

ZAA Journal

Winter 2018 Volume 12 Issue 4
Zoological Association of America



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Front cover: Gerenuk, *Litocranius walleri*, in Samburu National Reserve, Kenya. Dr. Mark P. Davis

Back cover: White rhinoceros, *Ceratotherium s. simum*. Dr. Mark P. Davis

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John Seyjagat, Executive Director



Wow! What a conference. The Zoological Association of America 13th Annual Conference was hosted by Essex County Turtle Back Zoo, West Orange, New Jersey, on November 8-11. The conference was supported by 27 vendors and welcomed 206 attendees. Conference attendees came from far and wide. There were attendees from Pakistan, Czech Republic, Jamaica, Mexico and Canada.

The preconference tour was hosted by Six Flags Great Adventure and Safari and visited by 167 attendees. The keynote speaker was Dr. Thomas Hildebrandt, Head of Reproduction Management, Leibniz Institute for Zoo and Wildlife Research, Berlin, Germany. He spoke on The Northern White Rhino – A Lesson on How Humans Aid Extinction or a Positive Example of Advanced Conservation Program. There were 24 oral presentations and a one-on-one office day with USDA Chief Administrator Bernadette Juarez.

Zoo Day was hosted by Turtle Back Zoo and featured several workshops and behind-the-scenes tours. Workshops included Chemical Immobilization, Fire Hose Enrichment and TBZ Bee Pollinators.

Several awards were handed out to our well-deserving members. The Education Award of Excellence went to Six Flags Great Adventure and Safari for their programs Six Flags Wild Encounters, Silver Safari and Safari Off Road Adventure. The Significant Propagation Long Term Commitment to a Single Species went to Tanganyika Wildlife Park for Clouded Leopards and to Pittsburgh Zoo and PPG Aquarium for Amur Tiger. The Comprehensive Immersion Exhibit Award went to Pittsburgh Zoo and PPG Aquarium for Jungle Odyssey. The In situ Conservation Award went to Myrtle Beach Safari for their support of Soraya Station and the Sumatran Tiger.

The 13th annual ZAA conference was a great success. I wish to thank our host Turtle Back Zoo, our Sponsor Mazuri, our vendors, our conference committee and the many volunteers who assisted. I also wish to thank all our attendees and congratulate this year's award winners.

This year's conference was all about building capacity. Building capacity comes from growing the association, bringing science to our operation, embracing public perception and forming alliances. ZAA is 13 years old and growing. Today ZAA has an individual membership of 521 with 60 accredited facilities, 23 commercial members and 19 conservation partners. Growing the association is key to our development, longevity and success. As members of the ZAA, it is your job to troll the industry, be ambassadors and recruit new members to the organization. Greater membership gives us a louder voice and a broader base of representation across the country. Bringing science to the organization is achieved through our Animal Managed Programs (AMPs), conservation and education. ZAA presently has four AMPs and is looking at developing others. Our AMPs are supported by conservation enhancements and education. ZAA is in partnership with several NGOs and supports the conservation of species in peril and their habitats. Developing an AMP requires a candidate species with 20 or more animals, reliable individual animal records, participation by at least four institutions and a champion. ZAA is embracing and engaging public perception. Public perception is the main driver of the zoo detractor and anti-zoo movement. You, our members, are the best to tell your stories. You are the expert and trusted voice for animals and their welfare. Zoos are important facilitators of the opportunities for that human-animal connection that creates a lifelong connection and bond. This connection instills passion, stewardship and awareness of wild animals and the need for their existence. We need wildlife, and wildlife needs us. Forming alliances is critical to the survival of the zoological industry. The industry is under attack by the animal rights movements. ZAA cannot fight this fight alone. ZAA needs partners, capital and leverage. ZAA is partnering with several like-minded organizations to form a unified front in the defense of all zoos and aquariums. ZAA is also widening its coverage to meet representation on local legislative wildlife issues.

Support the ZAA. It is your organization!

A handwritten signature in black ink, appearing to read "John Seyjagat". The signature is stylized and fluid, with a long horizontal stroke at the end.

Chair's Message

Dr. Barbara Baker



As your newly elected Chair of the ZAA Board, let me tell you that I am honored and humbled to have been given this role. I believe ZAA is at an exciting, pivotal point in its young history. We have an opportunity to work together to continue to evolve and improve our animal care and animal welfare, education programs, and conservation efforts. If we work together, we can grow our organization into an association like no other in the US. That is something BIG!

ZAA is unique in the variety of facilities within the organization, which is a great thing. I can't wait to visit, meet, and learn about all of them. In my humble opinion, ZAA can be an organization that welcomes all who want to work together to improve, evolve, and grow in all facets of our operations. Every time I visit a zoo or aquarium, regardless of the size or location, I learn something new!

Let me take a moment to introduce myself, as I am relatively new to ZAA (three years) and have not had an opportunity to meet many of you. I'm from a small farming town in North Carolina, attended NC State University (go Wolfpack), then on to Auburn University (War Eagle!) for my veterinarian degree. I was a zoo veterinarian for over eight years with the Lincoln Park Zoo and Riverbanks Zoo before joining the Pittsburgh Zoo, where I've been blessed to lead a great team for the past 28 years. Being a zoo director is a job somebody's got to do, so why not a down to earth animal person?

I'm also Mom (my proudest accomplishment) to seven great kids, six of whom joined our family through older child adoption. But that's another long story...

As I've said many times, Pittsburgh did not join ZAA to take over the organization, but rather to help, when asked, in any way we can. I should be more careful in what I say though; you never know what will happen when you volunteer! I will admit, I was not expecting to find myself as elected Chair of our great organization when I offered to get involved. Too funny!

One of the things we can't lose sight of is that this is a membership organization, and we must always be concerned about the membership's opinions. We heard many of these at the recent national conference, and I'm proud to say the board responded immediately, instituting a new policy requiring a membership comment period on policy changes. This is working very well so far, as we are getting many comments on a recent policy change.

So what can you do? Get involved, sign up for a committee. Encourage others in your facility to join. Attend the mid-year meeting and workshops in Austin this March. Work with the Animal Management Programs. Make presentations, network, and meet new colleagues at the national conference. We have an exciting course set through the strategic plan, and I believe it is a good, solid, energizing one. Recognize there will be growing pains and missteps, but as long as we are moving forward, we will get there!

Have a great day,

Dr. Barbara Baker

The Dangerous Animal Escape Tabletop Drill or How Playing Dungeons and Dragons Can Make Your Zoo Safer

by Ken Kaemmerer, Pittsburgh Zoo & PPG Aquarium

Let me make clear from the outset that an actual dangerous animal escape is no “game.” All zoological facilities that hold dangerous animals should prepare for the nightmarish scenario of a dangerous animal’s escape from its primary containment. There are a number of published articles (Kaemmerer, 2000; Kaemmerer and Piwonka, 2001; Kaemmerer and Piwonka 2007; Piwonka and Kaemmerer, 2007) as well as unpublished protocols, easily obtained with a little searching, if you are looking for examples and recommendations to improve preparations at your facility. You should conduct regular drills with your staff to train, as well as practice, your protocols so as to see what improvements, training or changes need to be made in order to make your institution safer. There’s no question that real drills get the adrenaline flowing and staff anxious over whether they might make a mistake, but drills are intended to enable staff to become familiar with protocols and learn from their mistakes. Sometimes it can be beneficial for staff to “walk through” the procedures by gathering in a meeting room to participate in a drill scenario and to discuss the various permutations and options for actions. This is sometimes referred to as a “tabletop” drill. Winter months, when outdoor activities slow down, can be an especially good time to conduct a drill in a warm room around a table and allow staff to think through the actions they might take before they have to do it “live.” So, based upon an “academic” leisure activity I

conducted in my youth, I developed a tabletop drill with random results involving zoo and emergency staff that must use their protocols, knowledge and a little luck to contain a simulated escaped dangerous animal.

BACKGROUND

One of the keys to this drill is a large map (e.g. 24” x 36”) of the grounds of the zoological organization, complete with all exhibits and buildings, exhibit barriers, interior and perimeter fence lines, pathways, roads, gates and locations of designated dangerous animals. There should be a legend for all the different features plus compass directions noted. If laminated, the map can even be marked up with erasable markers. It can also be hung on a wall when not in use for the time of a real emergency to help orient and direct staff and emergency responders and resources for necessary actions.

The Dangerous Animal Tabletop Drill is planned and run using a system borrowed from tabletop role-playing games which utilize dice to randomly select from different categories in order to introduce the unpredictability of an “escaped” animal to the drill participants. The tabletop drill “leader” runs the scenario utilizing a large map of the zoo with all important features identified. Markers to represent different species, as well as each participant and/or vehicles or other resources, can be custom-made or found at craft stores, game stores or

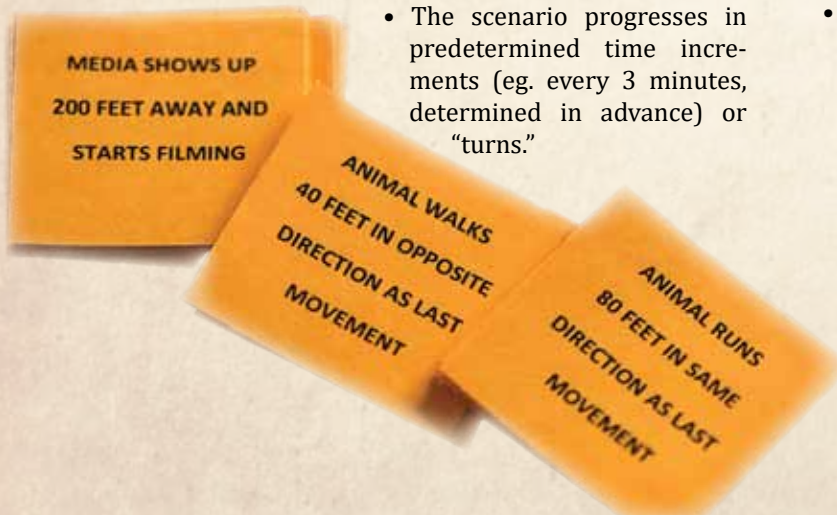


even fabric stores where different types of buttons are sold. The different-sided dice can be found in game stores or online. Time increments are decided at the onset, usually 2, 3, or 4 minutes to either speed up or slow down the scenario; thus, the overall average drill can last from about 30 minutes to an hour in length. Situational event cards are drawn every few time increments or “turns” to allow for minor complications to be considered and reacted to. Based on results of the relevant dice rolls and reading of event cards, the drill leader asks each participant: “Where are you, what are you doing and why?” Major complications may be added, such as multiple animals escaped, first aid required and so on.

After any drill or real event, a debriefing meeting should be held with participants. Notes and a summary should be written and archived. During the Tabletop Drill one person can be asked to take notes of the participants and actions to facilitate discussions. The summary should include names and roles of every participant, plus a timeline of the animal’s and responders’ actions along with identifying what went well and what needs improvement. For the latter, needed actions should be identified with assigned person(s) and deadlines. If all of this is done, then the drill will have served its purpose for training and resulting in written proactive actions for the future.

BEGINNING THE TABLETOP DRILL

- To start the scenario a 12-sided dice is rolled to randomly select one of twelve dangerous animal species (unless that was pre-determined). However, if an institution has fewer or more species to be chosen from, then a 6, 8, 10 or 16-sided dice can be utilized.
- Secondly, choose the day of the week (unless that was pre-determined), on which the escape would occur, so you can figure who would normally be at work on that day utilizing a 6-sided dice (pick one day to exclude).
- The time of day can be predetermined or selected, so you can figure who would normally be at what location at that time, and where each participant places his/her marker on the map, by rolling dice with either:
 - 6-sided dice for early morning, late morning, noon lunch hour, early afternoon, late afternoon, night time or
 - 8 or 12-sided dice to determine the hour
- Once the first two categories are determined, the scenario begins with a Dangerous Animal Escape being called and the escaped animal moving from its exhibit, utilizing a marker for the animal.
 - The scenario progresses in predetermined time increments (eg. every 3 minutes, determined in advance) or “turns.”



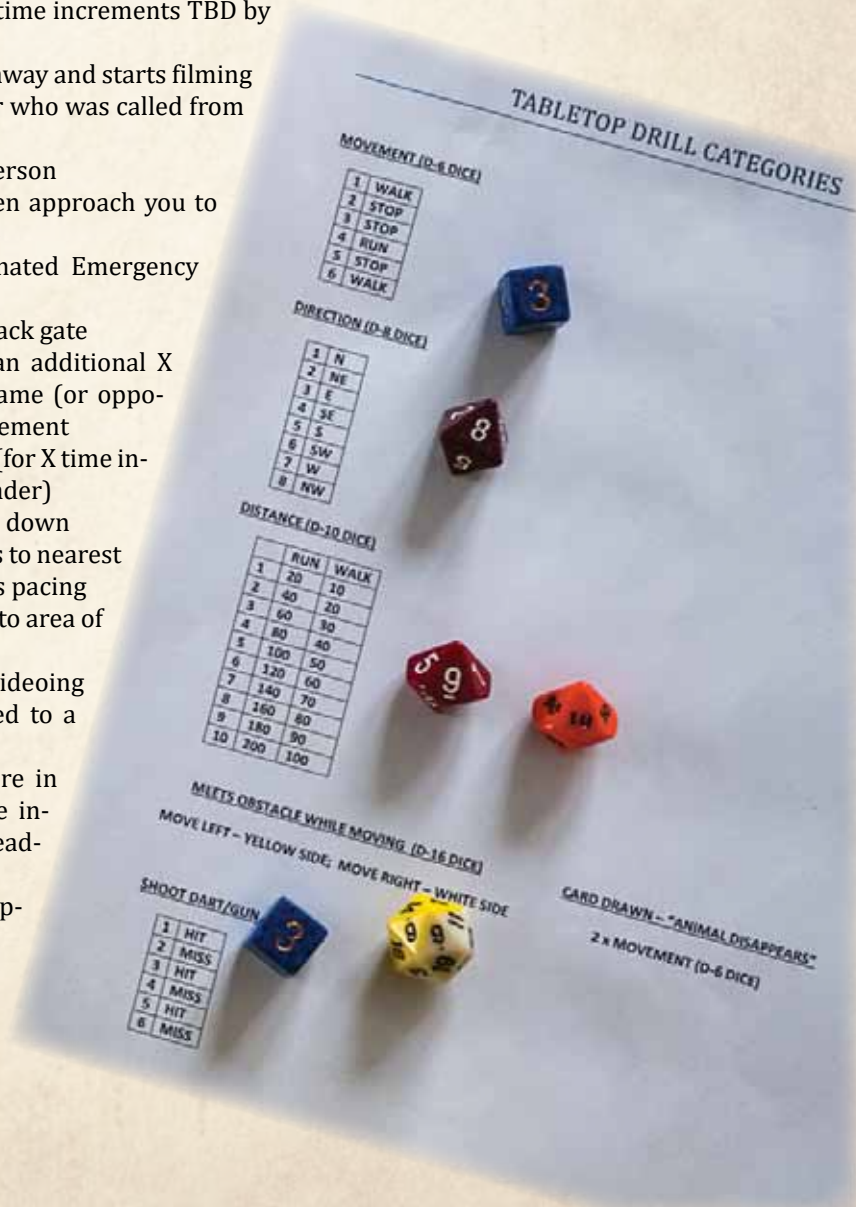
- At each turn participants are asked:
 - Where would they be at the time given?
 - How they would react, or what they would do?
 - Where they would go?
 - Why, and any other pertinent questions.
- The escaped animal’s movements are determined on several categories by dice rolls.
 - First, the animal is determined to be either walking, running or not moving (Stop) utilizing a 6-sided dice.
 - Second, its direction is determined utilizing eight compass points (e.g. N, NE, E, etc.) with an 8-sided dice.
 - Third, if walking or running, the distance traveled is determined through a 10-sided dice roll. Distance can be in feet or yards determined in advance.
 - Every few turns (e.g. 2, 3, or 4 turns determined in advance) an event card is drawn from a deck with particular events interjected such as, “visitor appears 50 ft. from animal” or “animal disappears” or “media shows up 200 ft. away and starts filming” and other random events. Participants are asked what they would do when presented with these events.
 - If an event card shows “animal disappears,” then its movement and direction are determined by the tabletop drill leader for several turns (e.g. 2-3 turns predetermined in advance) without revealing this to the participants, and its marker removed.
 - The distance moved by the disappeared animal is determined by the 6-sided dice and may be multiplied (e.g. 2X movement – determined in advance),

Tabletop Drill

Each situational event can be written on one side of small cards, similar to board game cards. Multiple copies of each situational event can also be made, particularly "Animal Disappears" and/or additional events, which can be customized to each institution. The deck of cards is randomly shuffled at the start and then one is pulled and read by a participant in a predetermined order (e.g. every 2-4 "turns"). When the cards are read, then the simulated emergency "leader" and "responders," as well as other participants, are asked, "Where are you, what are you doing, and why?"

Situation Event Cards Samples

- Visitor appears 50 feet from escaped animal
- Animal disappears (for X time increments TBD by Drill Leader)
- Media shows up 200 feet away and starts filming
- Emergency Team member who was called from home arrives at the zoo
- Animal charges nearest person
- Unknown Police patrolmen approach you to discuss how they can help
- Police show up at designated Emergency Staging Area
- Ambulance shows up at back gate
- Animal walks (or runs) an additional X feet (e.g. 40-80 feet) in same (or opposite) direction as last movement
- Veterinary dart rifle jams (for X time increments TBD by Drill Leader)
- A hard rain starts pouring down
- Animal suddenly relocates to nearest perimeter fence and starts pacing
- Catering/Gift staff walk into area of focus
- Visitors nearby start videoing and resist being evacuated to a safe place
- Emergency vehicle you are in quits working (for X time increments TBD by Drill Leader)
- Non-emergency staff approach to help





No matter how the drill ends, participants usually have had serious thought and active discussion on how they would work together to resolve the escape. Although the subject of the drill is a serious matter, the participants might even have a little “fun.” Hopefully it provides them some basic training to perform well in a live drill or in the event of a real animal escape. 🐾

but remember that three of the six categories labeled “Stop” means the animal did not move and is in hiding. Direction is determined by the 8-sided dice.

- Again, at each turn all the participants are asked the aforementioned questions.
- After several turns the new location of the animal is revealed as it “reappears” and its marker is replaced.

Tabletop drill at Pittsburgh Zoo photographs courtesy of Paul Selvaggio



TO END OR CONTINUE

- Generally, the drill scenario ends when the animal is “captured” by being anesthetized with a tranquilizer dart. However, if in the scenario it is believed that the animal represents a danger to human or other life per the zoo’s protocols, then the animal might be shot with a lethal weapon. When either the veterinarian or designated dart-trained staff member shoots an anesthetic dart to tranquilize the animal for capture, or a lethal weapons-trained person shoots a weapon to destroy the animal, then a 6-sided dice is rolled to determine if they “hit” with the intended result or they “missed” (50% chance).
- If the animal is “hit,” then the scenario is over and the total scenario and reactions are reviewed and discussed.
 - If the shot taken by dart or weapon is a “miss,” then the scenario continues with the animal moving in a particular direction utilizing the related dice.

Literature Cited

- Kaemmerer, K. 2000. After the Accident – Safety Improvements for Staff at the Dallas Zoo. AZA Annual Conference Proceedings, Orlando, FL, pp. 251-255.
- Kaemmerer, K and Piwonka, N. 2001. Dallas Zoo’s Animal Escape Procedures; Capture Equipment and Weapons Team Training. AZA Annual Conference Proceedings, St. Louis, MO, pp. 367-376
- Kaemmerer, K and Piwonka, N. 2007. Developing a Program for Dangerous Animal Emergencies: Procedures for Animal Escape, Unauthorized Person in with Animals, and Unified Command System. *Animal Keepers’ Forum* 34(11/12): 506-512.
- Piwonka, N. and Kaemmerer, K. 2007. Developing a Weapons Team for Dangerous Animal Emergencies: Organization and Training. *Animal Keepers’ Forum* 34(11/12): 480-487.

African Penguins: The Cold Truth

by Katy Massey, Corporate Conservation Coordinator, Virginia Safari Park

We have lost 99% of the world's African penguin, *Spheniscus demersus*, population since 1920, an estimated decline of 90 birds per week. African Penguins may become extinct in the next 15 years. In 2010, the IUCN added African penguin to the Endangered Species List, and if the current rate continues as estimated, they will be extinct in the wild by 2030. A variety of threats over time have slowly eroded the once stable penguin population.

The first negative impact on penguin population began with egg collectors. The green-tinged, fish smelling eggs were considered a delicacy up until the 1960's; over 13 million eggs were removed from the wild. (Cott, 1953) The second problem facing penguins was guano collectors. Guano is a nutrient-rich bird dropping, sought after for its use in fertilizer. Guano layers were 13-20 feet thick, and penguins burrowed into the guano layer to form nests. The burrowed nests kept them insulated from heat and cold and protected from predators. The breeding islands are now barren rocks, and the penguins have to nest in shallow pits, exposed to the sun, predators, and occasional flooding.

Current day African penguin population concerns are oil spills, finding food, and pollution. Oil is bad news for penguins; a spot of oil as small as the size of your thumb can cause harm. When you cut a hole in a wetsuit, water seeps



African penguin entwined in fishing line. Dyer Island Conservation Trust

“The greatest threat to our planet is the belief that someone else will save it.”
Robert Swan

in. The same thing happens to the African penguin; they lose their waterproofing, become waterlogged and can drown. If they make it to shore, they try to preen the oil off, ingesting oil, and become ill. (Barham, Underhill, Crawford, Leshoro, 2007) Finding food has be-

come increasingly difficult due to over-fishing of sardines and anchovies, forcing penguins to travel greater distances for food. The birds exert more energy and are exposed to more predators. (Sherley, Underhill, Barham, Barham, Coetzee, Crawford, Dyer, Leshoro, Upfold, 2013) Pollution has been on the rise with an estimated 14 billion pounds of trash dumped into the ocean each year. Trash can float thousands of miles and contaminate pristine areas. The most destructive item found among the debris is monofilament fishing line. Penguins and other wildlife become heavily entangled with the line wrapping around the body, flippers, and feet, preventing the bird from swimming or diving. Animals become exhausted, and if are not rescued, they will drown. (Ryan, 2015)

Saving the African penguin is an aggressive global team effort. Participation is needed from scientists, zoologists and everyday citizens. In the United States, the Zoological Association of America (ZAA) has developed an Animal Management Program (AMP) to save this amazing species. One of these team members is located in the foothills of the Blue Ridge mountains at the Virginia Safari Park. Bird enthusiast and park owner, Eric Mogensen, learned about the plight of African penguins and joined the efforts to save them. In the summer of 2016, the new Virginia Safari Park penguin colony made its public debut.



Installing artificial nests for African penguin, *Spheniscus demersus*. Dyer Island Conservation Trust



African penguins, *Spheniscus demersus*, at Virginia Safari Park. Virginia Safari Park

The large naturalistic exhibit, equipped with a swimming pool, allows the penguins to feel right at home. In February, 2018, hard work paid off when 'Winter,' the first African penguin chick, hatched at the Virginia Safari Park.

General Curator Sarah Friedel oversees the Virginia Safari Park's Penguin Program and says, "The most commonly asked question is about the lack of ice in the exhibit." Most people are surprised to learn that only a few species of penguin live as far south as Antarctica. The penguins seem to be enjoying the Virginia weather and three more penguin chicks have successfully hatched this fall. Animal ambassadors like these help zoos play an important role in instilling a passion for wildlife in future generations who see these aquatic acrobats firsthand.

Not only do these penguins raise awareness, but they also help raise funds to support programs in the wild through the Dyer Island Conservation Trust (DICT), located on the southern tip of Africa. This is a critically important eco-system; home to breeding colonies for a wide range of seabirds, Cape fur seals, Great White Sharks, various dolphin and whale species. The DICT built a world-class rehab facility called the African Penguin and Seabird Sanctuary (APSS.) This facility is able to care for displaced birds and release them back into the wild. The ZAA's African Penguin Management Program supports DICT efforts organizing beach clean-up days, installing over 2,000

artificial nests, supplying fishing line recycle bins, and providing environmental education.

It is a common misconception that you have to have millions of dollars to make a difference in conservation. The reality is, every little bit helps. For example, it only takes \$36 to sponsor a penguin nest. Other ways to help are organizing a local beach clean-up day, recycling and raising awareness.

The Virginia Safari Park, Metro Richmond Zoo, Tanganyika Wildlife Park, LEO ZCC, Hemker Park & Zoo, Wildlife World Zoo and Wildwood Wildlife Park work together to develop sustainable captive penguin populations as an insurance policy for the rapidly declining penguin populations of the wild. Supporting zoos involved with wild programs such as DICT provides guests an educational opportunity and contributes to long-term conservation.

"The greatest threat to our planet is the belief that someone else will save it." -Robert Swan. Every individual makes a difference; together we can change the world. 🐧

References

- Barham P.J., Underhill L.G., Crawford R.J.M., Leshoro T.M. 2007. Breeding Success of African penguins *Spheniscus demersus* cleaned and released after the Treasure oil spill at Robben Island, Western Cape, South Africa. *Emu Journal*. Vol. 107: 7-13. CSIRO Publishing, Carlton, Victoria, Australia
- Cott H.B. 1953. The Exploitation Of Wild Birds For Their Eggs. *IBIS Journal*. Vol. 95, Issue 4: 643-675. British Ornithologists' Union, Peterborough, Cambridgeshire, England
- Ryan, P.G. 2018. Entanglement of birds in plastics and other synthetic materials. *Marine Pollution Bulletin*. Vol. 135: 159-164. Elsevier, Amsterdam, Netherlands
- Sherley R.B., Underhill L.G., Barham B.J., Barham P.J., Coetzee J.C., Crawford R.J.M., Dyer B.M., Leshoro T.M., Upfold L. 2013. Influence of local and regional prey availability on breeding performance of African penguins *Spheniscus demersus*. *Marine Ecology Progress Series*. Vol. 473: 291-301. Inter-Research Science Center, Luhe, Bavaria, Germany



Baby African penguins, *Spheniscus demersus*, hatched at Virginia Safari Park. Virginia Safari Park

What Makes an AMP?

Animal Management Plans - The Why, What, and How to Achieve Enduring ZAA Species Populations

by Ken Kaemmerer, Chair, AMP/Conservation Committee

Animal Management Plans, why does ZAA need them?

While I'm dating myself, back when I started my zoo career and zoos wanted new animal species to exhibit or new animals to replace or add to existing exhibits, the directors and/or curators would simply dial up (rotary phones back then) exotic animal dealers and say, "I want a Fizza-ma-Wizza-ma-Dill or if they're unavailable, then a Mulligatawny, Seersucker or a Lunk will do." Then perhaps months later, depending on the size of the beast and the continent far away, the phone would ring and a voice would say, "Please pick up your Gherkins at the dock of the next boat, train or plane on this auspicious day." During those bygone days the earth was much greener, the wild animals more plentiful and the need to maintain "sustainable" populations of species in our care was but a thought of "futurists." But, as we know, the future arrives like a pie in the face, and it's become obvious that the earth is less green, the wildlife less plentiful, more regulations have been enacted and scientists and common sense have said, "We need to manage wisely what we've got." In other words, if we cannot come together to include all of our animal specimens of a particular species into a healthy, reproducing "population" that is self-sustaining into the future, then eventually people will only be able to view those animal species in video, books or Wikipedia.

What makes up an AMP?

So the first step in that regard is to reach agreement with participating institutions to assemble records on each specimen they hold into a "studbook". Studbooks or breed registries first came into use with domestics such as horses, cattle and dogs as far back as the early 1800's, when it was just beginning to be understood that certain traits could be passed on to offspring and that it was important to know the lineage of each sire and dam back to the start of the line or what we call a "founder." A studbook needs information on each living specimen, including minimally the date it was born or hatched, its dam and sire if known, and the location(s) where it has lived, along with any unique identifying characteristics, whether congenital or added later, such as a physical marking, tag, band, subcutaneous chip, etc. Very complete studbooks may contain information on living or deceased specimens of many institutions, especially those sires and dams of current specimens as far back through generations and time as possible to the first male and female founders that came out of the wild. This forms the basis for a genetic lineage which becomes vitally important to a managed plan. It is important for a studbook to record every birth or incoming animal, even if it didn't survive, as well as when and where (from and/or to) it was transferred. A population manager then may be able to use the studbook data and ascertain important traits key to future reproductive planning. A "studbook keeper" is the records manager for the species or breed of a studbook, and besides being

detail-oriented, she/he needs to be a great communicator with every owner or holder of that species, as well as a detective to try to figure out what happened to those specimens that "went missing" from incomplete records or suddenly appeared with little or no background. Is a studbook the same as an animal management plan? No, but it is the basis of any animal management plan. Without a well-documented studbook by a thorough studbook keeper, we won't be able to begin to plan and produce a knowledgeable and effective breeding plan to ensure a future population.

So what's next to create an AMP? I would say that you have to have a minimum number of specimens with enough numbers of genetically different males and different females of reproductive age and capacity, along with the interest of holders to work together to mix and match as needed. I've had the experience from participating in or observing Species Survival Plans (SSP) of the Association of Zoos and Aquariums (AZA) for over 20 years and have seen species populations grow with interest and collaboration from small numbers but good managed reproduction into sizable populations. Likewise, I've seen populations that started with good intentions but shrink or be "managed to extinction within AZA" because of poor reproduction or lack of interest and spaces. So while numbers and genetics are vitally important, in my opinion the key to long lasting populations is a collective interest to sustain the population. That requires a leader, a "species champion", to advocate for the AMP.

An effective species champion, aka the AMP Species Manager, needs to be someone who "knows" the species - natural history characteristics, behavior, reproduction, captive husbandry, etc., but who also can communicate and listen to other



Cheetah cubs, *Acinonyx jubatus*, at Metro Richmond Zoo. Metro Richmond Zoo

Abridged Forms

Proposal for New Animal Management Plan and/or Application to Become New AMP Species Manager/Studbook Keeper

1. Proposed Taxa (Common and Genus/Species Scientific Name)
2. Availability within ZAA Institutions (Participation in AMP is voluntary for all or some of member's animals)
 - Total Numbers at this Date (males/females/unknown; or give best estimate)
 - At how many institutions?
 - Names of Confirmed Interested Participating Institutions (Did you contact?)
 - Numbers out of Total that Interested Participating Institutions will designate for AMP
 - Of these numbers how many males/females are capable of reproduction?
 - Estimate of Genetic Founders or Founder Lineages - explain
 - Does taxa occur in other associations or in private and are there managed population programs?
3. Conservation Status of Taxa – Identify status if available, including USFWS, IUCN and CITES
4. Geographic Range and Status in the Wild, Husbandry/Veterinary Expertise with Taxa (Established/Fair/Limited) Consider medical, nutritional, social, etc. Explain
5. Reproductive Factors – relative ease of breeding or contracepting; with starting numbers are there sufficient reproductively viable animals? Exhibit and Education Value - Visitor appeal and potential to educate awareness of biology, habitat, conservation, etc.
6. Links to in situ Conservation Organization Programs – Since participation in AMP's may involve annual donations to approved conservation NGO's, please describe and provide a web link to potential organizations

Are you applying as the AMP Species Manager - Yes / No

Are you applying as the AMP Studbook Keeper - Yes / No

Do you have access to ZIMS Yes / No - If no, discuss potential options with ZAA Chief Administrative Officer or AMP Committee Chair

Please attach a resume/C.V.

Describe below your background and experience relative to this or similar taxa.

Statements of Commitment and Support for AMP Species Manager and/or Studbook Keeper

ZAA Animal Management Plan Species Managers and Studbook Keepers and their supporting institutions must be willing and able to devote the necessary resources to oversee and manage a ZAA Animal Management Plan and/or its Studbook. These duties and responsibilities can include, but are not limited, to the following:

- Ensuring that all ZAA holding facilities for this species identify an Institutional Representative with contact information who will represent the institution's interests including which specimens will be part of this AMP
- Communication with participating ZAA institutions or individuals through their designated representative
- Communication with AMP Committee and ZAA executives on status and/or questions in a timely manner
- Communication with designated genetics and population advisor for breeding and transfer masterplans
- Communication with species specialists, research investigators, conservation organizations and others as needed
- Being allowed time and necessary resources (e.g. computer; telephone) within routine work schedule to accomplish AMP related tasks
- As Species Manager ensuring that participating ZAA institutions and their representatives are provided an updated AMP policy and that they understand their commitment to communicate and provide species records data and relevant information (e.g. births, deaths, transfers, changes in reproductive status, etc.) and to provide annual support to the designated conservation NGO for the AMP

The ZAA institutional CEO/Director is encouraged to allocate funding and resources to allow the AMP Species Manager or Studbook Keeper to periodically travel to professional meetings, related training workshops or as needed to promote completion of AMP tasks.

I (Name of Applicant) have read and agree to perform the duties and responsibilities as described above.

holders and persuade all interested to collaborate for the benefit of the population and all holders. The champion needs to rely on the studbook keeper (if they are not one and the same) for details on the specimens, but they also need to work with and take input from other holders on their individual interests for holding, exhibiting and breeding. The person needs to be able to market or “sell” the importance of this species to more institutions so as to develop more spaces and locations to expand the population. Eventually the champion should develop a committee of like-minded individuals to develop goals to educate the public, link with conservationists to solve issues endangering the species, and identify research issues for better animal welfare, husbandry, improved survivability and population dynamics. Ability to effectively communicate, ability to listen and relate, and knowledgeable in the species – these are the traits of a good champion.

Did I mention numbers? What’s the minimum needed to start an AMP? While I don’t have a degree in population genetics, my experience with SSP’s suggests that we should start with a minimum of 20 specimens of reproductive age and viability, meaning that all have a theoretical chance to reproduce. However, if some of those specimens you can identify are beyond reproductive age or have physical deterrents to normal breeding (e.g. sterilization), then you really don’t have 20 viable specimens. Yes, artificial reproductive technologies can harvest semen or eggs, but that’s an unlikely selling point for an AMP except in extreme cases.

What about genetics, or in other words, founder lines? How many founders are required for a population to mitigate the effects of inbreeding, genetic drift, etc.? That answer can vary, depending on whether you’re talking about mammals, birds, reptiles, amphibians, fish, and so on. Obviously, the more diversity you have, the better, but I’ve known of an SSP population that had only three founders that with careful planning and breeding still built up a sizable population. In a case like that, the hope and plan should be to eventually bring new founders into the population, whether they are unrelated from the wild or from a captive line in private hands or imported from another zoo population. Eventually, no matter how big a managed population gets and how many effective founders it has, the population will lose genetic diversity or heterozygosity over generations if there aren’t some means to “bring in new blood”. So back to the question for a new AMP of how many founder lines should be represented – I’ll say five and if you propose less than that, then you will have to make a convincing argument.

What is the minimum number of holders for a new species AMP? Again, while more is better, I’ll suggest a minimum of three institutions wanting to collaborate on an AMP. ZAA policy allows an institution to decide for itself if it wants to include all its specimens in an AMP or only some of its specimens or none at all. If there is a ZAA studbook for that species representing all ZAA institutions, then all specimens should be included in the studbook (even if already included in an AZA or international studbook), even if the institution decides not to include some or any of those in an AMP. Why? Because in the future those specimens might enter the AMP, and having the vital information on them already is crucial to understanding their relatedness to others in the population.

How to propose a new AMP?

So a champion needs to convince at least three institutions to add specimens from their collections totaling at least 20 viable specimens with minimally five unrelated genetic lines to propose a new AMP.

Below this article is an abridged AMP Species Proposal form that will include information on the species and wild status, the interest in and need for a program, the numbers, genetic lines and holders, plus enough information for the AMP Committee to evaluate. This form also asks for numbers and names of holders that will allow specimens into the AMP as well as how many are reproductively viable. The form additionally requests information from the champion applicant for the AMP Species Manager as well as a studbook keeper (they can be one and the same). We will ask for recommendations for one or more conservation non-governmental organizations (NGO) to monetarily support and link with and reasons why. Finally, the applicant(s) will need to fill out the additional form for “Statements of Commitment and Support for AMP Species Manager and Studbook Keeper”. This form outlines expectations of the applicant as well as the supporting institution’s CEO/Director and must have signatures from both. Currently the AMP Committee is composed of six ZAA members (2019 – Karen Vacco, John Gramieri, Gavin Livingston, Jim Andelin, John Wortman, Ken Kaemmerer) plus Executive Director John Seyjagat, who will evaluate proposals for new AMP’s, species managers and/or studbook keepers. The AMP Committee will then take the applications and forms to discuss and evaluate; further information may be requested. If approved, a species manager and a studbook keeper for that AMP will be announced, and work will begin for a future sustainable population.

While we currently have AMP’s for Cheetahs, African black-footed penguins, Mandrills and Schmidt’s guenons (aka Redtail monkeys) and we expect the number of AMP’s to rapidly increase as there is a definite need to manage our ZAA species populations to be enduring and sustainable. In addition we want and need enthusiastic and committed volunteers to participate in these programs and assist them to be successful. At the 2019 ZAA Midyear Meeting March 29-30 at Austin Savannah in Texas, the AMP Committee will be conducting business and holding breeding and transfer masterplan sessions for the Cheetah AMP and the African Penguin AMP. We will have the participation of a small population and genetics advisor along with a number of participating AMP members to create scientifically based masterplans. This will be an opportunity for members to observe the process and better understand the science and input from AMP members in developing a collaborative masterplan.

For further questions on proposing a new AMP, becoming a species manager and/or studbook keeper and for a full email template for the required forms, feel free to email Kristi de Spain, Chief Administrative Officer (info@zaa.org), Ken Kaemmerer, AMP Chair (kkaemmerer@pittsburghzoo.org) or John Seyjagat, ZAA Executive Director (john@zaa.org). 🐾

Trumpeter Swan Release: Returning Swans to the Wild

by Betsey Brewer, Southwick's Zoo

E.A.R.T.H. Ltd, the non-profit arm of Southwick's Zoo, is excited to announce a new conservation program coordinated with the Trumpeter Swan Society.

The AZA and SSP Coordinator for Trumpeter Swans, *Cygnus buccinator*, and the Trumpeter Swan Society contacted Southwick's Zoo, wanting to genetically test the zoo's trumpeter swans to determine if they are Rocky Mountain Population stock. Due to rules governing migratory populations of birds, only swans that are purebred RMP (Rocky Mountain Population) stock can be released or repatriated into this population which is native to the Greater Yellowstone area.

With the help of Southwick's Zoo's veterinarian, Dr. Peter Brewer, blood samples were drawn from the zoo's adult breeding pair of trumpeter swans. While waiting for the results on the blood samples, hoping for a matched genotype, there was a coordinated effort with David Hoffman at the Iowa Department of Natural Resources to ship three cygnets which were hatched at Southwick's Zoo in the spring. This repatriation program does not require a specific genotype.

Requirements for the repatriation program included coordinating with zookeepers, scheduling health exams, obtaining permits and other documentation as well as planning travel arrangements. After all documentation was completed, three cygnets were shipped from Boston to Des Moines on October 3, 2018. This project required a joint effort by staff at Southwick's Zoo and E.A.R.T.H. by Peter Brewer, DVM, Betsey Brewer Bethel, Lauren Culley, Samantha Russak, and Duane Long.

The swans arrived safely in Des Moines and were then transported to Laurie Severe Pond in Nora Springs, Iowa. This 18-acre fenced area will be their temporary home for some months while they adjust to the new landscape and hone their survival skills. There is plenty of natural aquatic food, but the swans will also receive supplemental food over the winter months. These swans, as well as others in the program, will be released in southern Iowa next spring.

Unregulated hunting and wetland drainage caused a huge decline in the native trumpeter swan populations throughout

the country in the late 1800's and early 1900's. By the 1930's a nationwide survey found only 69 swans existing in the continental US, all occurring in the Red Rock Lakes National Wildlife Refuge in southwest Montana. Coordinated efforts among state natural resources agencies and zoological facilities to establish captive breeding programs allowed trumpeter swans to be brought back from the brink of extinction. However, there are still areas where native populations struggle to sustain themselves due to human disturbance.

According to the Iowa DNR, "until 1998, the last wild nesting trumpeter swan in Iowa occurred in 1883 on the Twin Lakes Wildlife Area southwest of Belmond, Iowa, in Hancock County." By participating in this restoration program, these swans will be making an important contribution towards increasing native populations in Iowa.



Trumpeter swans are considered a flagship species for waterfowl and wetlands. These restoration programs give the public a chance to connect with their local environment and allow for organizations like E.A.R.T.H. Ltd and Southwick's Zoo to participate in conservation efforts which help sustain and strengthen native wildlife populations. 🦢

*Photo above: Trumpeter swan cygnets, *Cygnus buccinator*, at Southwick's Zoo. Southwick's Zoo*

*Photo left: Trumpeter swan parents and cygnets, *Cygnus buccinator*. Southwick's Zoo*

Background: Temporary site for the swans. David Hoffman, Iowa Department of Natural Resources.

Preparing for a Baby: Training One Female Mandrill for a Pole Syringe Injection

by Stephanie Dosch, Tanganyika Wildlife Park

Eleven-year-old mandrill “M’Bili” is pregnant and will be having a baby very soon; however, there is a problem. Unfortunately, M’Bili has not proven to be the best mom in the past, resulting in failed attempts of mother raising her own offspring. It is always preferred for primate mothers to raise their offspring, with hand-raising employed only as a last resort. Mother-raised primates have fewer health risks and develop the necessary behavior and social skills to become a productive family member. Every new mom has a learning curve, but in M’Bili’s case, she has not shown improvement with her successive offspring. For the safety of the baby she is carrying, we decided to sedate M’Bili after giving birth, allowing us to hand rear the baby during its more fragile months. The final plan was to reintegrate the baby with the family unit. This depended not only on the health and age of the offspring but also provided the adult members of the group were showing affectionate, welcoming signs towards the baby once visual introductions started. To help M’Bili with the process, we devised a training plan for safe sedation which would greatly reduce the physical and physiological stress of the process.

Mandrills naturally turn their rumps as a sign of submission. This was the perfect behavior to use, considering we wanted to use a pole syringe for her injection, and the back hip is the best spot for less discomfort to M’Bili. This submissive behavior was “caught” and continually maintained with positive reinforcement; fruit is her favorite training treat. We used the cue word “Butt”, and once the behavior became more consistent, we used a hand signal with the cue word. The hand

signal was a flat open hand, palm towards her, then turning the hand over, knuckle side to her. Once the trained behavior was established, we needed to ensure she was willing to exhibit the behavior in various locations around her night house. Anticipating she would stay higher on her platforms once she had her baby, we trained for presentations not only at ground level but in multiple spots where we would have access to her on her upper benches. We wanted to ensure she was not pigeonholed into performing the presentation behavior in one location only, making any other spot out of the ordinary. We wanted to avoid making her fearful and hesitant when asked to perform the behavior in an unusual location. To help ensure M’Bili would be confident in performing the behavior asked of her when she saw a pole syringe, we used a practice pole. It was lighter, easier to handle, and adaptable, depending on how quickly she became comfortable when it was introduced. When the practice pole was presented, M’bili became hesitant to perform the rump presentation. We started with the pole just lying next to us as we did our training; slowly we started asking for the behavior with the pole in our hand, continuing until we could have the pole level to her back hip and ready for the injection. One month away from her due date, we introduced the actual pole. M’Bili noticed the difference, but it only took a couple of training sessions for her to be completely comfortable with the new pole.

Training was coming along well, but in order for M’Bili to still have an incentive to come to her keepers after her baby was born, we removed the fruit from her nightly diet and in-



Photo left: Mandrill, Mandrillus sphinx, “M’Bili”, presenting her rump on cue. Stephanie Dosch



Photo right: Beginning syringe pole introduction with “M’Bili. Stephanie Dosch



"M'Bili" allowing the syringe pole next to her. Stephanie Dosch

stead handfed all of it to her. We began a month before she was due, hoping she realized that she was only going to receive her fruit, her favorite part, if she came to the keeper working with her. We felt this was an important step, knowing that all new moms generally act differently once their baby arrives, and there was no way to predict how she would act.

So, did our months of training pay off in the end? The day came. During morning checks we found M'Bili had given birth to her baby the night before or in the early morning. We observed her behavior and watched to make sure her new offspring had the opportunity to nurse, gathering the good colostrum her mom produced. However, it did not take long for us to see her aggressive patterns with her offspring had already begun. We were fully prepared to execute the plan we trained for if M'Bili would allow it. As her lead trainer, I noticed she had chosen a top bench in a corner where we had trained multiple times, so I knew we could gain access to her from the opposite side. As we approached her, it was great to see she wasn't fleeing from her keeper. Instead, she sat right in the corner next to me, allowing me to sit on the opposite side of the fence. I asked M'Bili for her rump presentation, but I could see her conflicted feeling between paying attention to her baby and behaving as I wanted. After several attempts of asking for her to present her rump, it was clear we needed to change game plans. I offered fruit for her to stay close to me and slowly worked the syringe pole through the squares of the fencing. Since she was accustomed to seeing the pole, with some patience and the right opportunity, I administered the sedative. Her baby was safely brought to the nursery. We closely monitored M'Bili as she came out of the sedation. We are very much looking forward to seeing M'Bili's little girl grow and develop. In the future we will start the process of reintegrating her back into her family unit.

Even though M'Bili did not perform the full behavior we trained for, I do consider the plan we made for her a success on multiple levels. She was desensitized to the syringe pole, both visually and when it was physically close to her. Pulling her fruit and hand feeding her was a great added incentive. Any time she became hesitant about staying close to me or if she moved away, I could use that as a positive reward for her to stay. That allowed me to closely watch the wellbeing of her baby. Lastly and most importantly, good training requires a good relationship with the animal. M'Bili and I worked on our relationship enough so that when this day came, and as nervous as any new mother is expected to be, she felt comfortable enough for me to sit right next to her and her new baby with only fencing between us. 🐒



Positive results are the best - mom and baby are doing very well. Stephanie Dosch

Global Conservation Policy at CITES Standing Committee 70

by Sarah Conley, Conservation Coordinator, International Elephant Foundation

In the animal world, the conservation of species and habitat is at the forefront of all our minds. While your days may be filled with cleaning enclosures and designing new kinds of behavioral enrichment, your ultimate goal is to teach others to care and therefore take action to preserve animals and the environment for future generations. It is with this concept in mind that the International Elephant Foundation (IEF) attended and participated in the 70th Meeting of the Standing Committee (SC 70) of the Convention on International Trade of Endangered Species of Fauna and Flora (CITES) this past October in Sochi, Russian Federation.

SC 70 was the last meeting before the next full gathering of all the signatory countries to the CITES treaty, known as the Conference of the Parties (CoP), which is to be held in Sri Lanka in 2019. In the CoPs, formal changes and additions to the CITES appendices are adopted, and recommendations from the Standing Committee are approved or denied. Due to the proximity to the next CoP, SC 70 took a different tone and pace by focusing on resolving all issues during the meeting itself instead of forming individual issue working groups that would run between Standing Committee meetings. While not as large in attendance as SC 69, SC 70 was still a very large meeting. Besides the 19 members of the Standing Committee and over 50 observer nations, the room was mostly populated by non-voting observers. These ran the gamut from Intergovernmental Organizations like IUCN and the World Customs Organization to business/corporate interests like the China Association of Traditional Medicine, Fender Guitars, CF Martin Guitars, and America's Fur Resources Council. A significant number of non-governmental organizations (NGOs) were in attendance, including the Animal Welfare Institute, Annamiticus, Born Free Foundation, Born Free USA, Cheetah Conservation Fund, David Shepherd Wildlife Foundation, Defenders of Wildlife, Elephant Family, Environmental Investigation Agency, Global Eye, Humane Society International, International Fund for Animal Welfare, Sea Shepherd, TRAFFIC, World Wildlife Fund, and Safari Club International. There were also a number of zoo related organizations in attendance, including the Association of Zoos and Aquariums, European Association of Zoos and Aquaria, San Diego Zoo Global, Wildlife Conservation Society, World Association of Zoos and Aquariums, and Zoological Society of London.

As seems to be the way for all elephant-related issues, anything to do with elephants was hotly debated at this meeting. The National Ivory Action Plan (NIAP) process was established for parties of "primary concern" or those who have been implicated in the illegal trade of ivory. CITES requires NIAP nations to develop strategies to curb illegal ivory trade and related activities within their countries. There are currently 22 NIAP parties, but some have "substantially achieved" their plans and have thus requested to exit the NIAP process which they consider punitive. Robust discussion ensued on whether the data presented by individual NIAP Parties was complete, transparent and indicated a significant reduction in the illegal trade in ivory. It was suggested by others that a country achieving the goals of its NIAP should prompt the party to revisit and ensure



70th Meeting of the CITES Standing Committee. Sarah Conley compliance instead of exiting the process, but in the end, it was recommended to allow Kenya, Tanzania, Uganda, Thailand and the Philippines to exit.

Much of the country evaluations related to NIAP are based on CITES programs like the Elephant Trade Information System (ETIS) and the Monitoring the Illegal Killing of Elephants (MIKE). According to preliminary MIKE reports, illegal elephant killing is slightly down in Africa but regionally increasing in central Africa. A full MIKE analysis is due at the next CoP. The discussion on live Asian elephant trade brought up the need to address the increasing trade in body parts and skin. Therefore it was decided to expand the language regarding live elephant trade by adding "trade in parts and derivatives of Asian elephants" to the Resolution Conf. 10.10 (Rev. CoP17) on trade in elephant specimens and the monitoring of illegal killing of elephants as adopted at CoP17, Johannesburg, 2016.

Besides elephants, SC 70 addressed a number of pressing issues. Trade from the Democratic Republic of the Congo (DRC) in African grey parrots and stockpiled pangolin specimens was suspended until DRC proved compliance with previous CITES decrees about sustainability. Commercial fishing of sei whales by Japan was robustly discussed, with Japan asserting that specimens were not harvested primarily for commercial use. Nevertheless, Japan agreed to cease taking sei whales and pursue immediate action to ensure they were not being used primarily for commercial purposes. Although intended to be ready for SC 70, a proposed study on the legal and illegal international trade on marine turtles (including the Hawksbill turtle) had not been completed, so the issue was rolled over to the next CoP, upsetting some conservation groups.

The conservation of and the illegal demand for parts of Asian big cats was also discussed. There were a number of calls for reviews of captive tiger breeding facilities in Asia as there is speculation that these facilities are supplying parts and specimens for illegal trade. All parties were encouraged to use the best practices previously identified in CITES decisions to help guide law enforcement action to address illegal Asian big cat trade. Similarly, a discussion of African lions drew attention to the illegal trade in lion parts, citing demand in Asia as a driving force.

Even though the work had largely been done in committees and working groups prior to SC 70, the issue of “appropriate and acceptable destinations” for live species when moving from one country to another was again a hot button issue. The working group, in which IEF participated, had offered a set of non-binding guidelines complete with species-specific guidelines for rhinos and elephants as to what constitutes an “acceptable destination.” These guidelines covered topics like housing space and size requirements, substrate types, dietary needs, veterinary and husbandry care, and even behavioral enrichment. While not specifically elaborated on yet, it was determined there would be a CITES-built webpage with this information to allow easy access to the guidelines. Most reasonable parties were happy with this solution, but there were others who took it as an opportunity to attack the concept of animals in captivity, particularly outside of a species’ natural range. Niger and Burkina Faso asserted that for African species, no destination outside of Africa is “acceptable” and animals in human care are kept in “conditions that lead to trauma” for elephants. The nations of Gabon, Nigeria, Uganda, and Senegal concurred, with Senegal offering a very impassioned intervention in agreement, focusing on the “ethics of captivity.” A coalition of organizations including the Animal Welfare Institute, Born Free, HSI, Species Survival Network, Annamiticus, and the David Shepherd Wildlife Foundation spoke up in favor of the materials from Niger and Burkina Faso and against any live trade of African elephants. AZA, EAZA, WAZA, WCS, ZSL, and San Diego Zoo Global offered a group statement supporting the guidelines of the working group and indicating they are available as experts to help, but avoiding commenting on the anti-captivity part of the discussion.

CITES meetings also feature side events where organiza-

tions and parties can host smaller gatherings on special topics of their choice. On the last day a lunchtime event listed as “WAZA Zoos and Aquariums Protecting CITES-Listed Species”, was presented by EAZA, SDZG, WCS, AZA, and WAZA. Speakers showed video footage and slides highlighting zoological contributions to CITES-listed Appendix 1 species, such as the Mexican gray wolf, California Condor, Scarlett Macaw, Burmese Star Tortoise, and African gray parrot. The importance of teaching the public about conservation work enabled, inspired, and funded by animals in human care was stressed to make those in attendance at CITES aware of the impact zoological organizations have on wild populations and research.

Shortly after last year’s SC 69 meeting, John Scanlon, the Secretary General of CITES, announced his resignation. Scanlon’s replacement was not announced during this meeting, but it was done so shortly thereafter. Coming from decades working at the United Nations in various capacities, including at the UN Environment headquarters in Nairobi and the UN Economic Commission for Europe, Environmental Economist Ivonne Higuero has been selected for the position. She seems committed to “Agenda 2030 and the Sustainable Development Goals” of the CITES treaty and ready to lead.

While it may seem inconsequential to what we members of ZAA do each and every day by providing the best care for our animals, global conservation policy has a direct impact today as well as in the future. We have a responsibility to the animals we love to serve as the experts on the international stage to help guide policy. If we choose to not become involved in the national and international development of policy, our work, our industry, and ultimately our animals will suffer.

For more information about CITES: <https://www.cites.org/>

Book Review: Canids of the World

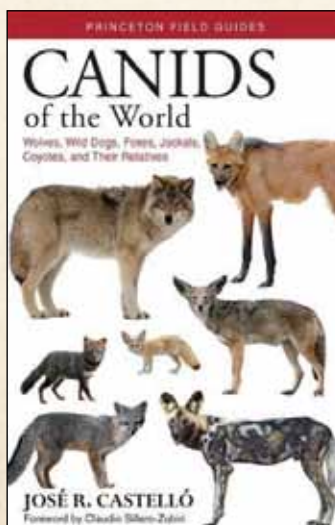
by Rick Hahn, Catocin Wildlife Park

Jose’ R. Castello’ has created another fine book to follow in the path of his *Bovids of the World: Antelopes, Gazelles, Cattle, Goats, Sheep and Relatives in the Field Guide* series printed by Princeton University Press. \$20 in soft cover; \$80 in hard cover from Amazon 2018.

Thoroughly researched and illustrated with more than 600 color photos of “13 genera and the 37 extant species” of the wild canines of the world and their related forms, this is the ultimate photographic-encyclopedic work on this subject.

In addition to its thorough photographic coverage of its subject matter, it also fills in other blanks for each species, including: other common names, taxonomy, similar species (if any), reproduction, behavior, distribution, habitat, conservation status and finally, the names of the many people who supplied photos for his book.

A bonus is that range maps for each subspecies are added to augment the concise information under “distribution”.



At the end of the book there are several pages of twenty-six canine skulls and a three-page glossary of terms. Finally, the field guide ends with eleven pages of references going back to Edward Cope in 1889!

The only thing that I would change in this book is the size of the print. (Does this mean that my eye sight is failing? Not necessarily.) It could just be a decision on the part of the publishers so that they could sell this encyclopedic book at a price point that would garner a larger audience if they kept it under 332 pages. Personally, I would have preferred that this book was coffee table size. I’d pay the price. In summation, I hesitate to call this the bible of canid information, but if there were such a book, this would be it.

“Um, I’m Done, Thanks”: Offering End of Session Choice

by LynnLee Schmidt, Curator Birds and Mammals, Downtown Aquarium Denver

Abstract

A primary reinforcer is anything that occurs naturally and doesn’t require learning or association to be inherently effective. The ability to choose has been postulated as a primary reinforcer, because having a choice is an advantage to one’s survival. Although animal trainers would like to believe their presence in a training session is in itself wildly reinforcing, it is more important for the trainer to read the animal’s behaviors and ensure they are providing positive reinforcement opportunities such as choice.

In the case of a North American river otter, *Lontra canadensis*, at the Downtown Aquarium Denver, cues and signals including aggression, wandering, avoidance, and escape indicated that ending a session might be more reinforcing than the food associated with it. Trainers placed a visual marker in the area during sessions, and if the otter touched the shape, the session ended. After the introduction of the shape labeled “end of session,” aggression, latency, wandering, avoidance, and escape were all reduced. The shape was even generalized to introductions with our male otter, so either otter could choose to end the introduction. Both creative options and the addition of choice are necessary to continue the evolution of animal training.

Problem

In 2016, the Downtown Aquarium Denver acquired an eight-week-old orphaned North American river otter pup, *Lontra canadensis*. Olive was rescued in Florida by Owl’s Nest Sanctuary. She was deemed unreleasable because she was imprinted. She arrived at the aquarium in March and received around the clock care from trainers and the curatorial team. Since she was imprinted, she was identified as a suitable candidate for training as an animal ambassador, and she participated in meet and greet sessions with the public.

During these meet and greets and other training sessions, Olive performed a variety of behaviors. Most of the time she voluntarily completed all of the behaviors without incident, but on occasion she would leave the session, bite the trainer’s shoes, grab the trainer’s legs, and refuse to go to her crate to end the session. Trainers grouped behaviors into three categories: bites, precursors to aggression, and frustration (Table 1). Since aggression and frustration can be difficult to operationalize, we identified behaviors Olive exhibited when she was more likely to be aggressive or if she seemed frustrated. Frustration behaviors often occurred before aggression precursors or in response to requests for challenging behaviors.

We attempted a variety of solutions, including decreasing



Above and below: “Olive”, North American river otter, *Lontra canadensis*, performing a variety of behaviors during meet and greets. LynnLee Schmidt

ing the number of trainers, creating more variety to keep her interested during sessions, and offering a variety of reinforcement items. These changes weren’t sufficiently reinforcing.

Identified Solution

Trainers wondered if ending the session could be more reinforcing than food. This hypothesis had been tested with a dolphin at Dolphin Quest (West, 2016). Their dolphin could choose among a variety of reinforcers, one of which was ending the session. The dolphin could select a certain shape placed near his pool. Aggression towards guests and trainers decreased when this option was available. At first the dolphin opted most often for end of session (EOS), but over time his aggression and EOS choice were nearly eliminated.

This is just one example supporting the concept that having control over the environment is in itself primarily reinforcing. If control allows an individual to ensure survival, and survival is a basic biological need, control fits the definition of a primary reinforcer (Harris, G. Susta, F., 2016).

Based on Olive’s behavior, we decided that in some cases her control of session timing was more reinforcing than food. Based on a continuation of the previously listed frustration behaviors, trainers created an option to allow Olive to end her own sessions.

How Trainers Implemented the Solution

During every session, trainers placed a square plastic shape in the area, either protected contact or free contact. The protocol:

- 1) Place the shape in the same position in every session.



Table 1: Frustration and Aggression

Precursors to Aggression

- Nibbling on trainer hands, shoes, or legs
- Grabbing legs or shoes with paws
- Encroaching on the trainer’s space

Frustration Behaviors

- Leaving sessions to swim
- Interacting with toys
- Avoiding proximity to trainer
- Positioning body to inhibit requested behavior
- Wandering room
- Leaving stimulus control

- 2) If she touches the shape at any point during the session, the session ends.
- 3) End the session as you normally would:
 - i. Free contact outside of enclosure - crate her and reinforce her in crate
 - ii. Free contact inside of enclosure - leave 3-5 pieces of food and exit enclosure
 - iii. Protected contact - push 3-5 pieces of food under and step away

Even the trainers required a few weeks of training to remember to place the shape in the area.

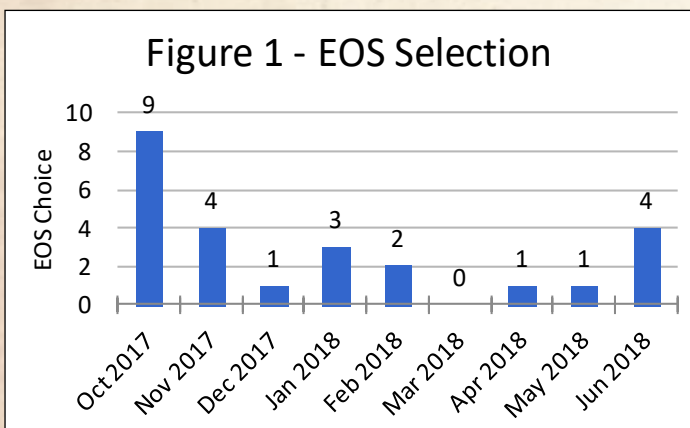
Results

Olive touched the end of session (EOS) shape in each of the first three sessions. Perhaps she was merely investigating the new object. Her seventh selection of EOS occurred after a few incorrect responses, which historically increased the likelihood of aggression and frustration behaviors. Trainers believed her EOS choice was intentional. Over the course of the next year, most EOS selections occurred during sessions in which a new behavior was being worked, when there were many distractions and competing reinforcers, and when Olive's food motivation was low.

Table 2 shows that for the year prior to implementing the EOS option, trainers experienced an average of 4.3 bites per month. During the year following implementation, they experienced 0.2 bites per month (t-test $p=0.004$). Precursors to aggression also decreased from 3.4 precursors per month to 0.4 (t-test $p=0.012$). Behaviors that were identified as frustration fell from 9.8 to 6.1 per month; however, they did not change significantly (t-test $p=0.152$).

	Average number per month		T-test p value
	Before EOS	After EOS	
Aggression	4.35	0.20	0.004
Precursor to aggression	3.41	0.40	0.012
Wandering	9.82	6.10	0.152

As shown in figure 1, selection of EOS spiked during the first month we introduced the shape; during this period she selected EOS 17 times. In the second month she selected EOS 9 times. In the following months her selection decreased to an average of 2 times per month. The trainers believe that curios-



ity and novelty in the first couple of months contributed to her interest in selecting EOS.

In addition to decreasing aggression and frustration behaviors, the EOS option also contributed to successful otter introductions. Shortly after EOS was started, we began introductions with Olive and one of the male otters. We left the EOS option in the reserve area, so if Olive wanted the introduction to end, she could select EOS. During the second introduction, the male touched the shape. We closed the gate and separated the two otters. He caught on quickly and selected EOS to end every introduction after that. Our introductions were safe and successful, and the otters were able to exercise some control over those encounters.

Conclusion

This case study demonstrates that offering your animals control over their environment has the potential of reducing aggression and frustration behaviors. It's important to read your animal's behavior so you can be sure that you're offering choice over things the animal finds reinforcing. We are in the process of brainstorming how we can offer these options to other species in our care and apply them to other situations.

References

Harris, G. Susta, F. 2016. Awareness of Control as a Primary Reinforcer. Soundings. Volume 41, Number 3. IMATA.
 West, N. 2016. Designing Environmental Influence Through Alternative Response Training (ART). IMATA conference proceedings



Plastic square used as end of session shape. LynnLee Schmidt

Notes from a Small Town: Or How I Found Four Postcards

by Ken Kawata

What is “fine and worthy”? Zoo-going is one of the nation’s favorite pastimes. The public’s image of zoos, it might be noted, is largely a product by the popular news media, namely television and daily newspapers. And it is usually large zoos in major population centers that enjoy a prominent status, thanks to the national publicity. Those zoos host sizeable collections of crowd pleasers including “status symbol” animals such as the giant panda and the koala. The general impression is that those with a high profile receive the society’s stamp of approval as fine and worthy institutions. Yet the large zoos belong to a minority in terms of statistics; the majority of zoos in any nation are small zoos in smaller population centers. Overshadowed by the larger cousins they receive less media visibility, and thus tend to slip through the fingers of even the most enthusiastic zoo-goers.

And that raises the question. Are those small collections, the less marketable majority in the zoo world, not fine or worthy? Absolutely not, in my opinion. The size, annual budget, visitor attendance and prominence (or lack thereof) of publicity of a zoo have little to do with the quality of the zoo. (More on the quality issue in a moment.) To put it another way, the excellence of a zoo is by no means in direct proportion to its size or the largeness of the city in which it is located. Bigger is not always better. An example: When wife Jean and I visited one large city zoo in the Midwest, I soon began to shake my head in disapproval and we could not wait to hit the exit gate (that particular zoo remains nameless).

A Midwestern contrast. We were again in the Midwest, this time in the northern part, some five years later, July 2018 to be exact. Even with a population of only 12,000 this town is blessed with two internationally famed, unique institutions in ornithology and entertainment business. It so happens that the town also has a small zoo, completely overshadowed by them, not well known even within the circle of seasoned zoo people. Recently when I was chatting with a well-known zoo

director in the Southwest I brought up the subject of this town, and his reaction was “I did not know it has a zoo.” But in my experience, if you step in little unknown zoos with an open mind, every now and then you may find a hidden gem. That is the magic of zoo-going.

At any rate, out of curiosity we paid a visit to this little town zoo. Just as the above-mentioned large zoo in the Midwest this zoo stays anonymous.

A lush, mixed deciduous forest greets the visitor to the park. There is no admission fee. At the entrance we find out that each visitor is expected to open a door-sized metal gate cut into the chainlink perimeter fence, and to close it behind them by dropping a rod into the slot. Obviously this zoo is not geared for out-of-state tourists. Imagine waves of tourists that flood Florida and California coming this way, single-file, trying to get into this zoo! More aptly this is a community-based and community-supported zoo. One way to feel “the pulse” of the community is to chat with a hotel concierge or wait staff at a local eatery. At a downtown restaurant I ask a waitress about the zoo. Immediately she names most prominent species there, adding, “A new otter exhibit will open soon”.



Each visitor is expected to open and close the door-sized metal gate. Ken Kawata



Lush, mature deciduous trees provide plenty of shade. Ken Kawata

Municipal outpost? From every indication this zoo is a municipal operation. It had a modest start when two bear cubs arrived in 1926. Such a birth of a zoo may be termed “happenstance” (animals often arrived unexpectedly, not as a part of a master plan) as opposed to “constitutional”, or a zoo built by a structured plan based on a mission statement, issued by an administrative body (Kawata, 2014). Within a circle of us old-timers (zoo dinosaurs would be more fitting) we used to call city-run zoos “the park department zoos”. That implies that people who operate swimming pools, soccer fields, golf courses and such also manage the zoo. In our collective mind a zoo is a living museum of sorts, but not just a park with animals. We thought our hands should not be tied with rigid bureaucratic policies of such an entity.

Another view from the dinosaurs’ circle is that a zoo is often a stepchild of a city government. We know because we worked in that outpost of the city system: that the word zoo begins with a “z”, at the bottom of the alphabet (and the priority list for budget and personnel). Or should it

be? This is not to say such a system is good or bad, or right or wrong. Also, generalization must be taken carefully. Certainly our recollections do not imply that all municipal zoos belong in a lesser category, compared with zoos operated under the guidance of scientific and cultural authorities. But enough for recollections for now and back to a little town. How does its zoo fare?

The sky is clear blue in this Midwestern town, good for zooing. Well-manicured grassy landscape, interspersed with mature trees, extends on a level land as visitors casually stroll from one exhibit to the other under abundant sunshine. For a moment I forget that this is a country of mercilessly harsh winter; the average low temperature in January is minus 22 C (or 8 F) degrees.

First large mammals that catch our attention are farm stock, such as donkey and goat and on the exotic department, llamas. Nearby stand caged barred owl and great horned owl. Soon we come to crowd-pleasers, brown capuchins, American black bear and Canada lynx, in enclosures well furnished with climbing apparatus, logs and rocks. Glass partition is used in some areas. Then I note that a cockatiel is labeled as chukar partridge. But I should not be so picky, picky since mislabeled and unlabeled animals are, unfortunately, fairly common in zoos around the world.

Memorable swan. Stepping back three decades for a moment, when I first visited this zoo I was mildly shocked to find a tundra swan. This is because zoos typically keep a pair of mute swans or black swans, both easily bred in captivity. So that swan left an impression, and when we were planning to visit the zoo I was hoping to see it again. Sure enough, in a large yard with a pond, in a mixed-species exhibit with four female white-tailed deer, I find a tundra swan! If it is the same bird it would have been here for at least three decades, almost the world's longevity record for the species.

Alas, it was not meant to be. Later I made an inquiry to Richard Weigl of Frankfurt Zoo, Germany, an expert on animal longevity records in captivity. He checked with ZIMS record and found out the following: this tundra swan, Snowflake, is a female and arrived there on 4 October 2004 from a rehabilitation Center in that state, and she is around 14 years old (email, 1 August 2018). Continuing on birds, snowy owls, a male and a female, are a bit of a surprise. They are housed not in a simple wire-mesh cage but in a building, behind glass and wire-mesh barriers.



The tundra swan, *Cygnus columbianus*, almost led me to think she is a long-time resident. Ken Kawata

That indicates, probably, they receive special care.

Soon we find a small prairie dog town which has no visual barrier between the public and animals, but that seems like an exception. Because of the "hard" barrier such as the wire fence this zoo is by no means a photographers' paradise, making prairie dogs exceptional. Another exception is gray wolves on the other side of the zoo grounds, in an open enclosure well shaded with trees. As I watch, keepers are shifting two wolves into a building so smoothly for servicing the exhibit yard. That is a surprise to me. In my experience, gray wolves tend to be suspicious and will not easily let you lock them into small indoor confinement. In fact, many zoos do not shift them into a building. (That's an example that you can learn something new every time you visit a zoo, large or small, in any country.)

Signs of a growing zoo are everywhere, such as the upcoming opening of the North American river otter exhibit. Overall, the collection consists of winter-hardy (nearly all, anyway) mammals and birds, a common practice for small municipal zoos in regions known for harsh winter. That may not necessarily mean that amphibians and reptiles are purposely ignored because it takes a climate-controlled building to maintain them year round, a costly proposition. I might add that animals are plainly visible in this zoo, instead of staying inside the building or behind furniture. (This depends on the way exhibits are set up. Lynx, for example, often rests or sleeps during the day. Here the opening of its sleeping box faces the public, so the animal is visible while sleeping in a secure spot.)

And that is despite the "furniture" (rocks, logs, trees and the like) that can block the view, and large sizes of enclosures that allow inhabitants to stay far from visitors. I am a poor guesser of distance and size, but here are examples of enclosure dimensions: gray wolf, 70 x 60 m in addition to a 15 x 15 m holding pen; American black bear, 50 x 50 m; lynx, 30 x 20 m; capuchin, 10 x 10 m. Again, I could be way off. Educational graphic panels and signs accompany these enclosures. Some signs acknowledge donors while others explain background of the animals in a tell-it-like-it-is manner. For instance, one sign says this animal is a hybrid while another, a tail of this wolf was bitten off by another wolf. Such a refreshing approach!

Exorcizing of a cage. My overall impression is that this zoo has made quite an improvement in three decades. Let me bring up, at this point, a perspective on animal husbandry and exhibits. There are common zoo exhibit features that are absent in this

zoo. One is the moat and the other, large-scale mixed species exhibits. Those features are so widespread in other zoos, that they become all the more conspicuous in this zoo by their absence. Here most animals are in single-species housing, old-style cages (with a few exceptions such as the gray wolf). As many know, “cage” is a politically incorrect term. By “caging” its animals this zoo could be targeted for criticism, particularly by those well-oiled big city animal advocate groups that tend to take up an anti-captivity position.

It might be noted, however, that ALL zoo animals are in captivity regardless of the mode of the barrier, whether they are in an expensively landscaped good-looking garden or in a chainlink-fenced yard. But the animal, the inhabitant, hardly cares about the method of confinement. It is all in the eye of the human beholder: Chaining of an elephant reminds the public of slavery and likewise “behind bars” is reminiscent of prison. Bars, chainlink fence and wire-mesh are “hard” barriers, an unpopular eyesore in today’s zoos. (For a more detailed discussion of cages see Kawata, 2012.)

Of moat and the “naturalistic”. One way to circumvent such barriers is to put a concrete moat, dry or wet (water-filled), between animals and the public, wide and deep enough to keep animals from jumping, swimming or climbing out. It may be visually pleasing to see lions or bears without any hard barrier. A moat, however, keeps the animal further away from the public, not to mention that it presents a potential death trap. Both animals and visitors could fall into it. Animals can also hide themselves in the moat. Besides the moat is expensive to construct and takes up so much space, certainly not recommendable for this zoo.

Those who criticize cages may in turn praise large, “ecological,” “immersive” and “naturalistic” mixed-species exhibits, usually behind a moat. The typical example is the African savanna, ubiquitous in zoos across the world. In a beautifully landscaped yard zebras, a variety of antelopes such as gazelle, impala, wildebeest and eland are exhibited with birds such as storks and cranes. It is a treat to the visitors’ eye. Well, that is the human side of the coin; on the other side reside the animals.

In truth, such an exhibit contains a highly abnormal concentration of animals in terms of space and time. In short they are jammed into a little pit, just a tiny fraction of an in situ territory or home range of each animal. Have you ever watched beautiful crowned cranes closely in such an exhibit, how uncomfortable they are and conscious of the surrounding, especially the approaching large mammals? Besides, those exhib-

its do not even begin to remind me of the real savanna habitat, be it in Botswana or in Tanzania.

And here is something the typical zoo visitor has never heard of, the disturbing reality reported by Catherine King (2009): The high injury rate, including fatalities, on large waders (cranes, storks, flamingos) caused by mammals in the same “naturalistic” exhibits. As for the marketing department, the exhibit is a successful formula, but it is built upon heaps of injured and dead birds. In terms of the welfare of individual birds it is a failure. Robbed of an opportunity to breed, they are used as short-term ornamental fillers. In the 1960s a large number of crowned cranes of both species was imported to the U.S. Cranes are long-living birds. You have to wonder what happened to them. Did they contribute to breeding programs in zoos? How many crowned cranes we see today in zoos are their progeny?

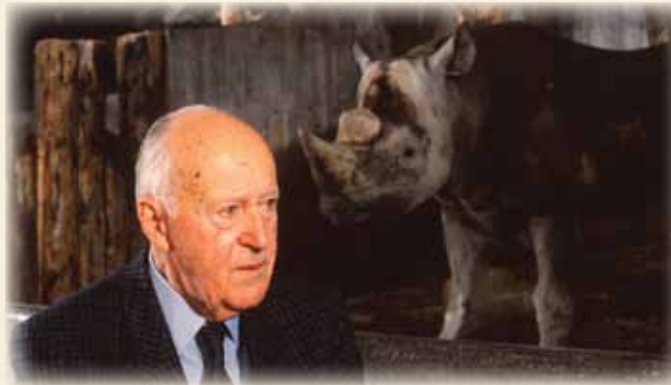
At any rate, the core of exhibit design boils down to fabrication of illusions, just as in theater productions. But enough said for now. Let me get off the soap box and return to the business of cages. Animal lovers who despise cages are so preoccupied with the container (the cage), while paying little attention to the life of the content (the animal). They should view the situation through another lens. The cage reduces the chance for escape, but that is only a part of what it offers.

Animals as property owners. For the sake of discussion, let us take a look at another viewpoint about the cage. Zoologist and former director of several Swiss zoos Prof. Heini Hediger

theorized that “the cage may mean to the animal a protection against unwanted contacts with animals of the same or different species.” (1964). Hard physical barriers keep out vandals (humans, or animals of a different species) and predators. Zoo history is littered with incidents, many of them fatal for the inhabitants, by human intruders or packs of stray dogs. Dangers are not limited to the ground level. Imagine being ducks and pheasants in an open enclosure during the night, how they are vulnerable to the deadly great horned owls. Another point: Cages guard the inhabitants from most trajectories cast by heartless visitors from rocks, lit cigarettes to junk food. And it comes as no surprise that, unlike open enclosures cages provide climbing apparatus for primates and parrots.

Continuing on Hediger: “In every good zoo the animal does not feel itself in any way a prisoner, but—as in the wild—it feels more like the tenant or owner of a piece of land; it should feel like occupier of a territory, the possessor, that is, of the unit of space to which the animal instinctively lays claim.” (1970). What if a pair of crowned cranes were to be transferred from

“In every good zoo the animal does not feel itself in any way a prisoner, but - as in the wild - it feels more like a tenant or owner of a piece of land...”
Prof. Heini Hediger



Prof. Heini Hediger, former director, Zurich Zoo, Switzerland. Dr. Christian Schmidt

a large, open, mixed species African savanna enclosure into a single-species housing unit, a cage? All of a sudden the birds find themselves in a property to defend as their own, in which they can carry on daily life away from danger. Now back into the zoo as an operational entity.

A quality zoo? Earlier, we discussed the size of zoos. At this juncture, let us move on to the subject of the quality of a zoo. Much has been talked about the mission, purpose, objective and goal for a zoo. These are the essential parameters in discussion on the quality of a given zoo. A common opinion across the zoo world would almost automatically point out that, the barometer for the quality of a zoo is the commitment and corresponding achievements in the field of wildlife conservation. In short, that will lead to the notion that the modern zoo is expected to become a Noah's Ark for endangered species. That is an amiable task, and zoos have accomplished quite a bit in this endeavor, and the task will continue in the years to come.

The challenging goals aside, let me step back for a moment and take a different angle to review the quality of a zoo. First off, let us peel off all the motto, slogan, cooperative breeding programs and technological advancements of the modern zoo into bare minimum components. Then examine that which is left there: What constitutes the backbones of a zoo? Opinions will differ, of course. In my view three integral elements that make a zoo will surface, not necessarily in the order of importance. A zoo is to:



---Provide a worthwhile yet comfortable work environment for employees. This is a vital factor, yet often overlooked by well-meaning

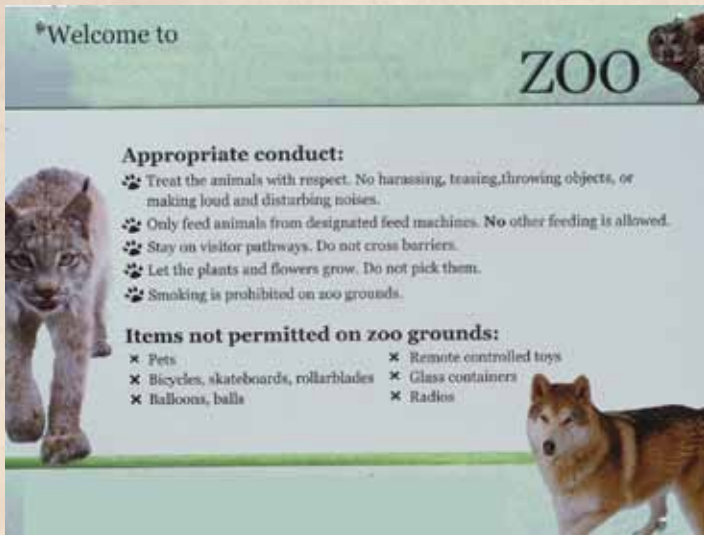
zoo visitors whose concern solely focuses on animals and exhibits. In actuality a zoo is a workplace, a specialized type it may be, and a workplace is inseparable from a host of people challenges. Please be reminded that zoo problems are not animal problems, but people problems. A zoo is not an animal lovers' utopia as some zoo-goers naively assume. Some zoos maintain esprit de corps intact with a positive outlook; at the least, employees do not mind coming to work every morning. At the other end of spectrum lies a zoo which represents a slippery slope toward a bottomless pit of employee morale. Imagine a young soul fresh out of college campus with a degree and an unrealistic expectation, suddenly thrown into a toxic work environment! This human dimension can easily affect welfare of animals in the zoo's collection.

---Maintain animals that are well cared for with their records meticulously chronicled. The importance of impeccable record keeping cannot be over-emphasized, because the zoo's animal data are the basis for science. All the state-of-the-art computer technology would become worthless if basic and original information on the animals is missing from the zoo's operational foundation. As for information, the most important step begins with observations by animal keepers. The information is then manually documented. The key word here is observation. It is no exaggeration to state that the most essential nutrient for the animal is the keepers' eye, and that the degree of success in animal husbandry is in direct proportion to the number of keepers' footprints in and around the animal enclosure.

---Offer an enjoyable and learning experience for the visitors. In our urban society, a zoo may provide the only contact with live wild animals for the populace. The critical point is that without a healthy animal collection, a zoo has no reason to exist. That is the starting gate for the modern zoo, and its task is immense: To introduce wild animal life to the citizenry so that they will help to save animals from the threat by increasing human encroachment into their



North American river otter exhibit is nearing completion. Ken Kawata
ZAA Journal 23



A community-asset, the zoo attracts visitors more than twice the town's population. Ken Kawata

habitat; ultimately, the public will learn how to share this Planet with other forms of life. It is an enormous responsibility, and it requires an enormous personal commitment.

"A neat little zoo." Now let us get back to the little zoo. A quick tour of a zoo, large or small, will most likely not provide a solid basis to examine its quality. At the most it is just a glance, too inadequate for us to evaluate the above three components.



White-tailed deer in a large exhibit area. Ken Kawata

Nevertheless, for a trial let us start with the staff. Keepers I watched had clean uniform and appeared friendly (although that does not provide an insight into the nature of the workplace). As for the animals, here follows a second opinion by a professional. I found out that James Alexander, a retired sealion trainer of the Saint Louis Zoo and a zoo/circus historian, also took a look at this zoo while he was in town. When visiting a zoo Jim turns a critical eye on the animal collection, visually examining every animal he comes across. "It's a neat little zoo," he commented, as I agreed with him: "It is very clean and animals are well cared for."

Onto the public, the above-mentioned outmoded zoo exhibit design is not eye-pleasing to some, and could cloud their objective observations. On that sunny day, however, I noticed that the zoo visitors were enjoying themselves despite the fact that most animals are in metal cages; it appeared that such a factor did not influence the public's attitude all that much. That confirms the point that to serve the public satisfactorily, a zoo does not have to be equipped with a series of expensive state-of-the-art "ecological" exhibits. Another point: For citizens to appreciate the animal viewing experience, a zoo does not have to fill its grounds with rare and endangered species.

It is unlikely that this zoo, just as other small town zoos, would someday find national fame in evening television news stories, nor would it be rated as a top-notch institution by an international zoo association. Yet it deserves more recognition by zoo enthusiasts wishing to find a little hidden treasure.

Before closing this report, let me point up one more finding. Nowadays, unlike their European counterparts, many large zoos in the U.S. do not carry their own postcards. They sell generic, commercially mass-produced postcards at their gift shops. Postcards and guide books simply do not bring in money. There are, however, small town zoos that have their own postcards just like old days. Alameda Park Zoo in Alamogordo, New Mexico, is one of those exceptions. While touring this unnamed zoo I came across a kiosk. A friendly young attendant pulled out four postcards, 75 cents each (a price justifiable for a small market). She said that they represented species currently on exhibit: Brown capuchin, American black bear, Canada lynx and snowy owl. Those postcards made a fine addition to my collection. 🐾

Literature Cited

Hediger, Heini. (1964): *Wild Animals in Captivity*. Dover Publications, Inc., New York.

Hediger, Heini. (1970): *Man and Animal in the Zoo: Zoo Biology*. Routledge & Kegan Paul, London.

Kawata, Ken. (2012): *Exorcising of a Cage: A Review of American Zoo Exhibits, Part III*. In *Der Zoologische Garten*, N.F. 81, 132-146.

Kawata, Ken. (2014): *WPA, Rattlesnakes and a Lady Doctor: The Staten Island Zoo History*. In *International Zoo News*, 61/3, 176-200.

King, Catherine. (2009): *Do Birds Belong in Savannah Exhibits?* (abridged from *EAZA News N. 63*). In *International Zoo News*, 56/2, 96-98.

Paul Leland Breese

Honolulu Zoo Director Emeritus

October 16, 1922 - October 18, 2018

Paul reminisced, "One of my most cherished childhood memories is picturing me as an eight year old explaining to my mother and aunt how my pet alligator used its webbed feet together with its tail to swim in our bathtub. This recollection turned out to be highly prophetic since the two basic commitments of my long life have involved these same two activities: maintaining and interpreting exotic creatures."

Orphaned by 1935, Paul traveled alone by train along with his pet turtle from Atlanta to southern California to live with relatives, where he continued to be absorbed with nature. While attending college, he worked as a bus driver and in the reptile department at the San Diego Zoo, establishing long time friendships with then director Belle Benchley, bird curator K.C. Lint, and reptile curator Charles Shaw.

After Pearl Harbor, Paul enlisted in the Navy, trained at Columbia University, and was commissioned a naval officer. He learned the skills of landing amphibious crafts on beaches and participated in five different Pacific campaigns including Leyte Gulf and Iwo Jima. With the benefit of the GI bill, Paul graduated from the University of Hawaii in 1947.

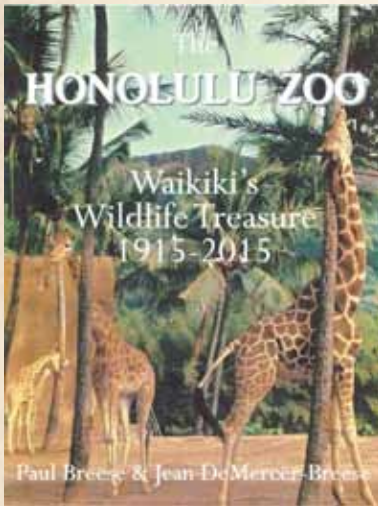
Paul's war experiences fostered his confi-

dence and strengthened his passion to pursue his career of displaying, conserving, and protecting animals. In 1947, Paul was appointed the first Director of the Honolulu Zoo. He developed the zoo's first master plan which defined the zoo's boundaries in Waikiki with fences and a single entrance, designed and constructed the many animal enclosures, landscaped and paved the parking area. Paul made numerous trips to the mainland, gathering and accompanying animals on their overseas trip to Honolulu. In 1964, a plaque was placed at the opening of the new reptile building. It reads: "Paul Breese Animalanai - This building is named in honor of Paul L. Breese in appreciation of outstanding service to the community while director of the Honolulu Zoo from 1947 to 1964. With vision, creativeness and dedication, he developed the zoo into

one of the world's finest, giving the people of Honolulu and to visitors an educational and recreational facility of unending pleasure. He leaves here a lasting imprint of his love of animals and of people young and old". Paul's most important contribution to our state was his work with then Territory of Hawaii to begin the Nene Restoration Project in 1949. He chaired the committee in the 1950's to name the Nene as Hawaii's state bird. In the 1970's, he was the Wildlife Chief for the DLNR, started the Pacific Zoological Consultants and worked with hotels on wildlife displays. In the 1990's Paul founded the Brown Tree Snake Control Group bringing attention and action to our state's protection from that threat. In 2013, Paul was interviewed by the Zoos and Aquariums Video Archives which recorded his history, experiences, and wisdom for future generations. Paul and his wife, Jean DeMercer-Breese, published THE HONOLULU ZOO Waikiki's Wildlife Treasure 1915-2015. In 2016, he was named a Living Treasure of Hawaii.



Nene, *Branta sandvicensis*. Kate Rogers



THE HONOLULU ZOO Waikiki's Wildlife Treasure 1915-2015., written by Paul Breese and Jean DeMercer-Breese

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Paul Breese, Jean DeMercer-Breese and friends. Paul Breese

New Accredited and Re-Accredited Facilities

Cape May County Zoo Cape May Court House, New Jersey

The Cape May County Park & Zoo in Cape May Court House, New Jersey, provides free year-round admission to a collection of more than 550 animals representing 250 species in 85 acres of exhibits. The zoo is located at 707 Route 9 North, in the center of Cape May County's Central Park, and together the zoo and the park cover about 220 acres. The zoo began operation in 1978. Its principal exhibit areas are a 57-acre (23 ha) African Savanna, a free-flight aviary, and a reptile collection.



Hemker Park & Zoo Freeport, Minnesota

Hemker Park & Zoo is located in Freeport, Minnesota. What began as a simple dream in 1977 has grown to give families up close access to over 50 different species from around the globe. The mission of Hemker Park & Zoo (HPZ) is to highlight and enhance animal species and encourage environmental conservation through integrated partnerships and practical approaches to wildlife management. Guests can expect to learn from their visit about our world while enjoying the over 200 animals that call

HPZ home. Hemker Park & Zoo has been voted the Best of Central Minnesota Out & About Family Recreation for 2 years in a row, 2017 & 2018!

Founded by Mark & Joan Hemker, the zoo has become a labor of love to honor Mark's legacy since his passing in 2006. Now operated by Joan and their children and their children's families, HPZ is an inviting and educational activity that will not disappoint. The zoo continues to grow each year, and new additions occur throughout the breathtaking Minnesota seasons.



Safari Niagara
Stevensville, Ontario, Canada

Safari Niagara is a 150-acre, privately-owned and operated nature park, home to more than 1,000 native and exotic mammals, reptiles and birds. They are located in Stevensville, Ontario – only 10 minutes from Niagara Falls!

Safari Niagara strives to educate people of all ages and abilities about wildlife conservation. Their goal is to bring guests a one-on-one connection with nature. Guests are invited to see the animals up close and get to know them. It is hoped that Safari Niagara will inspire future conservationists and nature-lovers by bringing them into a new environment.



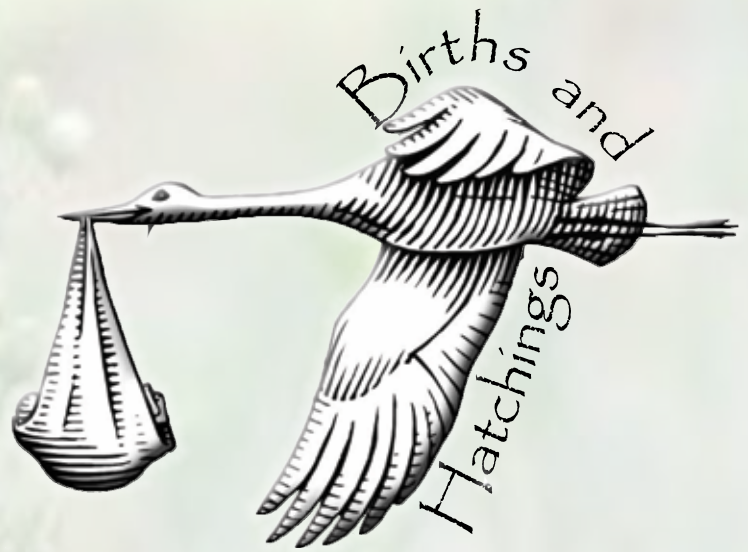
Triple D Game Farm
Kalispell, Montana

Triple D's main mission is to provide our animals with the best overall life possible. We are dedicated to the mental and physical health of each of our animals through the highest standard of nutrition, enrichment, and overall care. We believe that by exercising the animals' inherent instincts and abilities in a controlled environment, not only are we able to provide the best form of enrichment, but we are simultaneously able to provide our clients with the best photographic opportunities of our animals in their natural settings. Our unique role in the worldwide conservation message is an important one. Together, our animals and our clients create a powerhouse as conservation ambassadors. Through their lenses, the purpose of conservation is infinitely captured. And through their artwork, images and natural films, our clients and animals are inspiring people across the globe. Steve Irwin may have said it best, "If you can't excite people about wildlife, how can you convince them to love, cherish, and protect our wildlife and the environment they live in?" The collaboration of our animals and clients provides people that excitement and inspiration to play their part in global conservation.





African Dwarf Crocodiles, *Osteolaemus tetraspis*.
Crocodile Conservation



Member Updates

New Professional Members

- Lana Borg**, Safari Niagara
- Doug Hotle**, Animal World & Snake Farm Zoo
- Emily Jaffe**, Animal World & Snake Farm Zoo
- Robin Lentz**, Mill Mountain Zoo
- Robert Olmstead**, Tanganyika Wildlife Park
- Monte Oswald**, Oswald's Bear Ranch
- Jordan Patch**, Animal Adventure Park
- Holly Taylor**, Baton Rouge Zoo
- Jeff Taylor**, The Wild Animal Park
- Bud Wiser**, Alameda Park Zoo



What's Gnu

Hemker Park & Zoo creates non-profit to be the education arm of the zoo

Hemker Park & Zoo (HPZ), beginning in 1977 as a simple dream, has grown to give families up close access to over 50 different species from around the globe. To keep with the mission of highlighting and enhancing animal species and encouraging environmental conservation through integrated partnerships and practical approaches to wildlife management, HPZ created a 501(c)3 non-profit organization, Guardians of Conservation (GOC). GOC's purpose is to support endangered animal conservation and education efforts locally through the HPZ and around the world.

GOC is working to guide the next generation down a life-long path of animal conservation by bringing the world to their fingertips. Both HPZ and GOC share the wonder and importance of conservation, as well as the critical importance of the role of animals within our ecosystem.

New Commercial Members

Service Systems Associates
kmssa.com

Felis Consulting
felisconsulting.com



Pittsburgh Zoo & PPG Aquarium President & CEO Takes on New Role

Election Results

Board of Directors

Marcia Woodard
Vanessa Roer

Code of Conduct

Marcy Crede-Booth

2019 Board of Directors

Dr. Barbara Baker, chair
Holly Hunt, vice chair
Dr. Eric Trager, secretary
Kayte Hogan, treasurer
Dr. Peter Brewer
Dr. Pat Condy
Judy Domaszek
Michael Fouraker
Jim Fouts
Vanessa Roer
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Education - David Kleven
Legislative Task Force - Mickey Ollson
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Membership - Marcus Hemker
Nominating - Jim Fouts
Policy Advisory - Jim Fouts
Professional Development - LynnLee Schmidt
Public Relations - Tracy Gray



In addition to her current role as President & CEO of the Pittsburgh Zoo & PPG Aquarium, Dr. Barbara Baker is taking on a new challenge as Chair of the Zoological Association of America (ZAA).

At the ZAA November conference in New Jersey, with the Turtle Back Zoo as host, ZAA Directors unanimously voted Dr. Baker in as Chair.

"I am very excited to be part of the ZAA organization and have the opportunity to work with wonderful professionals to grow and meet new challenges in the world of animal care, welfare, and conservation," says Dr. Barbara Baker. "ZAA is all inclusive, focused on its members, and we welcome all individuals and zoo organizations. ZAA's programs, conferences and workshops, as well as other networking opportunities, assist zoos and aquariums in improving and advancing their animal care and welfare programs."

With more than 60 accredited members and the largest membership of its history, the Zoological Association of America is the second largest trade association in the Zoological sector. Dr. Baker worked to develop the ZAA's Strategic Long Range Plan, which sets an industrious and exciting vision for the future of the young organization.

Under Dr. Baker's leadership at the Pittsburgh Zoo & PPG Aquarium, the Zoo has grown into one of the top zoos in the country, introducing visitors to the wonderful and amazing world of animals through naturalistic exhibits and education classes. She was a pioneer in efforts to help save endangered and threatened species by being the first Zoo to create an off-site International Conservation Center. She partnered with Project Frozen Dumbo to begin efforts to help strengthen an aging African elephant population in zoos. Dr. Baker has never met a challenge she didn't like and proved it when she successfully engineered the rescue of female African elephants facing death in Botswana.

Today, she is the mastermind of one of the largest development projects in the Zoo's history, Top of the World, which will utilize the last of the remaining acreage of the Zoo property.

Always with an eye on the future, Dr. Baker is aware of how zoos have evolved over the years and how to ensure success for years to come.

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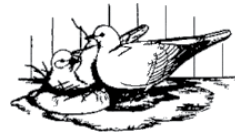


Significant Propagation & Long Term Commitment to a Single Species

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Legislative Corner

Federal Update

Frank Vitello, Vitello Consulting
vitelloconsulting.com

Happy New Year! As I sit here writing this column, the partial federal government shutdown is now the longest ever with no end in sight. President Donald Trump and lawmakers are still locked in a standoff over Trump's demand that Congress allocate \$5.7 billion to build a wall at the US-Mexico border. Trump has said he's considering declaring a national emergency to get the money but he'd prefer to strike a deal with Congress. The House, now led by Democrats, passed a series of spending bills this week that would reopen parts of the government, including financial services, national parks, housing and transportation, and agriculture. But they're unlikely to go anywhere. Senate Majority Leader Mitch McConnell blocked a move to get the Republican-controlled Senate to vote on the bills, and the White House has signaled the President would veto any spending bills that don't have his requested wall funds. While both chambers of Congress have signaled they will support back pay for furloughed workers, many (considered "non-essential") are currently not working which has resulted in shutdowns and limited services on many fronts. For example, for those visiting Washington, D.C., all Smithsonian Museums and the National Zoo are closed. Many National Parks are also closed. Closer to home, for those seeking federal permits you can expect that it's going to be a while. In short, it's a mess and there's no telling when it's going to be resolved.

When the dust eventually settles, we can expect major changes in the U.S. Congress, most notably on the House side. With Democrats taking control of the House majority, our major concern is likely the philosophical shift that will occur. Without question we should expect much more activity on bills favored by the AR community and thus we would need to step up our defensive efforts to fend off potential threats.

Specifically, we can expect that bills dealing with the Endangered Species Act, or revisions of major environmental provisions are likely dead. We can also expect a major focus

on policies related to climate change to emerge under Democratic control. The Big Cat Public Safety Act will be reintroduced with a Democratic lead sponsor, and the bill will receive a hearing and move through the House. As in previous sessions of Congress, you can expect that ZAA will draft a letter of opposition and forwarded to both the House Natural Resources Committee and the Senate Committee on Environment and Public Works. Areas where we can expect to play offense are generally those dealing with wildlife conservation; reauthorization of the Multinational Species Conservation Fund (MSCF) for example. MSCF programs have been managed by the U.S. Fish and Wildlife Service for nearly 30 years and help to conserve some of the world's most iconic species: elephants, rhinos, tigers, great apes, and marine turtles.

At USDA, ZAA continues to work closely with top officials throughout the Department. Specifically at APHIS Animal Care, ZAA is routinely approached prior to any regulatory action as an important stakeholder and given an early opportunity to talk through forthcoming agency proposals.

At Interior, Secretary Ryan Zinke is out, and Deputy Secretary David Bernhardt has been promoted to acting Secretary. No word yet whether David will be nominated to stay in the job or a new Secretary will be nominated. Former Senator Dean Heller of Nevada has been mentioned among potential replacements. In the first quarter we expect to have an opportunity to begin pursuing a rulemaking within the FWS Migratory Bird Office that could lead to blanket permit authority for ZAA accredited members. In addition, FWS published a proposed policy change in the Federal Register that would waive permitting for sanctuaries. ZAA is currently formulating comments and is likely to oppose unequal treatment of wildlife facilities.

Keep up the good fight and I'll be back in touch next quarter. Feel free to contact me should you have any questions or needs at frank@vitelloconsulting.com. Cheers!

State Update

Alan Smith, National Legislative Affairs Director

There has been an enormous amount of national press on the 2019 composition of Congress following the recent midterm elections, but there were significant changes in the states that are likely to be more meaningful for some of us. Republicans had been steadily gaining state legislative seats since 2010 and were probably at some kind of high-water mark. The combination of retirements and losses in either the primary or the general election resulted in a turnover of 1002 Republican and 541 Democrat state legislators, unfortunately including many people who had a decent grounding in our issues.

Democrats gained seats in 62 out of the 99 state legislative chambers and picked up control of six, including the New York

Senate which for decades has frustrated New York progressives' quest to be more like California. Desertion of the GOP by moderate suburban voters, especially women, turned states like Maryland, Wisconsin and Kansas into potentially bigger challenges for us. California looks even less hospitable to our interests. In both North Carolina and Michigan the GOP lost its supermajority leverage to work with Democrat governors. The Democrats gained seven executive mansions in the midterms, and since Michigan and Illinois are among the top ten states in population, most Americans (53%) will live in states with Democrat governors next year. Legislatures in all of the states will be in session, and we have information that the activists are targeting at least

Texas, Kansas, North Carolina and Alabama for state-wide laws. State attorney generals are responsible for issuing opinions on what state laws actually mean, unless or until interpretation is conferred by a court. This can be incredibly important as statutes are often vague or unclear. Some of the people we should be watching carefully are the new attorneys general elected in New York, Michigan, Colorado, Nevada and Wisconsin. These new top lawyers for the state are likely to spend most of their time suing the federal government, but there are a lot of ways that they could make life miserable for us interpreting or proposing state laws as they attempt to seek enough publicity to support an eventual leap into their governors' offices.

Clearly there is bipartisan interest in legislation containing either outright attacks or unintended consequences for us. At the same time, when looking for defenders it has been largely true that GOP lawmakers generally have been more open to consideration of impacts on small business and practical applications, since many of them come to the capital with this background.

The election produced other results that bear watching. A ballot issue prohibiting dog racing in the state where 11 out of 17 tracks were located was approved by over two-thirds of the Florida voters. A California ballot issue containing "the strongest law against farm animal confinement in the world" according to Kitty Block, CEO of HSUS, passed with 60% of the vote.

Activists who have worked on putting racing greyhounds and caged chickens or pigs out of business may find time in the near future to crusade against confinement of animals which are not destined for family protein nourishment. Lawsuits are the preferred method of democratic activism because many of the targets are economically unable to defend themselves, but lawsuits until recently have been brought on laws that set the legal requirements for animal welfare or animal rights.

The New York courts are currently evaluating the latest claim of "personhood" for animals, which we all know is not an assessment of the way people view or treat animals but the method by which lawyers can earn a decent living by representing them in court proceedings against their owners. In the meantime, trial lawyers are having great success working with common law nuisance against farming, and we should be watching this very carefully.

The HSUS CEO brags that "the deep pockets of these special interest groups were no match for the energy of our staff members and volunteers who worked for months to mobilize millions of voters in favor of Amendment 13 (Florida) and Proposition 12." (California) We should take this to heart and devote the same level of energy by our members to erect guardrails of familiarity and respect around our elected officials.

We have been very successful in working to prevent passage of state laws restricting ownership, possession and breeding of exotic animals, which are the laws that we thought would most likely support lawsuits against our facilities. We have been moderately successful thus far in amending laws which are designed to prevent traveling exhibits. We have gotten many amendments inserted to protect educational outreach programs. With your help we will continue to defend what most Americans still believe to be an offer of healthy family time and educational engagement with exotic natural resources which could never be appreciated as fully otherwise.

Wishing all of you the best holiday season ever!

ZAA Mid-Year Working Meeting

March 28-30, 2019

Buda, Texas

Hosted by Austin Savanna

Schedule at a Glance

March 28

Board of Directors Meeting

March 29

Committee Meetings:

Business/Finance

Education

Membership

Accreditation

Conference

Workshops:

Crisis Management

Venomous Animal Management

Animal Training with Barbara Heidenreich

AMP Program Masterplans

March 30

Committee Meetings:

Policy Advisory

Professional Development

Legislative

AMP/Conservation

Workshops:

Accreditation Inspector Training

Marketing & PR

AMP Program Masterplans

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Calendar of Events

Feb. 2-6, 2019	International Rhino Keeper Workshop; Orlando, FL rhinokeeperassociation.org
Feb. 5-7, 2019	4th Annual Animal Training Workshop; San Antonio, TX sazoo.org/trainingworkshop
Feb. 20-23, 2019	International Association of Avian Trainers and Educators Annual Conference; Orlando, FL iaate.org
Feb. 25-28, 2019	Perrissodactyla Conservation Symposium; West Palm Beach, FL perissodactyla.org
Mar. 9-10, 2019	2019 Wildlife and Exotic Animal Symposium; Davis, CA ce.vetmed.ucdavis.edu/symposia-events/2019-wildlife-and-exotic-animal-symposium
Mar. 25-29, 2019	European Zoo Educators Conference; Stockholm, Sweden eaza.net
Mar. 26-28, 2019	EEHV North American Workshop 2019; Houston, TX http://houstonzoo.doubleknot.com/event/eehv-north-american-workshop-2019/2455192
Mar. 28-30, 2019	ZAA Mid-Year Working Meeting; Buda, TX zaa.org
Mar. 30-Apr.3, 2019	25th Annual Aquatic Animal Life Support Operators Symposium; Long Beach, CA aalso.org
Apr. 7-12, 2019	Animal Behavior Management Alliance Conference; Portland, OR theabma.org
Apr. 9-10, 2019	Ape Cardio Health Workshop; Waco, TX greatapeheartproject.org/cpzworkshop
Apr. 13-18, 2019	Association of Zoos and Aquariums Mid-Year Meeting; Phoenix, AZ aza.org

May 6-10, 2019	Practical Zoo Nutrition Management; Front Royal, VA smconservation.gmu.edu
May 18-22, 2019	International Associate for Aquatic Medicine Annual Conference; Durban, South Africa iaaam.org
May 20-23, 2019	International Giraffid Conference; Columbus, OH reservations.columbuszoo.org/Policies.aspx
May 22-24, 2019	Zoo Design Conference; Wroclaw, Poland zoodesignconference.com
June 19-22, 2019	International Herpetological Symposium; Belize City, Belize internationalherpetologicalsymposium.com
June 24-28, 2019	American Ornithological Society 137th Meeting; Anchorage, AL amornithmeeting.org
July 1-4, 2019	International Society for Anthrozoology 28th Annual Conference; Lake Buena Vista, FL isaz2019.net
July 21-25, 2019	International Congress for Conservation Biology; Kuala Lumpur, Malaysia conbio.org/mini-sites/iccb-2019
July 21-28, 2019	National Zoo Keeper Week
Aug. 24-28, 2019	American Society of Ichthyologists and Herpetologists Annual Meeting; Snowbird, UT asih.org
Aug. 25-28, 2019	Association of Zoological Horticulture Annual Conference; Philadelphia, PA azh.org
Aug. 8-10, 2019	45th American Federation of Aviculture Annual Educational Conference & Avian Expo; Orlando, FL afabirds.org
Aug. 18-22, 2019	American Association of Zoo Keepers Annual Conference; Indianapolis, IN aazk.org

Aug. 24-28, 2019	10th International Penguin Conference; Dunedin, New Zealand penguin-conference.com
Sept. 7-11, 2019	Association of Zoos and Aquariums Annual Conference; New Orleans, LA aza.org
Sept. 8-12, 2019	International Marine Animal Trainers' Association Conference; New Orleans, LA imata.org
Sept. 17-21, 2019	European Association of Zoos and Aquaria Annual Conference; Spain eaza.net
Sept. 23-26, 2019	Association of Zoo Veterinary Technicians Annual Conference; Colorado Springs, CO azvt.org
Sept. 28-Oct 4, 2019	American Association of Zoo Veterinarians; St. Louis, MO aazv.org
Sept. 28-Oct 3, 2019	Association of Avian Veterinarians; St. Louis, MO aav.org
Oct. 7-10, 2019	40th Annual Elephant Managers Association Conference; Denver, CO elephantmanagers.com
Oct. 7-13, 2019	Zoological Registrars Association Annual Conference; Granby, Quebec, Canada zooregistrars.org
Oct. 20-24, 2019	Aquarium & Zoo Facilities Association Annual Conference; Oklahoma City, OK azfa.org
Nov. 2019	ZAA 14th Annual Conference Montgomery, AL zaa.org
Dec. 9-12, 2019	2nd World Marine Mammal Science Conference; Barcelona, Spain marinemammalscience.org
2020	
Jan. 5-10, 2020	9th World Congress of Herpetology; Dunedin, New Zealand worldcongressofherpetology.org

June 22-26, 2020	Zoos & Aquariums Committing to Conservation; Salt Lake City, UT zaccconference.com
Aug. 30-Sept. 3, 2020	American Association of Zoo Keepers Annual Conference; Los Angeles, CA aazk.org
October 11-15, 2020	International Zoo Educators Association Conference; San Diego, CA izea.net
Nov. 2020	ZAA 15th Annual Conference Fort Worth, TX zaa.org

Save The Date

ZAA Annual Conference
November 15-18, 2019
Montgomery, Alabama
Hosted by Montgomery Zoo

Conference Schedule

November 15

Pre-Conference Tour - Alabama Safari Park
Ice Breaker

November 16

Keynote Speaker
Presentations
Vendor Blender

November 17

Zoo Day - Montgomery Zoo
Presentations
Pub Crawl

November 18

Presentations
Auction
Awards banquet

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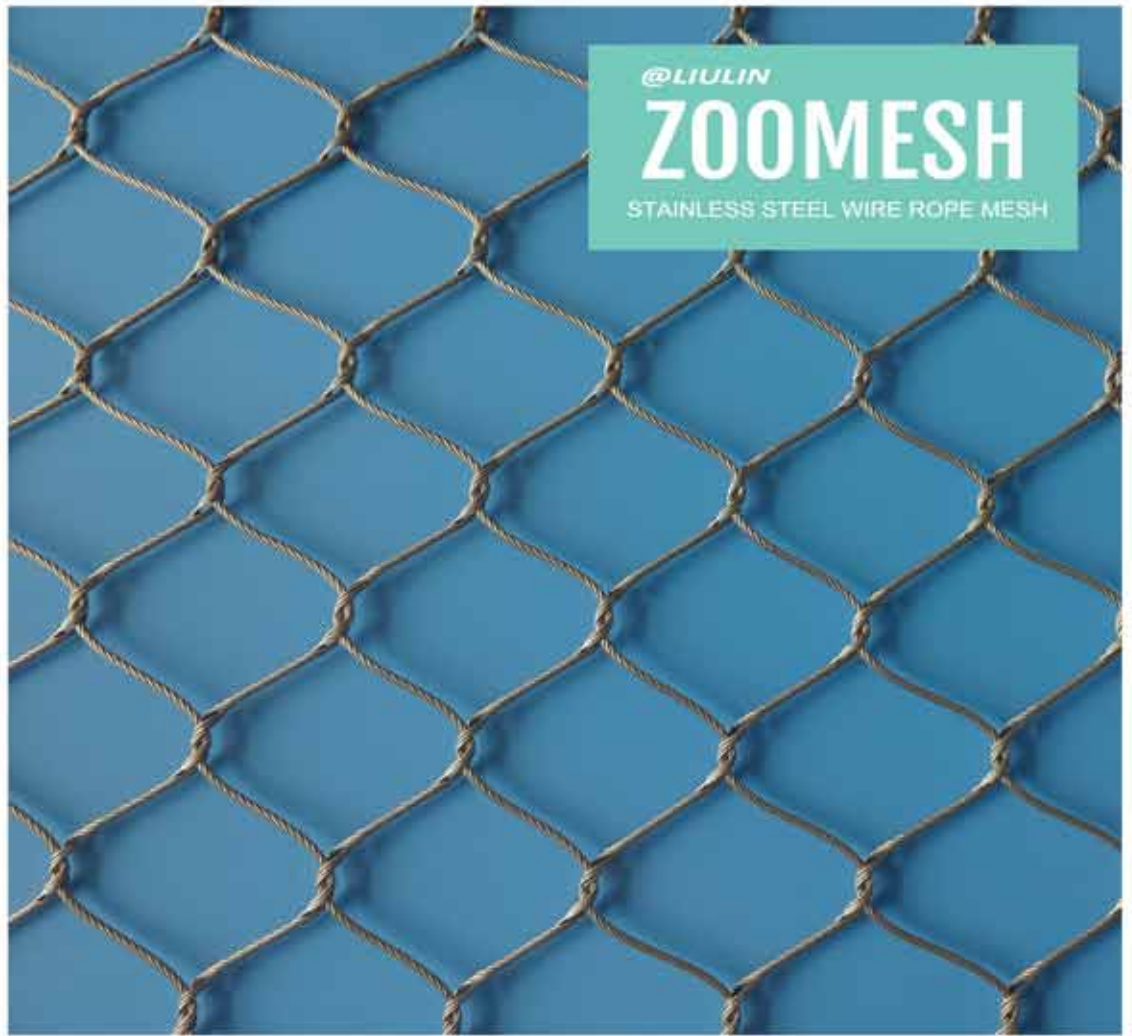
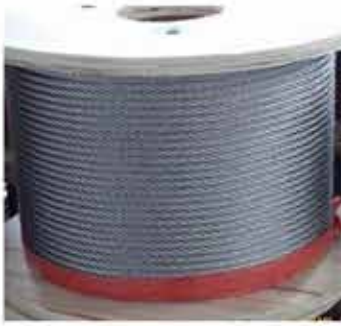
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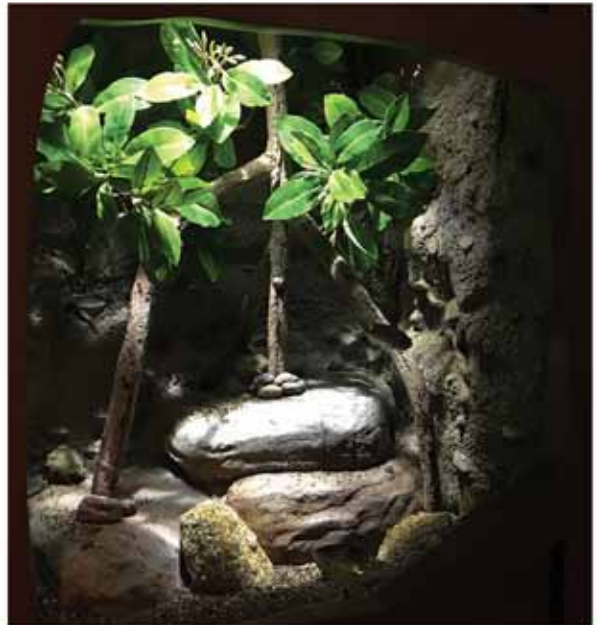
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