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Animal Keepers' Forum

AKF



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221 ABOUT THE COVER

222 FROM THE PRESIDENT

224 COMING EVENTS

**225 LEWA WILDLIFE CONSERVANCY'S
IAN CRAIG HONORED**

FEATURED ARTICLE

226-228

*Meerkat Management:
From Chaos to Compliance*

Tyler Mesick and Conrad Teufel III

229 AAZK ANNUAL REPORT

TRAINING TALES

234-237

Steer Squeeze Training at the Nashville Zoo

CONSERVATION STATION

238-239

*Foundation for the
Conservation of Salamanders*

MY AAZK

240-241

*Professional Development and the
AAZK National Conference*

**AAZK 2015
Annual Report**
pp. 229-232



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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

Salamanders are the most abundant vertebrate predator in Appalachia. Scientists believe their biomass is equivalent to that of white-tailed deer in their ecosystem. Although you can find salamanders on every continent, except Australia and Antarctica, the highest diversity is here in the United States, especially Appalachia. Out of the roughly 650 species that are known to science, 80 are found in Appalachia and almost 200 are found in the United States. They are true Americans.

The photo on the cover of this issue of the *Animal Keepers Forum* is of a (*Eurycea wilderae*) or Blue Ridge Two-lined Salamander. *Eurycea* is a genus of salamanders native to North America that are commonly referred to as brook salamanders. Species in the genus *Eurycea* are within the family Plethodontidae, or the lungless salamanders, which is the largest family of extant salamanders with over 350 species. This fairly small species is found primarily in the Blue Ridge Mountains in North Carolina and Tennessee, although they can be found as far north as Virginia and down to the northern mountains of Georgia. Adults can be found in and around streams hiding under leaf litter within their range; their larvae are aquatic.

The photographer, Todd Pierson, is a PhD student in the Department of Ecology and Evolutionary Biology at the University of Tennessee conducting his research on salamanders. His past research on the use of eDNA to monitor Appalachian salamanders was conducted through the Odum School of Ecology at the University of Georgia. Todd Pierson was one of The Foundation for the Conservation of Salamanders' (FCSal) first grant recipients, back when FCSal was known as Chopsticks for Salamanders. Todd's research is extremely valuable to the conservation of Appalachian salamanders and his continued passion for this taxa is inspiring. In addition to conducting research on salamanders, Todd is an exceptional photographer!

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. Phone (330) 483-1104; FAX (330) 483-1444; e-mail is shane.good@azk.org. If you have questions about submission guidelines, please contact the Editor. Submission guidelines are also found at: azk.org/akf-submission-guidelines/.

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ANIMAL KEEPERS' FORUM

TO CONTACT THE AKF EDITOR:

Shane Good, AKF Editor
P.O. Box 535, Valley City, OH 44280
330-483-1104
Shane.Good@azk.org

AAZK Administrative Office

American Association of Zoo Keepers
8476 E. Speedway Blvd, Suite 204
Tucson, AZ 85710-1728
520-298-9688 (Phone/Fax)

CHIEF EXECUTIVE/FINANCIAL OFFICER: Ed Hansen

E-Mail: Ed.Hansen@azk.org

DIRECTOR OF PROFESSIONAL DEVELOPMENT: Bob Cisneros

E-mail: Bob.Cisneros@azk.org

ANIMAL KEEPERS' FORUM - EDITOR

Shane Good, Shane.Good@azk.org

GRAPHIC DESIGNER

Elizabeth Thibodeaux, Elizabeth.Thibodeaux@azk.org

ENRICHMENT OPTIONS COLUMN COORDINATORS

Julie Hartell-DeNardo, Heather Dunn

Casey Plummer, Dawn Neptune

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Chapters of the American Association of Zoo Keepers (AAZK) form when members come together to strengthen communication, professional attitudes and knowledge, and support conservation projects. I have been a member of a Chapter of our Association for over 20 years. When I moved to Orlando from Kansas City, I helped reform a Chapter, because I felt and still feel being a member of a Chapter has so many benefits. It is not only a way to help zoo keepers, aquarists, veterinary technicians and educators grow professionally, it is also a great way to form lasting friendships. Organizing BFR events, roadside clean ups, presentations and meetings, social outings and conference hosting helps develop better animal care personnel.

We have had three new Chapters form this year in Albuquerque, New Mexico, Tyler, Texas and Green Bay, Wisconsin! I would like to take a moment to applaud the officers for taking on their leadership roles and the Chapter members for being active AAZK Members.

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Our Association now has 106 Chapters! Thank you to all our Chapters and AAZK Members for being a part of our team to advance the zoo keeping profession.

My regards,

Penny Jolly
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and Aquarium Docents and
Volunteers (AZADV)**
El Paso, TX
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**International Aquarium
Congress**
Vancouver, BC
Hosted by The Vancouver
Aquarium Marine
Science Centre
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October 1-5, 2016
Otter Keeper Workshop
Buffalo, NY
Hosted by the Buffalo Zoo
For more information go to:
otterkeeperworkshop.org

October 5-9, 2016
**From Good Care to Great
Welfare Workshop**
Royal Oak, MI
Hosted by The Detroit
Zoological Society's Center for
Zoo Animal Welfare
For more information go to:
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October 6-9, 2016
Advancing Bear Care 2016
Omaha, NE
Hosted by Omaha's Henry
Doorly Zoo & Aquarium
For more information go to:
www.bearcaregroup.org

October 10-14, 2016
Giraffe Care Workshop
Colorado Springs, CO
Hosted by Cheyenne Mountain
Zoo
For more information go to:
<http://www.cmzoo.org/index.php/giraffe-care-workshop/>

October 12-16, 2016
**2016 Elephant Managers
Association Conference**
Oklahoma City, OK
Hosted by Oklahoma City Zoo
For more information go to:
<http://elephantmanagers.com/>

October 31 - Nov. 5, 2016
**2016 International
Gorilla Workshop**
Guadalajara, Mexico
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September 19-23, 2016
AAZK National Conference
Memphis, TN

*Hosted by Memphis Zoo AAZK
Chapter and Memphis Zoo.*

MemphisZoo.org/AAZK-Conference

November 14-18, 2016
**15th International Elephant
& Rhino Conservation and
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Singapore Zoo.
Hosted by Wildlife
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Lewa Wildlife Conservancy's Ian Craig Honored with Prestigious Award

Northern Kenya's Ian Craig was awarded a prestigious Order of the British Empire last week by Her Majesty Queen Elizabeth II for services to conservation and security to communities in Kenya. The Queen's Birthday Honours list was published on 10th June 2016, on the occasion of Her Majesty's official 90th birthday, and recognises the achievements of a wide range of extraordinary people.

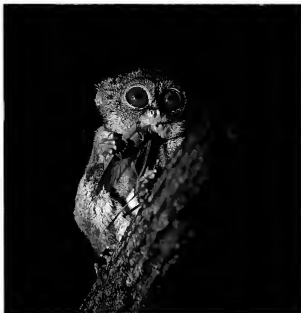
Raised in Kenya, Ian Craig converted his family's 62,000-acre cattle ranch into a rhino sanctuary at the peak of the elephant and rhino poaching epidemic. The rhino sanctuary flourished at a time when few did, and later, it was re-established as the Lewa Wildlife Conservancy. Ian's vision propelled Lewa to great success, and the Conservancy has grown to become a world-renowned catalyst and model for conservation that protects endangered species and promotes the development of neighbouring communities.

Through Lewa, Ian began partnering with surrounding local communities to support sustainable land management, conservation and peace efforts. Out of this, the Northern Rangelands Trust (NRT) was born, and today supports 33 community conservancies across northern Kenya.

Ian now serves as a Strategic Advisor for Lewa and Director of Conservation for NRT and has built up invaluable trust and respect with the communities that he serves. The community conservancies are governed by local people and are transforming the lives and landscapes of northern Kenya. They are building peace in a historically tense region, have reduced elephant poaching by 52% since 2012, and are rehabilitating large areas of degraded land for the benefit of livestock and wildlife. NRT supports Conservancies with fundraising, advice and training working closely with The Kenya Government and Lewa Wildlife Conservancy to provide security for both wildlife and people in the region.

"I feel that I am purely the nominee for many people's support and hard work within Lewa and NRT, including those who have lost their lives in this task. This is a big surprise which I am most honoured to receive," said Ian.

This isn't the first NRT and Lewa staff member to receive recognition from the British Royal Family. In 2013, NRT's Chief Programmes officer Tom Lalampaa received the Tusk Award for Conservation in Africa from Prince William, a patron of the Tusk charity. In 2015, Lewa and NRT's Head of Anti-Poaching, Edward Ndiritu, received the Tusk Wildlife Ranger Award.



Call for Papers

Dedicated Issue of AKF – Best Practices in Lighting for Zoo Animals

AKF will be creating a dedicated issue on the Best Practices in Lighting for Zoo Animals. Papers will be accepted on, but not limited to, the following topics:

- ▶ General topics in artificial lighting for zoo animals
- ▶ The importance of UVA/UVB
- ▶ Nocturnal exhibits: Red bulbs vs. blue bulbs vs. new technology
- ▶ Controlling for photoperiods and circadian rhythm
- ▶ Requirements for specific taxa: Reptiles, amphibians, birds, primates, aquatics, etc.
- ▶ Using lighting to manipulate breeding seasons
- ▶ Success stories with lighting improvements
- ▶ New trends and products

Deadline for submitting articles for this special dedicated issue is September 1, 2016.

Meerkat Management: From Chaos to Compliance

Tyler Mesick and Conrad Teufel III, Animal Keepers
Rosamond Gifford Zoo, Syracuse, New York
Edited by Adrienne Whiteley, Animal Collection Manager,
and Liz Schmidt, Education Coordinator
Rosamond Gifford Zoo, Syracuse, New York

The Rosamond Gifford Zoo's collection of 4.1 Meerkats (*Suricata suricatta*) had become quite a challenging collection of animals for the zoo keeper staff to manage. Meerkats are small mammals in the mongoose family known for running and hiding when feeling threatened. The zoo's meerkats were no exception, often fleeing from keeper staff when they entered the exhibit for daily maintenance. Due to the naturally skittish behavior of meerkats, specific tasks such as capture and restraint for veterinary procedures and even daily cleaning of the exhibit seemed to cause stress to the animals. The keeper staff wanted to improve animal welfare and reduce stress on the meerkat collection by creating a successful training program. One of the most rewarding tasks for a zoo keeper is training; and for the small mammal staff at the Rosamond Gifford Zoo, training these meerkats certainly proved this.

The meerkat exhibit has a daily routine that generally consists of cleaning and feeding. However, during cleaning the meerkats scattered into their hiding places and during feeding they ran around, creating chaos for the keepers. Due to the unruly nature and competitive personalities of the meerkats, training seemed nearly impossible. When attempting to treat an individual meerkat, the other meerkats would swarm to the keeper to get the treat. Each meerkat's distinct personality made training even more of a challenge. Two of the males, 'Columbus' and 'Magellan,' were more bold than their siblings.

When treats were available they crowded the keeper and jockeyed for the treats. The other two males, 'Vasco' and 'Cartier,' were more hesitant to come out from their hiding spots, even when presented with treats. When they did come out, they kept their distance from keepers, only darting in to steal treats. These behaviors, inconvenient on a daily basis, were even more problematic during the annual cleaning of the exhibit. The meerkats exhibited signs of stress, inappetence, and increased stereotypic behaviors such as pacing and scratching when netted and crated in order for the exhibit to be stripped. The keepers decided to implement a training program that would reduce the stress on the meerkats and alleviate the daily and annual problems.

Initially, one of the regular keepers became the primary trainer and introduced the meerkats to station training. Station training involved having each meerkat sit and stay at a designated location. The stations were elevated platforms of varying heights and different colors. One station/color was designated for each meerkat. The meerkat would jump onto the platform and get rewarded for staying on their specific station. The meerkats that were least timid, Magellan and Columbus, caught on quickly to the station training and became less likely to steal treats from the other meerkats. The timid meerkats, Cartier and Vasco, began to slowly build confidence around the trainer and with time also stayed on the station. As the station training became more reliable, the

trainer decided to introduce target training in order to isolate individual meerkats from the group. The targets were different shapes and matched the colors associated with their stations. Studies of color vision in carnivore species have revealed that some diurnal species of mongooses may have good color vision, which was evident during this training in that the meerkats quickly learned their designated colors.¹ Since the station training kept the meerkats' attention there was little to no treat stealing and therefore all the meerkats learned their targets quickly. The successful target training also resulted in target discrimination by the meerkats. Target discrimination is the process of showing the meerkats two or more target sticks and allowing them to choose the correct one. This training challenged their recognition skills. The keeper used the targets as a tool to facilitate new behaviors such as crate, squeeze, and induction box training to isolate a meerkat. The crate is a simple way to move the meerkat for transport. The squeeze is a box used to reduce the surrounding space, squeezing the animal so it cannot move, thus facilitating injections. An induction box is an airtight tank into which gas can be introduced for anesthesia. To accomplish this level of compliance it was important to maintain a high frequency of reinforcement for every meerkat and treat each meerkat equally. This high level of reinforcement became increasingly difficult to maintain with only one trainer, especially when trying to train



Station training with elevated platforms of varying heights and different colors for each meerkat.



Target discrimination: the use of two or more different shaped and/or colored targets and allowing the animal to choose the correct one.

new and complicated behaviors that required more attention from that trainer.

To maintain the high frequency of reinforcement and increase individual animal attention the decision was made to add another trainer. The increased trainer to meerkat ratio reduces the workload on each individual trainer. Each trainer worked only two meerkats during the training sessions. More attention was given to the more timid meerkats to help build up the trust between the new trainer and the animals.

During this transition period the new trainer took on Magellan and Columbus, who were already crate trained, while the original trainer took on the timid meerkats, Cartier and Vasco, to work on station training with them. Cartier and Vasco were hesitant to come out and participate in the training with the new trainer present. Initially the trainers were positioned at opposite ends of the exhibit. With this arrangement, the new trainer ran out of treats quickly while the original keeper waited for the timid meerkats to participate. Training sessions ended too quickly to be beneficial to either group of meerkats. The trainers discussed changing the meerkat group configuration so that each trainer had one timid and one crate-established meerkat. This change proved to be very effective as both timid meerkats were getting the attention they needed and trainers were able to maximize the training sessions.

In 2012, a new young female meerkat named 'Chamberlain' was introduced to the group.

Chamberlain arrived with a timid attitude but was food-motivated. The keeper staff had no idea what impact Chamberlain would have on the established group in terms of training. The addition of the female meant another station and space in the exhibit for the training sessions. The keeper staff decided to videotape training sessions to visualize training inconsistencies and develop solutions. One of the biggest hurdles was the influence each meerkat had on one another. For example, the trainers observed if they made any movement, Chamberlain ran, therefore making Vasco and Cartier nervous and more apt to run as well. Steve Martin, a well-known animal trainer, stated a useful way to establish trust is a level of certainty that interaction will result in good outcomes and so interaction increases.² The trainers increased positive reinforcement by taking very small steps. To begin, the trainers entered the exhibit, treated the meerkats then immediately exited. This increased positive interaction between trainers and meerkats resulted in an increased confidence in the meerkats. Soon, the meerkats came out of hiding when the trainers entered the exhibit instead of running away as they had previously done. Making this simple change in approach resulted in Chamberlain becoming a very reliable animal with stationing as well as being crate trained.

Successful crate training has limited the amount of stress experienced by our meerkats. One use for this is during our annual exhibit

cleaning. The annual stripping and refurbishing begins with netting the meerkats, putting them in crates, and removing them from their exhibit while the work is completed. Previously, every time the meerkats were crated, their training regressed. Now, through consistent training, the time it takes for the meerkats to again build confidence in the trainers grows shorter every time. This progress was evident during the most recent cleaning as Columbus, Magellan, and Chamberlain were all crated and moved to a secure holding without having to be netted. Recognizing the importance of stress on the well-being of the animal was important to the trainers because 'like humans, while experiencing severe stress, animals can succumb to disease or fail to reproduce or develop properly.'³ In order to maintain a healthy meerkat colony, reducing stress through positive training and keeper interactions was the first priority. As a result of this attention, the keepers noticed that during the annual cleaning Columbus, Magellan, and Chamberlain did not display stereotypical scratching behaviors and began eating when offered food. After the most recent annual cleaning, compliance was back to normal within two sessions, showing a clear improvement in the management of the meerkat colony.

To further validate the effect of the training on individual meerkats, a new training procedure was implemented in order to facilitate a veterinary procedure with Magellan, who



Crate training has decreased meerkat stress.



Short sessions with positive reinforcement



Squeeze training "Magellan"

needed to be anesthetized to examine a recurring abscess on his face. The keeper staff communicated with the veterinary staff regarding the upcoming procedure and agreed to squeeze train the meerkat to prepare him for a hand-injection. For the squeeze training, the trainer first desensitized the meerkat to the squeeze cage. Once comfortable, the meerkat was confined to the cage while a movable wall was pushed in to 'squeeze,' or restrain, him. The primary trainer worked with Magellan every day to prepare him for the upcoming procedure while other trainers reinforced stationing with the remaining meerkats to keep their attention away from Magellan. The primary trainer was therefore able to focus his attention on Magellan alone and squeeze training was successful. This process was practiced with Magellan until he became comfortable entering the cage and being restrained in it. Once this was established, the next phase was getting him used to having veterinary staff being next to the cage with a syringe. When the day of the procedure came, the keepers had a meerkat that was comfortable being squeezed with a veterinarian right next to him to administer the injection. Using this technique, Magellan was anesthetized in one to two minutes with minimal stress. Previously, netting and induction with gas anesthesia

took up to twenty minutes, during which time Magellan was awake and under duress. After the procedure, just like the previous annual cleaning, Magellan was compliant and went inside the squeeze as soon as he was asked. Training Magellan to be squeezed and hand-injected was a prime example of successful training with an individual meerkat under stressful circumstances.

Through hard work and consistency, this training program has been a positive experience for both keepers and animals. When keepers enter the exhibit, the meerkats no longer run and hide. The crate is no longer viewed as a threat, but a place where they receive treats they enjoy. Through proper training techniques, meerkat husbandry is now improved, not only for the keepers but for the meerkats as well. Additionally, this process has developed into an example of a successful training program for a group of animals, which has led to a new training plan for the patas monkeys and lemurs in the zoo's collection. Through the success of this experience, the small mammal keeper staff found that the chaos that had once existed had one simple cure, a positive and focused training program.

Acknowledgements

Thank you to Ted Fox, Director of the Rosamond Gifford Zoo, for first sparking the idea of writing a paper to us. We would also like to thank our editors Adrienne Whiteley, Animal Collections Manager, and Liz Schimidt, Education Coordinator, for taking the time and working hard on the paper. The animal and veterinary staff at the Rosamond Gifford Zoo, that takes great care of the collection of meerkats. Thank you to our family, especially Sara Worthley and Moily D'Apris. Last but not least, to the meerkats that we love to work with each day.

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Annual Report 2015

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Topeka Zoo Chapter - \$750
New Orleans Chapter - \$500
Omaha Chapter - \$1000
Cape May County Zoo Chapter \$1000
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Milwaukee County Zoo Chapter - \$500

Undefined Committee Support

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Jackson Zoo Keepers Chapter
Memphis Zoo Chapter

National Zoo Keeper Week

Bearsley Zoo Chapter

President's Message

Challenging ourselves is second nature to zoo keepers. I assumed the challenge of being President of the American Association of Zoo Keepers (AAZK) late last year and we have also welcomed three new Board Members, Bill Steele, Mary Ann Cisneros and Rachael Rufino, who have stepped up to the challenges of their new roles. Together we have worked to bring the membership two new committees to help them meet their daily challenges.

The Safety Committee provides resources and opportunities for safety and health training. The committee is developing materials for hazard recognition, crisis management, emergency management, zoonotic disease, dive safety and on-the-job safety tips.

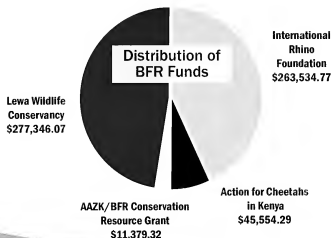
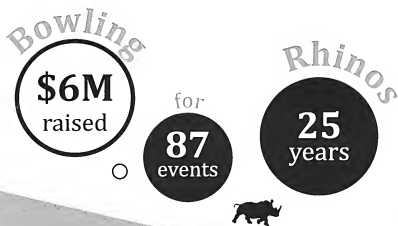
The International Outreach Committee's purpose is to provide resources and opportunities for training and continuing education in the international community. The committee is focusing on basic husbandry techniques and skills for keepers including the topics:

knowledge of and importance of natural history, record keeping, animal nutrition and animal welfare.

We have grown to 106 Chapters across North America. Each Chapter member is the backbone of the Association. Their passion for conservation is shown by the over \$798,000 they have fundraised and donated to conservation projects worldwide. We are also now engaging over 6,000 people interested in the animal keeping profession on social media.

AAZK's volunteer Board and Committees will continue to strive to meet and exceed our membership's needs with engagement using the *Animal Keeper's Forum* and social media. We will advance professional development through our discipline-specific certification workshops and conferences and seek out new opportunities for our members to support conservation.

Penny Jolly
AAZK President
Penny.Jolly@azak.org



Conservation

AAZK continues to be a leader in species conservation through our flagship conservation program Bowling for Rhinos. Celebrating 25 years of conserving animals and habitat in 2015, BFR raised almost \$600,000.00 and surpassed the 6 million dollar mark. In addition, AAZK is increasing our promotion of Trees for You and Me, a Chapter-focused fundraising effort to reduce our carbon footprint and combat climate change. Mary Ann Cisneros, Board Member Oversight for Conservation reports on the AAZK Conservation efforts of these two programs. You may contact her at Maryann.Cisneros@azak.org.

To say that Bowling for Rhinos (BFR) was a huge success in 2015 is an understatement. In 2015 BFR raised \$597,814.45. We had 87 events in 2015 compared to 80 in 2014. With the additional events we made more money for rhino conservation, over \$16,000 more! To make this happen not only have our Chapters Bowled for Rhinos, they have also Trekked for Rhinos, Wined for Rhinos, and Curled for Rhinos to name just a few. The bottom line being that BFR has broken its own record for money raised since 2012 and 2015 didn't disappoint. Bowling for Rhinos also added a Vice-manager to help with all the success. Jim Halgwood from the Los Angeles Chapter, a past honorary trip winner, adds to the expertise of our Chair Patty Pearthree. At the 2015 conference, the BFR event kit was also rolled out to help prep Chapters for success in 2016. Thanks to all that helped make 2015 the biggest year yet for BFR and here is to making 2016 even better!

The total raised for the Trees for You and Me (TFYM) competition was \$11,838.07. This fundraising effort contributed to Polar Bears International (PBI) to help combat climate change. Brookfield AAZK Chapter raised the most funds of the 13 Chapters that contributed. Thank you to all the Chapters that participated!

By the end of 2015 though, a new development was brewing for TFYM. Anthony Nielsen from Lincoln Park Zoo came on as Vice-manager to help Christy Mazrimas-Ott with the change to a grant-based fundraiser. The TFYM Campaign would now fundraise for the TFYM grant to be applied for by non-profits that help combat climate change through reforestation efforts. A TFYM committee was formed to review applicants to the grant and a new goal was set at \$15,000 for 2016. The TFYM committee and Janee Zakoren, Vice-chair of the Conservation Committee, created educational materials for Chapters to hand out during events in 2016. Contact Christy Mazrimas-Ott at Christy.mazrimas-ott@azak.org to get the AAZK educational handout. The year 2015 brought change, but also the start of a new and exciting time for TFYM!

Thank You!

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Bowling for Rhinos 2015

Sondaicus
\$50,000 and Up
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Sumatrensis
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Greater Cincinnati AAZK Chapter
San Diego Chapter of AAZK
Toronto Chapter of AAZK
Utah Chapter of AAZK

Unicornis
\$5,000 – \$19,999
AAZK Philadelphia Chapter
Brookfield Zoo/Lincoln Park
AAZK Chapters
Buffalo Zoo/Zoological Society
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Columbus AAZK Chapter
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AAZK New England
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Chapter AAZK
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Iowa AAZK Chapter
Lion Country Safari Chapter Event
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Minnesota Zoo AAZK Chapter*
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Barbara Singer
Alison Smith
Dale and Catesby Suter
Walt Disney World Resort
(in the name of Majorie Thompson)
Lynn Weber
Soovill Zoo AAZK Chapter
Susanne Wilson

*Includes 2014 funds received after
event deadline

Animal Keepers' Forum

The *Animal Keepers' Forum* continues to be the main communication tool for members, sponsors and advertisers. The monthly journal shares quality articles submitted by our members and supporters through features such as Training Tales, Enrichment Options and Conservation Station. This past year we also introduced a new column focused on Animal Welfare. We were also excited to deliver two very popular dedicated issues, one focused on *Bowling for Rhinos* and the other featuring the husbandry and conservation of *Prosimians*. The AKF highlights best practices and innovations in animal care, conservation success stories, and training and enrichment ideas. Animal care professionals share and learn from experiences shared by their colleagues, and we are always interested in hearing from you. If you have comments for the editor or would like to submit an article — please e-mail Shane.Good@azak.org.

AKF TEAM:

- » Editor, Shane Good
- » Graphic Designer, Elizabeth Thibodeaux
- » *Enrichment Options Coordinators*
Julie Hartel-DeNardo, Heather Dunn, Casey Plummer, Dawn Neptune
- » *Training Tales Coordinators*
Kim Keizer, Jay Pratta, Beth Stark-Posta
- » *Conservation Station Coordinator*
Lauren Augustine
- » *Animal Welfare Coordinators*
Beth Ament, Pattie Beaven

AAZK Continuing Education

The annual AAZK National Conference offers delegates the opportunity to travel to a variety of different destinations to meet and network with other animal care professionals from across the country. Attending a conference gives members the chance to visit with colleagues, recharge their passions, and most importantly expand their knowledge on topics such as conservation, animal husbandry and workplace safety just to name a few.

The Conference also provides a unique destination learning experience through a selection of Professional Certificate Courses offered each year. These Professional Certification Courses are designed to offer registrants a minimum of 12 hours of student-instructor contact time in the selected subject matter. The courses may have one or more instructors that are considered Subject Matter Experts (SMEs) in their

field. Registrants will be expected to complete a post-course testing process that will result in the awarding of a Professional Certificate. In addition, courses may include hours participating in Wet Labs on zoo grounds, organized in conjunction with the host facility.

In 2015, the AAZK National Conference was hosted in Saint Louis, Missouri and attended by over 250 animal keepers. Professional Certificate Courses were offered in Ungulate Husbandry, Elephant Husbandry, and Advances in Zoo Keeping.

AAZK continues to offer distance learning opportunities through AAZK Online in partnership with San Diego Zoo Global Academy. Membership in AAZK Online is a member benefit for all Professional Members of AAZK. If you would like to learn more, please e-mail Bethany.Bingham@azk.org.

FINANCES

EXPENSES 2015

Association Memberships (AZA)	\$ 475.00
Board Travel/Lodging	\$ 6,513.06
CEO Expenses/Travel/Lodging	\$ 2,782.70
Committee	\$ 2,951.19
Conference	\$ 10,761.82
Grants	\$ 4,183.29
Business/Office	\$ 2,448.82
Office Rent	\$ 6,266.70
Payroll Fee	\$ 2,012.00
Payroll Taxes	\$ 20,054.14
Pension Contribution	\$ 3,600.00
Pension Management Fee	\$ 1,335.00
Postage and Delivery	\$ 3,915.44
Print and Reproduction	\$ 1,745.78
Product Expense	\$ 3,864.08
Program Expense	\$ 9,295.12
Salaries and Wages	\$ 54,421.42
AKF Postage and Delivery	\$ 16,135.33
AKF Printing	\$ 58,311.21
Banking Fees	\$ 13.00
BFR Directed Donation	\$ 60.00
BFR Trip Winner Payout	\$ 5,691.20
Fees and Charges (License)	\$ 123.00
Insurance	\$ 1,275.00
Professional and Legal Fees	\$ 2,945.00
Taxes (Business)	\$ 108.30
Utilities	\$ 2,112.90
Web Revision and Management	\$ 6,318.50
Zoo Keeping Textbook	\$ 2,128.35
Total Expenses	\$232,228.53

INCOME 2015

BFR Registration Fee	\$ 1,800.00
Donation	\$ 9,153.04
Non-member Job Posting	\$ 2,948.10
Membership	\$ 121,092.12
Payroll Tax Refund	\$ 232.74
Product Sales	\$ 5,559.32
Re-charter Fee and Duty Obligation	\$ 65,860.92
AKF Advertising	\$ 36,620.36
BFR Trip Winner Fund Transfer	\$ 5,591.20
Total Income	\$248,938.76

MEMBERS

Category	January 1, 2016
Affiliate	501
Commercial	22
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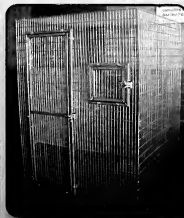
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Steer Squeeze Training at the Nashville Zoo

Kate Sproul
Nashville Zoo at Grassmere
Nashville, TN

Introduction

Boone and Tipton, two male American Milking Devon (*Bos taurus*) steers, were six-months-old when they arrived at the Nashville Zoo at Grassmere on 2 January 2010. Both were skittish, and keeper staff worked hard to gain their trust. Over a period of several months keepers gradually habituated the steers to their presence, desensitized them to being pet and groomed, and established a positive relationship with them. Keepers clicker-trained them and taught them to target and station at separate posts in their pen where they would receive their grain. When the keepers first tried to bait them through a cattle squeeze chute in 2012 to prepare them for medical exams, however, the steers balked—their horns were now too big to fit through the squeeze unless they turned their heads, and the clanging noise that their horns made when they hit the metal seemed to frighten them. Tipton did enter the squeeze once or twice when lured in with hay, only to have Boone head-butt him from behind. Tipton immediately backed out of the squeeze and would not enter it again that day.

After a few unsuccessful training sessions, it was thought that the steers could not be trained to go through the squeeze willingly. They were pushed through the squeeze for their annual exams in 2012 and 2013. Being forced through the squeeze, combined with getting their annual vaccinations and blood drawn, made the steers very wary about entering the squeeze again. Therefore, in the summer of 2014, historic farm keepers and the newly hired mammal curator decided to address the challenges of getting their steers to enter the squeeze chute for their annual exams.

The new mammal curator suggested a new training method: secure the steers in the 19 meter (62 foot) x 7 meter (23.58 foot) fenced and gated pen off of the main pasture and only allow them access to the pasture if they exited the pen through the squeeze, which would be strategically placed at one of the exits. Together, the keepers and curator developed a

training plan to train the steers to enter the squeeze calmly and without hesitation for their exams that December.

Methods

On 22 August 2014 the Priefert™ Squeeze Chute Model S04, 3.3 meters (10.75 feet) long, 0.7 meters (2.33 feet) wide, and 1.75 meters (5.75 feet) high was moved to one of the two pen gates. Hay was placed all around the squeeze. Both steers walked up to the squeeze without hesitation and began eating; the real training could now begin!

On 23 August the steers were locked in the pen along with 0.3 Belted Galloway (*Bos taurus*) heifers at about 0800 hours. Hay was placed in the pasture near the squeeze exit, and both ends of the squeeze were locked open. The heifers, who had previous training with the squeeze and were accustomed to walking through it, walked through and into the pasture and began eating the hay. The steers would not go through it and instead tried to find a way around it. After about ten minutes, the steers began running around and head-butting each other. Keepers allowed them to leave the pen through the other gate before they became too stressed and before the first training exercise became a negative experience.

The same procedure was followed the next day except the gate to the steer pen remained closed from about 0800 to 1800. Again, the heifers exited through the squeeze and the steers tried to go around it, refusing to leave the pen through the squeeze. The steers again became stressed, chasing each other and sparring a bit. Per the mammal curator's instructions the keepers conducted several training sessions throughout the day to redirect the steers' energy: one keeper target-trained one steer at the far end of the pen while the other keeper used target training to try to lure the other steer through the squeeze. Training both steers at the same time prevented them from head-butting



Photo 1. Keeper Ben Pugh feeds alfalfa cubes as Tipton stands calmly in the squeeze. Photo by: Kate Spruiell

each other, and the steers participated in these sessions willingly. Over several training sessions that day, each steer went only as far as putting its head into the squeeze. The heifers entered and exited the pen many times, but the steers never followed them out. Keepers let the steers out of the pen through the gate when the zoo closed for the night at around 1800 hours.

The keepers followed the same procedure for the next two days. During one attempt Tipton walked almost all the way through the squeeze before he backed out, but neither steer went all the way through to the pasture. Per the mammal curator, on 27 August the gate to the steer pen was locked and was to remain locked until the steers exited the pen through the squeeze. The keepers locked the squeeze open during the day and conducted at least two training sessions with each steer to try to get them to go through it. In addition to target training, the keepers baited

to use target training and baiting to entice them through the squeeze. On 1 September Tipton walked about halfway through the squeeze while the keeper in front of him offered him an alfalfa cube for each forward step he took. He had not put his head through the far side when the keeper stepped back, taking the alfalfa cubes with her. With neither keeper near Tipton nor offering him an immediate food reward, he turned his head in order to get both of his horns through the exit of the squeeze, stood there for a minute, and then calmly walked into the pasture! The keeper quickly gave him a jackpot of alfalfa cubes. The staff hoped that Boone would follow, especially since Tipton was allowed to stay in the pasture for the rest of the day, but he could not figure out exactly how to tilt his head so that he could fit his horns through the exit side of the squeeze. Over the next few days keepers decided to jackpot Boone each time he put a back foot into the squeeze rather than just stretching his nose through the exit of the squeeze. These jackpots made him much more willing to put a back foot in the squeeze. An unintended consequence was that he would put one rear foot in the squeeze, eat several alfalfa cubes, take that foot out of the squeeze, and then put it back in to get more treats. On 5 September he finally put all four feet in the squeeze at once, a keeper closed the door behind him, and Boone figured out how to maneuver his horns through the far end of the squeeze and walk out of it. Even after each steer went through willingly once, he still had to be enticed through the squeeze the next several times.

Once the steers were walking comfortably through the squeeze, the keepers began to work on the next training step. Both animals soon learned to enter the squeeze, walk to the end, and then stop with only their heads outside of the squeeze while a keeper fed them alfalfa cubes. On 27 September the keepers began to desensitize the steers to the noises they would hear during their annual exam. While one keeper fed alfalfa cubes to the steer in the squeeze, the other keeper rattled the levers and began to raise the sides of the squeeze. The extra noise

Together, the keepers and curator developed a training plan to train the steers to enter the squeeze calmly and without hesitation for their exams that December.

the steers and rewarded the animals with alfalfa cubes or hay when they approached or entered the squeeze.

Over the next three days each steer made progress, although Boone was not as quick to enter the squeeze as Tipton was. The keepers continued



Keeper Ben Pugh feeds Boone alfalfa cubes as keeper Kirren Covey desensitizes Boone to being pet and rubbed while in the squeeze. Photo by Kate Sproul

made the steers uncomfortable at first, but they got used to it within a few training sessions.

On 5 October the keepers began acclimating the steers to having the head catch closed around their necks. One keeper would feed the steer alfalfa cubes while he was locked in the squeeze, and the other would release him before he became stressed. Over the next two months the keepers gradually increased the amount of time the steers stayed comfortably in the squeeze. When they were comfortable staying locked in the squeeze for several minutes, keepers from other areas would come to the exhibit to help desensitize the steers to having people around them, touching them, and talking, as would occur at the annual exam. During the first few training sessions the animals would tolerate only two relatively quiet people around them and then only one person touching them at a time as someone else fed them alfalfa cubes. As the training sessions continued throughout October and November, the steers eventually became comfortable with up to five chatting keepers petting them at the same time.

Results

Four months after training began, the steers were scheduled for their annual exam. On 16 December vet staff came to give the steers their yearly check-up. Each steer walked into the squeeze willingly with very little targeting or calling. The vet staff was as pleased as farm staff was!

Conclusion

Throughout the training process the farm keepers were in daily communication with the mammal curator, reporting on each steer's progress and receiving instructions for the next step in the training plan. Keepers were flexible about the type of food reward they offered the steers, and used both target training and baiting, depending on which training method seemed appropriate at a given time. If keepers had rigidly stuck to using only one type of food reward or training method, the process would likely have taken much longer, often if a steer stopped

responding to one reward or training method, switching things up would renew his interest and bring results. At least two keepers were at each session so that the steers did not spar with each other while one was going through the squeeze. It also helped to have more than one person observe each steer's behavior and discuss ways to improve training during each training session, instead of waiting for the meeting at the end of the day. The positive relationship that the keepers had established with the steers helped this process immensely, and we will continue to build on that. Future plans include training them to lift their feet and stand still for a hoof trim, as well as to pull a cart.

Acknowledgements

This entire process was a group effort. I would like to thank mammal curator Lanny Brown, farm keepers Ben Pugh and Julia Carter, farm supervisor Kacie Meffley, keepers Kirren Covey, Brittany Blocker, Isaac Gallup, Megan Baker, Amanda Duke, Jessica James, Kayce Hackett, Emily Johnson, Jonathon Hankins, Jennifer Rupright, Jennifer von Dohlen, Tori Mason, and veterinary staff, Dr. Heather Robertson, Dr. Margarita Woc Colburn, Rita Buice, and Sandy Skeba for their help and support. 🐾

The squeeze chute that we use at the Nashville Zoo was purchased from: Priefert® Farm, Ranch, and Rodeo P.O. Box 1540 2630 South Jefferson Avenue Mount Pleasant, TX 75455 <http://www.priefert.com>

BHC Comments by Beth Posta

Patience pays. In all my years of training animals, one of the greatest lessons I learned was the value of patience and "listening" to the animals, however they communicate.

Over a four-year period, the relationship between the keepers at the Nashville Zoo at Grassmere and the steers changed. Promoting a positive relationship early on, the keepers gained the animals' trust. With some setbacks along the way, in this case the steers learning to turn their heads to walk through a chute, maintaining that high level of trust became challenging. However, the staff did not give up and tried a different method to ultimately find success.

When animals convey their discomfort with an element of their environment, how can we help? While we, the care staff, know that what we are asking the animals to do is for their benefit, how can we communicate that to them? How do we tell a steer "if you walk through this chute, you'll be rewarded with preferred food and options of how to spend your day?" The animal care staff in this case looked at different options, based on the animals' responses. They listened. When the steers refused to set foot in the chute (but stuck their heads in), the keepers listened and looked to another method of reinforcing a hoof in the chute.

Congratulations to the staff at the Nashville Zoo at Grassmere on a job well done. This training project presented several challenges and the staff worked as a team to accomplish their goal. They practiced good communication, modified their training plan as needed and exercised patience to ensure that the animals, while encouraged by training, went through the chute based on their comfort level. Thanks for sharing your story with us and keep up the good work!

Boone stands in the squeeze while keeper Kate Sproul feeds him alfalfa cubes, vet tech Sandy Skeba scans his microchip, and Dr. Heather Robertson observes. Photo by Karen Rice



Due to space considerations in the June 2016 issue of the AKF, the BHC Comments section was omitted. Below are Column Coordinator comments on the paper titled "Training an Adult Male Western Lowland Gorilla (*Gorilla gorilla gorilla*) for the Voluntary Administration of an Intranasal Spray".

BHC Comments by Kim Kezer:

More and more medical technologies and diagnostics for human application are being included in our animal training. Diagnostics such as cardiac ultrasounds in gorillas, blood pressure in large cats, and testing sugar levels in diabetic primates are a few that come to mind. This Training Tale shows us yet another way, through behavioral conditioning, to further advance our ability to test, treat or, in this case, to do minimally invasive research projects for the betterment of a species in a zoological setting. A critical component in developing a behavioral plan for more advanced diagnostics is to include multiple unfamiliar people as part of the training process. Since the author was the primary trainer for this behavior but not well known by the gorilla, the success of this project was dependent on the level of trust that was built. Although relationship building takes some time, and it can be a challenge when we are eager to get started training the behavior; by spending this time you will be sure to have a positive outcome.

There are many excellent points to comment on; for example having a second person observe while you are training to provide feedback. Or if the animal exhibits an aversive response to something, while training, give the animal a brief break and provide other opportunities to receive reinforcement. One concept that needs to be addressed, for trainers in general, is that of "luring". Frequently, trainers will depend on luring the animal with food to elicit the desired response. Although this does initially result in the desired behavior, it is not a true application of operant conditioning. Using a lure is helpful in the developmental stages of reaching a training goal, but it needs to be faded out as quickly as you brought it in, so that true operant learning and association occur.

In this case, Moloko was lured to the green bean to "train" the "NOSE" behavior, but as the author stated, Moloko's response was inconsistent. Once the green bean was replaced with the spray device as a target, almost immediately the animal was responding consistently in the desired position. When luring, the animal is more focused on the reinforcement rather than the behavior it just accomplished to earn the reward, thus little learning has occurred. Will the animal still offer the behavior if the green bean or other type of food reinforcement is not visible? It would, but only when the lure of the green bean is transitioned into using true operant conditioning by replacing it with a target. I have a feeling luring will be the topic of a future Training Tale!

Foundation for the Conservation of Salamanders

Bill Konstant

For reasons perhaps only an expert in paleontology and zoogeography would understand, North America is the salamander capital of the world – the Appalachian Mountains harboring the greatest species diversity of these tailed amphibians. Thus, it makes sense that the continent is also home to organizations dedicated to salamander survival. One such organization is the Foundation for the Conservation of Salamanders (FCSal), which strives for “a world where salamanders are considered, conserved and appreciated wherever they are found.” FCSal has an ambitious four-part mission:

- ▶ To increase awareness about salamander diversity and biology and to disseminate information about the threats to salamanders and their habitats;
- ▶ To raise funds for salamander conservation and research;
- ▶ To support education programs aimed at inspiring passion for local salamanders;
- ▶ To serve as a resource for salamander conservation by providing annual grants.

Key among FCSal's objectives is to increase cooperation between *in situ* facilities and field conservation programs, and especially to inspire zoo keepers to become more involved in these efforts.

Lauren Augustine and Matt Neff of the Smithsonian's National Zoo serve as FCSal president and vice-president, respectively. Megan Baumer of the Fort Worth Zoo is secretary and Kat Mantzouris of the Maryland Zoo treasurer. This is a truly dedicated group. Lauren developed Chopsticks for Salamanders in 2011, a fundraising effort that ultimately blossomed into this stand-alone organization. Matt started the National Zoo's Frogwatch Chapter. Megan was right there from the beginning of Chopsticks for Salamanders, introducing the program to NYCAAZK while serving as Chapter secretary. Kat has worked with Project Golden Frog, an international effort undertaken to save Panama's threatened amphibian fauna. And let's not forget FCSal board member Kenton Kerns, past president of the National Capitol AAZK Chapter, which was awarded Chapter of the Year in 2011 under his leadership. Other board members include Genevieve Warner of Creating Fun Animals LLC and Bill Orrico at the Bronx Zoo, both of whom have contributed significantly to the project's success.

The Pigeon Mountain Salamander (*Plethodon petraeus*)





The Pigeon Mountain Salamander: *Plethodon nebulosus*

A brief description of Chopsticks for Salamanders is in order, the obvious question being "How does reducing the use of wooden chopsticks in restaurants impact salamanders?" The answer is that close to four million trees are felled each year to produce disposable chopsticks, which negatively impacts prime salamander habitat. Insect-chomping salamanders are often the most abundant vertebrate species inhabiting the forest floor, and prime indicators of environmental health. A BYOC (Bring Your Own Chopsticks) movement originated in China in 2006, helping to raise public awareness and galvanize legislative action aimed at reducing deforestation. FCSal sells very classy, stainless steel reusable chopsticks on-line – your own personal lifetime supply – for \$15 a pair. In return for your investment, trees are spared, the restaurant saves for every pair of chopsticks it doesn't have to purchase, and the salamanders breathe a little bit easier – even the lungless species!

In 2015, FCSal awarded a \$5,000 grant focused on Georgia's rare Pigeon Mountain Salamander and another for \$1,000 on Eastern Hellbenders in North Carolina. Applications for 2016 grants were submitted by January 1 and are currently under review.

The first annual Salamander Saturday was scheduled for Saturday, May 7. FCSal is encouraging organizations around the world to hold an event on that day to raise awareness about salamanders, their habitats and role in the ecosystem, and to share their events through social media. For event ideas, organizations should contact info@fcsal.org. 🐸

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Professional Development and the AAZK National Conference

Heidi Pankratz, Animal Care Manager
California Wolf Center

This year (2015), I was extremely fortunate to be able to attend the AAZK National Conference in St. Louis. It was my first time attending an AAZK Conference and my first time visiting St. Louis! The St. Louis Chapter of AAZK did a great job coordinating this conference, and I was surprised at how much there was to do. From the icebreaker to zoo day, workshops and speakers, papers and socials...I didn't get much sleep! The conference was definitely worth my time though, as I was able to gain a lot of valuable information as well as meet other professionals in the field.

I signed up for the Advanced Animal Keeping Skills Workshop, which ended up being a wonderful chance for me to learn more about

I learned that it's important to know your chain of command when communicating information, and to ask your coworkers and superiors how they wish to receive communication from you. Bob also brought up an excellent point in regards to communication—if you're ever in an e-mail chain that seems to be emotional or leading towards anger or frustration, ask the other person if you can talk in person or over the phone. It's so much easier to gage body language that way, and avoid confusion and hurt feelings.

Another great topic brought up at the workshop was emergency preparedness. This is something that, upon hearing feedback from other zoo keepers, seems to be lacking



I am extremely grateful for the AAZK Professional Development grant I received to attend this conference. ... I returned home and back to work with a bunch of new ideas, things to improve on, and new friends.

how to be a great zoo keeper and how to adjust well into my new role as Animal Care Manager at the California Wolf Center. The workshop covered topics including how to properly care for animals, geriatric issues, training, enrichment, communication, emergency response planning, and how to train new keepers and interns.

One of the most important things that I learned at the workshop was proper communication. As zoo keepers, Bob Cisneros (AAZK Director of Professional Development) said that we "care for animals, solve problems, and communicate effectively." Sometimes it's difficult to communicate effectively, especially when your chain of command is ambiguous or confusing.

in most zoos. Ed Hansen (AAZK CEO) brought up some useful tips on how to make a great plan, and practice it regularly. For example, it's important for every animal facility to have a shooting team ready if they are ever needed. Sometimes this team is comprised of animal care professionals, but Ed brought up a great point—that the people on this team should be skilled shooters. They could be employees that work in concessions or facilities, but if they have great shooting experience and can handle a gun well, they will be a much better choice than someone who just knows the animals. We also discussed how often the emergency protocols should be practiced, including doing drills for different scenarios. Of course, the more often you can practice these, the better off you will

be if it actually happens, but it seemed to me that most zoo keepers reported that their zoo only did this once a year. Ed suggested having drills once a month, and brought up many other simple yet important ideas including having regular radio maintenance, a radio protocol that everyone knows (not just animal care staff), and partnering with the local authorities and nearby zoos.

We had a very interesting and engaging conversation about caring for geriatric animals. Bob talked about factors to consider when caring for a geriatric animal, including loss of special senses, dental issues, palliative care, and humane euthanasia. It was a tough topic to talk about, but so important because as we continue to improve our care of animals, we will have an increasing number of geriatric animals in our collection. Personally, I am currently overseeing the care of five geriatric gray wolves, so the topics brought up in this part of the workshop were relevant to my work. I especially appreciated the solutions Bob talked about when giving palliative care, for example, considering the substrate your animals are living on, as this can be an effective tool at reducing the pain of arthritis. The layout of the enclosure can also make a big difference for a

geriatric animal, especially one who is losing senses and may be more prone to stumbling or bumping into things.

Jenny Gray, CEO of Zoos Victoria was the keynote speaker, and she delivered a very inspiring speech at this conference. She talked about how we as zoo keepers help animals in the wild, either directly or indirectly. She told us about a project that one of her zoos did to raise awareness about the dangers of palm oil, and how prevalent it is in our food and other products we buy. This zoo created a "store" with real products that visitors could scan, and on a screen they could see if that product had unsustainable palm oil in it or not. She told us about how many companies ended up changing their recipes or switching to sustainable palm oil as a result of this. Some of them were not aware of the destruction that unsustainable palm oil has caused. She challenged us to think of our own ideas on how we can inspire our visitors to make small yet meaningful changes in their lives to help animals in the wild.

Zoo Day at the St. Louis Zoo was a fun filled day that included behind the scenes tours. I chose to see the penguin areas, hoofstock holding,

and how the SCUBA diving team operates. All of the zoo keepers that work there did a great job at welcoming us and showing us how they keep their animals happy and healthy. I especially appreciated being able to see so much enrichment going on with all the animals. The polar bear really enjoyed his ice block full of fish, and became very active, even going for a swim in his pool. Also, seeing the penguin areas was special to me because I've never worked with them before, so it was nice to gain a new perspective on a different species from what I'm used to.

This conference challenged me in many ways. I came to the conference by myself, and I'm a pretty introverted person. I was challenged to introduce myself to others and join other people's "groups". It was beneficial for me to hear stories and advice from other zoo keepers, especially ones who work with wolves. I even got to chat with a fellow wolf keeper about a wolf that she used to care for, that I now have under my care. The cute and funny stories are always great to hear, but even better was being able to hear what works and what doesn't work for other zoo keepers. Bob told us that we should share our best ideas freely and steal great ideas shamelessly, which I thought was a

good point—we are all in this field together, and sharing ideas helps us all to improve without having to "reinvent the wheel".

I am extremely grateful for the AAZK Professional Development grant I received to attend this conference. Without it, I would not have been able to go. I returned home and back to work with a bunch of new ideas, things to improve on, and new friends. I hope to attend next year's conference, as continuing education and networking in our field is very important. I also hope that everyone considers attending an AAZK conference if they haven't already, because the experience will give you new ideas and skills to improve yourself professionally, and can bring you to a new level in your career. 🐾

Heidi's attendance at the AAZK National Conference was partially covered by an AAZK Professional Development Grant. To learn more about our grants, please go to: aazk.org/committee/grants-committee/



**43rd Annual National
AAZK Conference
September 19-23, 2016**

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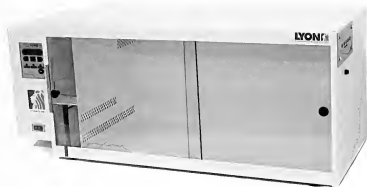
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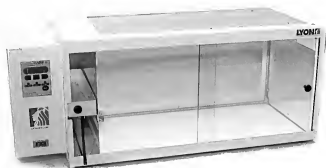


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