., 2020). The more different animals are from humans, the more they are feared (Castillo-Huitrón, 2020). Aposematic signals were also mentioned as a reason for concern, which coincides with Souchet & Aubret's (2016) study showing youth did not rank images of snakes as "mean" unless they had aposematic signals like sharp teeth, triangular heads, or zig-zag dorsal patterns. Further knowledge about the purpose of snake design soothed fears about them per Liordos et al.'s (2018) findings.

Another common misconception that led to snake fear was the lack of knowledge about and the inability to identify venomous snakes. The Ssensational Snakes show has an entire scene that focuses on snake behavior, the truth about venomous snakes, and snake identification. Respondents felt much more secure around snakes armed with this knowledge. Liordos et al. (2018) also determined that increased awareness of snake biology and attack behaviors greatly increases snake tolerance, attitudes, and conservation-minded behavior.

Some respondents inevitably mentioned the serpent's role in the Fall of Creation in Scripture as a reason for disliking snakes or believing them to be evil. Because this is a common argument among Christians, the Ssensational Snakes show has an entire portion dedicated to explaining snakes through the lens of the Bible. Staff informs the

The incorporation of animal contact also seems to have made a strong impression on guests, even those who were fearful of snakes.

audience that God created snakes and declared them very good. It was Satan, not a snake, that tempted Adam and Eve into disobedience. Snakes are incapable of evil because they are not moral beings made in the image of God like humans. While snakes are associated with Satan several times in Scripture, they are also associated with salvation. In the book of Numbers, God commanded Moses to raise a statue of a snake among the Israelites, and whoever looked upon it was healed. This was a foreshadowing of Christ's sacrifice on the cross (Stanley, 2008). Many respondents mentioned this portion of the show being the reason they improved their perceptions of snakes.

CONCLUSION

While snake fear is one of the most prevalent phobias, educational zoo programs can improve people's attitudes toward snakes. The Sensational Snakes show at the Ark Encounter's Ararat Ridge Zoo significantly improves people's perceptions of, comfort around, and care for snakes. The incorporation

of animal contact also seems to have made a strong impression on guests, even those who were fearful of snakes. Not only did guest perceptions, comfort level, and environmental awareness of snakes significantly increase due to Sensational Snakes, but many also reflected positive emotions after viewing the show. Most respondents indicated that they experienced happiness or surprise when photographing or touching the snakes. This study demonstrates that people's minds can be changed in favor of uncharismatic animals, which consequently leads to more conservation-minded behavior.

ACKNOWLEDGMENTS

The researcher wishes to thank the significant contributions of Herptile and Programs Manager Channing Guest, Programs Lead Keeper Benjamin Dunning, and Herptile Keeper Luke Daniel. Without their assistance, this research would not have been completed. 🙌

Rainbow Boa. Photo by Sarah Borman.



Boa Constrictor. Photo by Karina Altman



REFERENCES

- Akerman, S. 2019. Best practices for building empathy through live animal encounters. *Journal of Museum Education*, 44(1): 89–95. <https://doi.org/10.1080/10598650.2018.1496388>
- Alfandre, J. 2022. The importance of snake education on snake conservation. [Standard Thesis, Bates College]. Scholarly Research and Communication at Bates. https://scarab.bates.edu/cgi/viewcontent.cgi?Article=1000&context=biology_theses
- Castillo-Huitrón, N.M., Naranjo, E.J., Santos-Fita, D., and Estrada-Lugo, E. 2020. The importance of human emotions for wildlife conservation. *Frontiers in Psychology*, 11, 1-11. <https://doi.org/10.3389/fpsyg.2020.01277>
- Ceríaco, L.M. 2012. Human attitudes towards herpetofauna: The influence of folklore and negative values on the conservation of amphibians and reptiles in Portugal. *Journal of Ethnobiology and Ethnomedicine*, 8(1):1-12. <https://doi.org/10.1186/1746-4269-8-8>
- Cox, N., Young, B.E., Bowles, P., Fernandez, M., Marin, J., Rapacciuolo, G., Böhm, M., Brooks, T.M., Hedges, S.B., Hilton-Taylor, C., Hoffmann, M., Jenkins, R.K.B., Tognelli, M.F., Alexander, G.J., Allison, A., Ananjeva, N.B., Auliya, M., Avila, L.J., Chapple, D.G., ... Xie, Y. 2022. A global reptile assessment highlights shared conservation needs of tetrapods. *Nature*, 605(7909):285–290. <https://doi.org/10.1038/s41586-022-04664-7>
- Dahlstrom, M.F. 2014. Using narratives and storytelling to communicate science with nonexpert audiences. *Proceedings of the National Academy of Sciences*, 111(supplement 4), 13614–13620. <https://doi.org/10.1073/pnas.1320645111>
- da Silva, M.X.G., Braga-Pereira, F., da Silva, M.C., de Oliveira, J.V., de Faria Lopes, S., and Alves, R.R.N. 2021. What are the factors influencing the aversion of students towards reptiles? *Journal of Ethnobiology and Ethnomedicine*, 17(1). <https://doi.org/10.1186/s13002-021-00462-z>
- Fuhrman, N.E., and Ladewig, H. 2008. Characteristics of animals used in zoo interpretation: A synthesis of research. *Journal of Interpretation Research*, 13(2):31–42. <https://doi.org/10.1177/109258720801300203>
- Jerger, A.D., Acker, M., Gibson, S., and Young, A. 2022. Impact of animal programming on children's attitudes toward local wildlife. *Zoo Biology*, 41(5):469–478. <https://doi.org/10.1002/zoo.21702>
- Kidd, A.H., and Kidd, R.M. 1996. Developmental factors leading to positive attitudes toward wildlife and conservation. *Applied Animal Behavior Science*, 47: 119–125.
- Kusmanoff, A.M., Fidler, F., Gordon, A., Garrard, G.E., and Bekessy, S.A. 2020. Five lessons to guide more effective biodiversity conservation message framing. *Conservation Biology*, 34(5), 1131–1141. <https://doi.org/10.1111/cobi.13482>
- Liordos, V., Kotsiotis, V.J., Kokoris, S., and Pimenidou, M. 2018. The two faces of Janus, or the dual mode of public attitudes towards snakes. *Science of The Total Environment*, 621:670–678. <https://doi.org/10.1016/j.scitotenv.2017.11.311>
- Morgan, J.M., and Gramann, J.H. 1989. Predicting effectiveness of wildlife education programs: A study of students' attitudes and knowledge towards snakes. *Wildlife Society Bulletin*, 17(4):501–509. <https://www.jstor.org/stable/3782720>
- Polák, J., Rádlová, S., Janovcová, M., Flegř, J., Landová, E., and Frynta, D. 2020. Scary and nasty beasts: Self-reported fear and disgust of common phobic animals. *British Journal of Psychology*, 111(2):297–321. <https://doi.org/10.1111/bjop.12409>
- Souchet, J., and Aubret, F. 2016. Revisiting the fear of snakes in children: The role of aposematic signalling. *Scientific Reports*, 6(1). <https://doi.org/10.1038/srep37619>
- Stanley, J.W. 2008. Snakes: Objects of religion, fear, and myth. *Journal of Integrative Biology*, 2(2):42–58. <https://www.researchgate.net/publication/228628396>
- Ware, J., Jain, K., Burgess, I., and Davey, G.C. 1994. Disease-avoidance model: Factor analysis of common animal fears. *Behaviour Research and Therapy*, 32(1):57–63. [https://doi.org/10.1016/0005-7967\(94\)90084-1](https://doi.org/10.1016/0005-7967(94)90084-1)



Hognose Snake. Photo by Karl Rebenstorf.

A UTOPIA FOR THE MIND AND THE POCKET: REPORT ON THE AAZK LATIN AMERICAN TRAVEL GRANT (LATG) FOR LATIN AMERICAN KEEPERS

EMILIANO SCOLESE
ECOPARQUE DE BUENOS AIRES
BIOPARQUE LA PLATA

INTRODUCTION

My name is Emiliano Scolese, and I want to share how a scholarship turned what seemed like an unattainable dream into a tangible reality. Eight years ago, I immersed myself in the fascinating world of animal care. I did volunteer work, took unpaid jobs, and spent many hours of effort before landing my first job at the Ecoparque de Buenos Aires. Throughout this journey, my passion was always present, but financial resources were a constant obstacle.

THE IMPORTANCE OF ALWAYS TRYING

On January 21, 2024, I submitted my grant application for the 49th Annual AAZK Conference, which would take place in Omaha, Nebraska. With high hopes but few certainties, I decided to apply, and just before the deadline, I managed to send in my application—



just in time... A month and a half later, on March 18, 2024, the long wait came to an end: an e-mail informed me that I had been selected for the AAZK LATG. It was no longer just a dream—it had become a reality. That e-mail was also a wake-up call: among so many applicants, I had managed to be seen.

The American Association of Zoo Keepers (AAZK) awarded me a grant aimed at animal keepers in Latin America, a region where economic challenges often limit access to training and professional growth opportunities. This grant not only alleviated the financial burden but also opened doors to new experiences and learning opportunities.

In this report, I want to share the difficulties we face as keepers, the importance of collaboration between organizations, and the impact that this



type of support can have on the lives of many professionals.

ECONOMIC CHALLENGES IN THE TRAINING OF ANIMAL KEEPERS

Working with animals is a vocation that demands commitment, dedication, and continuous learning. However, in Latin America, keepers face enormous financial challenges that make access to training almost a luxury. Salaries are often low, and resources for further education are scarce.

Courses, conferences, certifications, or even access to educational materials can represent an expense that is impossible to afford. While in other parts of the world, professionals receive institutional support for their training, here, we rely on our own efforts and, at times, on the solidarity of colleagues and organizations that recognize the importance of investing in education. The lack of support networks and funding further exacerbates the situation, isolating many keepers and

limiting opportunities for growth. Without access to updated knowledge, it becomes difficult to improve working conditions and ensure optimal welfare for the animals in our care.

THE IMPORTANCE OF SUPPORT BETWEEN ORGANIZATIONS

Collaboration between institutions such as AAZK, ALPZA (Latin American Association of Zoos and Aquariums), and other conservation and animal welfare organizations is essential to breaking down these barriers. It is not just about financial aid—it is about opening pathways, recognizing the efforts of those who dedicate their lives to caring for wildlife, and providing them with the tools to keep growing. Scholarships and grants allow passionate professionals to access training that would otherwise be out of reach. But the impact goes far beyond the individual recipient. Each acquired piece of knowledge is shared with colleagues, applied in daily work, and contributes to raising the standard of animal care throughout the region.

Additionally, these initiatives strengthen a connected network of keepers, where the experience of some enriches the learning of others. It is not just about receiving but also about giving, exchanging, and collectively building a better future for animals and the people who care for them.

IMPACT OF THE GRANT

Thanks to the grant awarded by AAZK, I had the opportunity to access essential training in animal care, conservation, and education. However, the most valuable aspect was being able to share this experience with my colleagues. Knowledge was no longer a privilege for a few but became an accessible resource for many. What once seemed like a utopia became a reality.

This experience not only improved my performance as a keeper but also reinforced within my team the

importance of continuous education. Today, I can proudly say that the knowledge I gained did not stay with me alone, it became a tool for change for those around me.

CONCLUSION

The support provided by AAZK is an example of how collaboration and solidarity can transform lives. It impacts not only the keepers but also the welfare of the animals and the quality of the work we do every day. It is crucial that programs like this continue and expand so that more professionals can access opportunities that enhance their work and strengthen biodiversity conservation.

I am deeply grateful for this opportunity and reaffirm my commitment to sharing what I have learned, to being another link in this chain of knowledge, and to proving that when support arrives at the right moment, what once seemed like an impossible dream becomes an achievable goal.

And to the person reading this brief account—always try. It doesn't matter if it takes time to arrive; if you dream of it and long for it, you will make it a reality.





REPTISUN UVB/LED

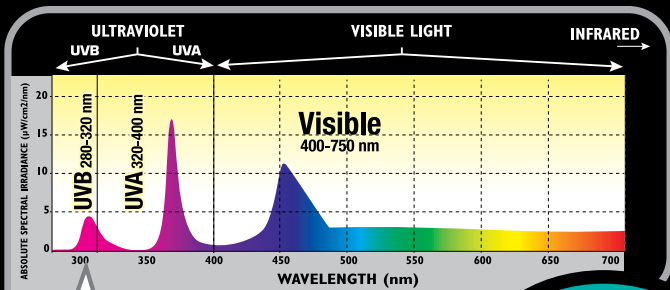
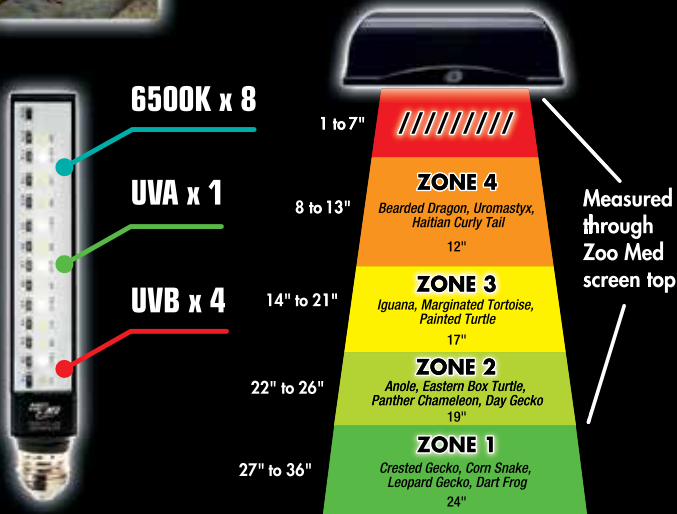
CUTTING EDGE UVB LED TECHNOLOGY



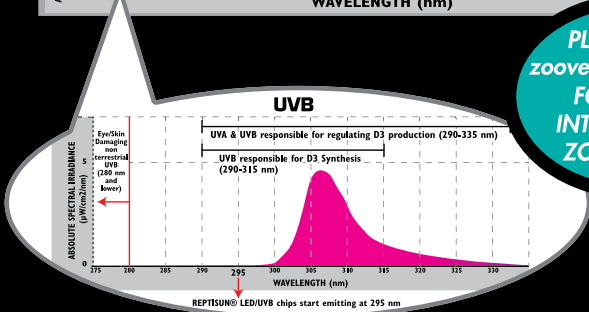
PROFESSIONAL SERIES

- The most energy efficient way to provide UVB
- Made with high-precision Japanese LEDs, the best in the world
- Combines UVB, UVA, and full visible spectrum lighting
- UVB-transmitting quartz glass cover for added protection and durability
- 283 Lumens
- CRI-96
- Color Temperature 6500K

USABLE UVB UP TO 40"



PLEASE EMAIL zoovet@zoomed.com FOR SPECIAL INTRODUCTORY ZOO PRICING!



SPECIAL MENTION

I want to express my deepest gratitude to Yvette Kemp, whose commitment and dedication have been fundamental throughout this process. Her unwavering support and passion for keeper education have made a difference not only in my life but also in the lives of many other professionals who, thanks to her efforts, have found opportunities for growth. Her work is a reminder that when the right people believe in us, dreams stop being utopias and become realities.

ACKNOWLEDGMENTS

I also want to thank the AAZK Board of Directors for providing this invaluable opportunity that allows Latin American keepers to continue growing professionally. Their commitment to education and animal welfare is a fundamental pillar of our development.

I extend my gratitude to the Ecoparque de Buenos Aires and the Bioparque La Plata for their support and for granting me the necessary days to travel and fully take advantage of this experience. Without their understanding and backing, this journey would have been much more difficult.

Finally, to my loved ones, who have stood by me every step of the way, offering their unconditional support, motivation, and encouragement. Their confidence in me has been the driving force that pushed me to make the most of this opportunity.

Thank you all for being part of my story. 🙏



Visitors love seeing healthy playful animals.
We can help!



Happy, healthy animals are our passion.

- 68 different items
- Custom manufacturing
- 32 colors
- 4 wall thicknesses

Family owned and operated

2401 Phoenix Ave NE • Albuquerque, NM 87107
Ph: 866.793.0376 • Fax: 505-884-3932 • E-mail: sales@wildlifetoybox.com
www.wildlifetoybox.com
A Proud Product Line of Desert Plastics



2820 S Alma School Rd.
Suite 18 PMB 2057
Chandler, AZ 85286
U.S.A.

Sound Nutrition for Nature's Royalty



Central Nebraska Packing, Inc. offers:

Classic & Premium Frozen Carnivore Diets

• ALSO AVAILABLE •

HORSE SHORT LOINS / HORSE & BEEF BONES

MEAT COMPLETE **WITH TAURINE** (RAW MEAT SUPPLEMENT FOR ALL CARNIVORES)

MEMBER: AZA | AAZV | AAZK

NEBRASKA BRAND



877.900.3003 | 800.445.2881

P.O. Box 550, North Platte, NE 69103-0550

info@nebraskabrand.com • nebraskabrand.com

FELINE & SENIOR FELINE | BIRD OF PREY | CANINE | SPECIAL BEEF FELINE