

ANIMAL KEEPERS' FORUM



AUGUST 2009

The Journal of the American Association of Zoo Keepers, Inc.

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AKF 35th Anniversary - 1974 - 2009

MISSION STATEMENT

(Revised April 2009)

American Association of Zoo Keepers, Inc.

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

This month's cover features a Cheetah (Acinonyx jubatus) and her Cub drawn by Kim Lovich of the Curator's Department at the San Diego Zoo. The fastest land animal in the world, the cheetah is a marvel of evolution. The cheetah's slender, long-legged body is built for speed. Cheetahs are tan in color with black spots all over their bodies. They can also be distinguished from other big cats by their smaller size, spotted coats, small heads and ears and distinctive "tear stripes" that stretch from the corner of the eye to the side of the nose. In 1900, there were over 100,000 cheetahs across their historic range. Today, an estimated 9,000 to 12,000 cheetahs remain in the wild in Africa. In Iran, there are around 200 cheetahs living in small isolated populations. Historically cheetahs were found throughout Africa and Asia from South Africa to India. They are now confined to parts of eastern and southwestern Africa and Iran. Found mostly in open and partially open savannah, cheetahs rely on tall grasses for camouflage when hunting. They are diurnal animals and hunt mostly during the late morning or early evening. Only half of the chases, which last from 20-60 seconds, are successful. Cheetahs knock their prey to the ground and kill with a suffocating bite to the neck. They must eat quickly before they lose the kills to other bigger or more aggressive carnivores. Cheetahs are also typically solitary animals. While males sometimes live with a small group of brothers from the same litter, females generally raise cubs by themselves for about a year. Cubs are smoky in color with long, woolly hair – called a mantle – running down their backs. This mantle is thought to camouflage cubs in grass, concealing them from predators. Mothers move cubs to new hiding places every few days. At 5-6 weeks, cubs follow the mother and begin eating from their kills. The cheetah's future is uncertain due to a variety of threats. The biggest is habitat loss due to human encroachment. In addition, they often deal with declines in prey and conflicts with humans. There is also high cub mortality due to predation by carnivores like lions and hyenas that are in competition with the cheetah. Cheetahs are listed under both the Endangered Species Act and on CITES Appendix I. Thanks, Kim!

Articles sent to *Animal Keepers' Forum* will be reviewed by the editorial staff for publication. Articles of a research or technical nature will be submitted to one or more of the zoo professionals who serve as referees for *AKF*. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Lengthy articles may be separated into monthly installments at the discretion of the editor. The editor reserves the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed, appropriately-sized envelope. Telephone, fax or email contributions of late-breaking news or last-minute insertions are accepted as space allows. Phone 785-273-9149; FAX (785) 273-1980; email is akfeditor@zk.kscoxml.com If you have questions about submission guidelines, please contact the Editor.

Deadline for each regular issue is the 10th of the preceding month.

Dedicated issues may have separate deadline dates and will be noted by the editor.

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

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BFR Website: <http://aazkbfr.org>

Scoops & Scuttlebutt



AZA Offers Discounted Conference Rate for Keepers/Aquarists

The Association of Zoos & Aquariums is pleased to announce a special discounted registration rate for all zookeepers and aquarists attending the 2009 AZA Annual Conference in Portland, OR, September 12th – 17th.

In an effort to encourage attendance by zookeepers and aquarists who may not typically attend AZA conferences due to financial restrictions, AZA is offering discounted registration rates for the 2009 Annual Conference. This opportunity will give zookeepers and aquarists the opportunity to attend open TAG and SSP® meetings during the conference. They will also have the chance to participate in program sessions on Tuesday, Wednesday and Thursday. A draft schedule, including all TAG and SSP® meeting times and program session descriptions, and other conference information can be found at www.aza.org/AnnualConference. We hope that this offer will provide keepers and aquarists with new, meaningful professional development and networking opportunities.

In order to qualify for this special discount, zookeepers and aquarists must work at an AZA-accredited institution, but do not have to be individual AZA members. Please send names of zookeepers or

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aquarists that would like to attend to Cheryl Wallen (cwallen@aza.org) for approval. Once they have been approved, you will receive a special discount code that can be used when registering either online or through the mail. **Please keep in mind that curators, managers, and senior level staff are not eligible for this discounted rate.**

A full registration will be discounted to \$350 and will include one ticket to each social event (Icebreaker, Honors and Awards Lunch, and Zoo Day). Daily registrations only are available for \$100/day and include social event tickets for the events that are taking place the day the individual is registered (Icebreaker – Monday, Honors and Awards Lunch – Wednesday, Zoo Day – Thursday). Additional social event tickets can be purchased separately (Icebreaker - \$65, Honors and Awards Lunch - \$50, Zoo Day - \$45).

Marine Mammal Training and Behavior Management Seminars Offered

The International Marine Animal Trainers' Association (IMATA) is pleased to announce the offering of two new animal training seminars. Both seminars will be presented in Atlanta, GA, USA during the first week of November 2009.

Course Title: Marine Mammal Training and Behavior Management: Applying Advanced Learning Principles to Enhance the Quality of Animal Training, Environmental Enrichment, Staff Development and Conservation / Education Program Development.

Course Description: Program participants will be exposed to critical developments in behavioral research, advanced behavior modification for multi-species, and accelerated staff development to improve behavior programs. A variety of multi-media presentations featuring computer graphics, video and interactive demonstrations will be used. Specifically, this accelerated course will cover: proper behavior shaping and effective maintenance; environmental influences on behavior; effective environmental enrichment; the etiology of severe behavior disorders and case studies (their intervention, treatment and successful outcomes); behavior medicine and health psychology; reactive/proactive animal care; emergency intervention techniques for handling large animals; aggression management; animal acclimation; safety; interpersonal communication and teamwork.

Certificates of course completion will be provided and awarded to participants. The course will be presented by Ocean Embassy and is comprised of two workshops: 1. The Essentials of Training Sunday, 1 November 2009 (6hrs) and 2. Advanced Behavior Management Wednesday evening, 4 November 2009 (3hrs) Participants have the option of registering for either one or both classes.

To register, please visit <http://www.imata.org/> and click on the tab for “workshops.” **Space Is Limited And Slots Are Only Available On A First Come, First Served Basis**

Tuition Information*: The Essentials of Training \$125; Advanced Behavior Management \$90; Both Classes \$175 *discounts are available for tuitions received prior to 31 August 2009. Workshop location: All classroom activities will take place at: Hyatt Regency Atlanta 265 Peachtree Street, NE Atlanta, GA 30303 <http://www.atlantaregency.hyatt.com/> Tel: 404.577.1234 Please direct email inquiries to info@imata.org

The International Marine Animal Trainers' Association (IMATA) is dedicated to advancing the humane care and handling of marine animals by fostering communication between professionals that serve marine animal science through training, public display, research, husbandry, conservation, and education. IMATA is dedicated to providing and advancing the most professional, effective, and humane care of marine animals in all habitats. IMATA provides opportunities for marine animal trainers to exchange and disseminate current knowledge, research and training information in both professional and social settings. In addition, IMATA maintains a positive public image by preparing its members to act as ambassadors of the marine animal community.

Snow Leopard Trust Offer



Snow Leopard Trust

For interested members, the Snow Leopard Trust is offering a discounted membership to AAZK and ICZ active members. SLT regular membership is \$50 per year but they are offering memberships for \$20 per year to AAZK or ICZ members. If you are interested in joining the Snow Leopard Trust please go to their website at https://www.snowleopard.org/shop/index.php?main_page=donate There are instructions for discount memberships toward the bottom of their donation page - the important thing is to indicate your affiliation as AAZK or ICZ in the ‘Comments’ field.

Bowling for Rhinos Yahoo® Group Established

There is a new Yahoo® group email for Bowling For Rhinos Coordinators. If you would like to be part of this email group, please email Barbie Wilson at rhinobarbie@hotmail.com. This group offers BFR Coordinators the opportunity to communicate with each other on questions about t-shirts, bowling alley prices, how to get more support from your zoo, etc.

New AAZK PRODUCTS COMING SOON!

Organic cotton ladies t-shirts and men's long-sleeve shirts with our “eye movement” design as well as logo embroidered baseball caps will be on sale at the 2009 Conference at special introductory prices.

Check out the AAZK website in September for a sneak preview on styles and pricing. Conference pricing for current AAZK product will be in effect as well, so send your orders along with conference attendees to get the best deals!

From the President

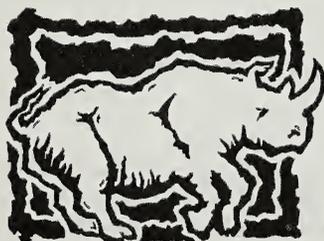
Leadership – From S.W. 29th Street to Seattle

Leadership is a buzzword that is used all the time in conferences, motivational seminars, and glossy magazine articles. Unfortunately, it's not a word that has been traditionally associated with animal keepers. However the landscape is changing, and keepers, just like you, are taking the lead throughout this industry and beyond. One of the most important messages that I have tried to convey during my term as President is that you don't need to be a zoo manager to be a leader in the zoo industry and conservation. Examples exist throughout our Association, from Bowling for Rhinos, which has raised millions of dollars to protect rhinos and their habitat, to each AAZK Chapter and individual member who rolls up their sleeves to improve the future for wildlife. Included in this issue of *Animal Keepers' Forum* is a report on Amy Cutting, Senior Keeper at the Oregon Zoo. Amy helps lead Polar Bears International's Sustainability Initiative and is a fine example of a zoo keeper taking a leadership role in an international conservation effort.

AAZK has recently developed a partnership with Polar Bears International that takes the concept of leadership in zoo keepers to a whole new level. This fall we are launching the world's first Zoo Keeper Leadership Camp. Shortly after the AAZK National Conference, approximately 30 professional zoo keepers will travel to Churchill, Manitoba in Canada. Churchill is the scene of one of the world's most spectacular wildlife phenomenon, the congregation of polar bears awaiting the freeze of Canada's Hudson Bay.

AAZK Chapters and zoos across the country have selected some of our profession's brightest individuals to participate in the camp. These 30 keepers will spend a week on the Arctic tundra, living aboard a Tundra Buggy[®]. The participants will receive intensive leadership training from some of the world's top conservationists, educators, and scientists. The goal of the camp is to have each keeper return to their zoos and community as a highly qualified ambassador for polar bear conservation and climate change awareness. Additionally, the graduates of this program will have a role within AAZK, working in concert with the AAZK Conservation Committee to define the conservation strategies of our Association.

Closer to home, hundreds of zoo keepers from around the world will be traveling to Seattle's Woodland Park Zoo for the joint conference of AAZK and the International Congress of Zookeepers. Conferences are the hub of any profession, and this may be the most educational and diverse conference on professional animal care ever assembled. Leaders within AAZK and eight other professional zoo keeper associations from around the globe will congregate to highlight some our industry's greatest achievements.

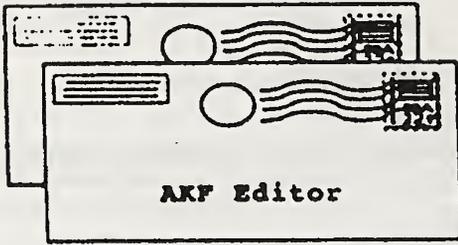


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I urge you all to come to Seattle for the conference but I know budgets and schedules are tight. Whether you are there or not, AAZK is here to help you develop your leadership skills. Come to a conference, join an AAZK Committee, become a leader in your local Chapter, or start that project that you have been thinking about in between cleaning stalls and pools. We are here to help, so contact me at shane.good@aazk.org if you need assistance with getting pointed in the right direction.

Shane Good, AAZK President

A handwritten signature in black ink that reads "Shane Good". The signature is written in a cursive, flowing style.



Letters to the Editor

Readers are welcome to comment upon material published in *Animal Keepers' Forum* through a Letter to the Editor. We welcome a free exchange of ideas benefiting the zoo keeping profession.

June 7, 2009

Dear Susan,

Your very well done April/May 2009 *Animal Keepers' Forum* just arrived.

There is one error that I'd like to point out: In your "Longevity in the Animal Kingdom" on page 235, you perpetuate a mistaken legend when you state that Captain Cook gave a Madagascar radiated tortoise to the royal family in Tonga.

Unfortunately, this is not true. The reason I can state that this is positively wrong is that in the 1950's, the librarians at the Bishop Museum, at my request, spent many hours researching any possible written evidence about this tortoise myth. We carefully reviewed all of Captain Cook's logs on his time in Tonga as well as written references about life in Tonga during those years. In short, although the logs and references covered many minute details of Tongan life, there is not one mention of this tortoise.

My longtime colleague and close friend, Sean McKeown, who was the reptile curator at the Honolulu Zoo and later at the Fresno Zoo, was also deeply interested in this possibility. Together we co-authored an article about this tortoise that was published in the December 1999 *Reptile* magazine. We determined that there was a tortoise that roamed the palace grounds in Tonga. In the 1950's I asked my friends to take a photograph of this reptile. From these photos, our best identification was that the animal was a radiated tortoise. The only difficulty, Susan, was the tortoise's origin. All of our evidence indicated that it did not come from Captain Cook but was left in Tonga from a ship many decades later.

Please help correct this delightful myth. The late Sean McKeown was a stickler for accuracy. He would like to know that our article's exhaustive details would dispel further mistaken stories of this tortoise's origin. The story is just not true.

With Best Aloha,

Paul Breese, Director Emeritus, Honolulu Zoo

In researching data for the "Longevity" section in that issue of AKF, I came across more than a half dozen references to this tortoise and it being a gift from Captain Cook to the King of Tonga. So it appears that if something is repeated enough it begins to take on a life of its own and become "reality". I appreciate Paul's letting us know the true story about the Tortoise of Tonga! Lesson learned: Just because it is on the Internet doesn't make it true--browsers beware! ~AKF Editor

AAZK Announces New Members

New Professional Members

Layne Norton, **Utica Zoo (NY)**; Bevan Clark, **Duke University Primate Center (NC)**; Katy Harringer, **North Carolina Museum of Life & Science (NC)**; August Wageman, **ATW Zoological (NC)**; Megan Miller, **Rowan Wildlife Adventures (NC)**; Tere Dardon, Jennifer Lindsley, Jennifer Casines and Lenore Gunn, **Miami Metrozoo (FL)**; Sharon Gehri, **Cleveland Metroparks Zoo (OH)**; Kaylee Kernstock, **Binder Park Zoo (MI)**; Peter Brusky, **Henson Robinson Zoo (IL)**; Anne Swales, **Omaha's Henry Doorly Zoo (NE)**; Rene Serafino, **Audubon Zoo (LA)**; Karla Grahn, **Denver Downtown Aquarium (CO)**; Kyley Olson and Shawna Joplin, **Santa Ana Zoo (CA)**; Heather McDonald, **Sea World of San Diego (CA)**; Amy McMillan, **Toronto Zoo (Ontario, Canada)**. *We no longer print the names of those Professional Members who do not list their facility on their membership application.. (There were five this month).*

Renewing Contributing Members

Joan Diebold, Quincy, MA
 Linelle Smith, Toms River, NJ
 Vernon N. Kising, Jr., High Springs, FL
 Steven M. Wing, Louisville Zoo, Louisville, KY
 Judy Stickler, Everett, WA

Renewing Institutional Members

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Naples Zoo
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Arizona-Sonora Desert Museum
 Tucson, AZ
 Robert J. Edison, Executive Director



*Saguinus
 fuscicollis
 mura*

New Monkey Subspecies Found

A remote part of the Amazon rainforest has led researchers to the discovery of a new sub-species of monkey. The sub-species, that had first been spotted by scientists in 2007, is believed to be related to the saddleback tamarin. According to the Wildlife Conservation Society the monkey weighs 213g [0.47 lbs.], has a 320mm [12.6 in.] tail,

and is mostly gray and brown. It has been named the Mura's saddleback tamarin after the Mura Indian tribe living in the area where the monkey was discovered. Fabio Rohe, the lead researcher of the discovery said "This discovery should serve as a wake-up call that there is still so much to learn from the world's wild places, yet humans continue to threaten these areas with destruction."

The monkeys are threatened by development projects in the region such as a major highway through the forest that could increase deforestation.

(Reuters News Service - July 2009)



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Coming Events

Post Your Coming Events Here
email to: akfeditor@zk.kscoxmail.com

August 28 - 29, 2009 - 8th Annual Great Lakes Bat Festival - Milwaukee County Zoo, Milwaukee, WI. For more information: <http://www.batconservation.org>.

August 31 - September 2, 2009 - Third Orangutan SSP® Husbandry Workshop - hosted by Zoo Atlanta, Atlanta, GA. This workshop will focus on the care and management of the orangutan in captivity. The workshop will bring together orangutan caregivers, managers, researchers, and field biologists to share and disseminate the most current information on husbandry, conservation, and emergent issues pertaining to captive and wild populations of orangutans. For more information please visit our website at www.2009orangutanworkshop.org or contact Tom Heitz at theitz@zooatlanta.org or call 404-624-5939.

September 24-29, 2009 - Joint 36th National AAZK and 3rd International Congress on Zookeeping Conference - in Seattle, WA. Hosted by the Woodland Park Zoo and the Puget Sound Chapter of AAZK. Check out www.pugetsoundaazk.org/ for conference information.

October 1-6, 2009 - 29th Annual Association of Zoo Veterinary Technicians Conference - in Jackson, WY. If you would like more information, please visit www.azvt.org or contact Virginia Crossett via virginia.crossett@louisvilleky.gov

October 4-8, 2009 - 64th WAZA Annual Conference - in St. Louis, MO. Hosted by the St. Louis Zoo at the Renaissance Grand Hotel. For more information please visit <http://www.waza.org>.

October 21 - 25, 2009 - The Zoological Registrars Association (ZRA) 2009 Annual Conference "Foundations for the Future", will be hosted by Zoo Boise in Boise, Idaho. Conference Program begins with leadership training and the Icebreaker on Wed., October 21. General Sessions will be held on Thurs., October 22 and Sat., October 24 and will feature topics from four categories of presentations under Record Keeping, Permits and Wildlife Legislation, Animal Transport and Records and Collection Management. Possible topics will include presentations on ZIMS; ARKS; animal transactions; permit applications; roundtables on permit issues; legislative updates; policies and procedures; accreditation; collection management; disaster preparedness; archives management; records retention, protection and disposal. Zoo Day will be held on Fri., October 23 and will culminate with a special dinner celebrating ZRA's 25th Anniversary. A special evening at Bogus Creek Outfitters featuring a cowboy-style dinner, cowboy poetry, Wild West shoot out, karaoke and a bonfire has been scheduled on Sat., October 24, and the 2009 Annual Conference will end on Sun., October 25 with additional ZIMS sessions.

ZRA, Zoo Boise and the Owyhee Plaza Hotel

welcome delegates to Idaho. Please visit the ZRA website at www.zooregistrars.org or contact the 2009 Annual Conference Host, Corinne Roberts/Registrar for Zoo Boise, at (208) 384-4260 ext. 101 or by email at cxroberts@cityofboise.org. If you have questions about the 2009 ZRA Annual Conference Program, please contact the Program Chairman, Pam Krentz/Registrar for Cleveland Metroparks Zoo at (216) 635-3361 or by email at pak@clevelandmetroparks.com

November 6-8, 2009 - Second International Bear Care Conference: "Advancing Bear Care '09" - to be held in San Francisco, CA. For more info see <http://www.bearcaregroup.org>

February 21-24, 2010 - First Ever Giraffe Keepers Workshop/Conference - To be held at The Phoenix Zoo. Check back next month for more info and details or email giraffekeepers@gmail.com

April 15 - 18, 2010 - 4th Otter Keeper Workshop - the Cincinnati Zoo in Cincinnati, Ohio will host. This year the focus of the workshop will be expanded to include all of the otters managed under the Otter SSP® North American river otters, Asian small-clawed otters, African clawless, African spot-necked and giant otters. Keepers working with any of the species are welcome to attend. Topics will include: captive management issues, enrichment, training, water quality, health care, nutrition, diet, hand-raising, exhibit design, lots of sharing of information between keepers.

Registration will be \$75 and the deadline is December 15, 2009. Spots fill up fast so please register early. A waiting list will be maintained once the workshop is filled. Due to the popularity of the workshop, priority will be given to first-time attendees. Please just one registrant per institution. No refunds after January 15, 2010. Accommodations: A hotel near the Cincinnati Zoo or the Newport Aquarium. Room negotiations are ongoing. Roommates are encouraged. You will be matched if you indicate that you wish to have a roommate. Information can be found on: www.OtterSpotter.com

For more information contact: David Hamilton at Seneca Park Zoo, 2222 St. Paul St., Rochester, NY 14617; phone: 585-336-2502; 585-266-5775 fax dhamilton@monroecounty.gov

August 30 - September 3, 2010 - 7th International Penguin Conference - in Boston, MA. Hosted by The New England Aquarium. For info email ipc@neaq.org

September 28-October 2, 2010 - 20th International Zoo Educators' (IZE) Biennial Conference - at Disney's Animal Kingdom, Orlando, FL. For more information, please visit <http://www.izea.net>



DIETS AS DIVERSE AS THE ANIMAL KINGDOM

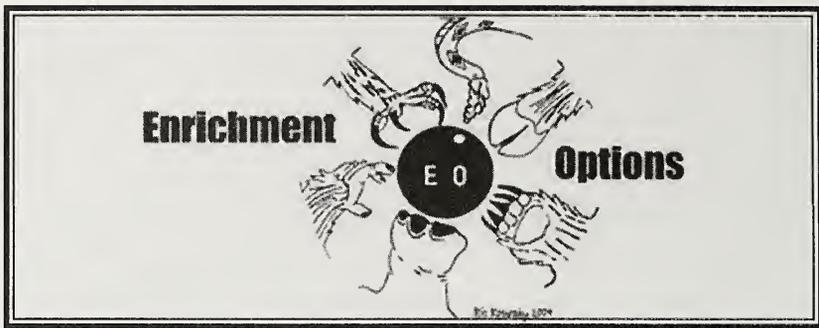
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EO Editors -

Julie Hartell-DeNardo, Oakland Zoo and Ric Kotarsky, Tulsa Zoo & Living Museum

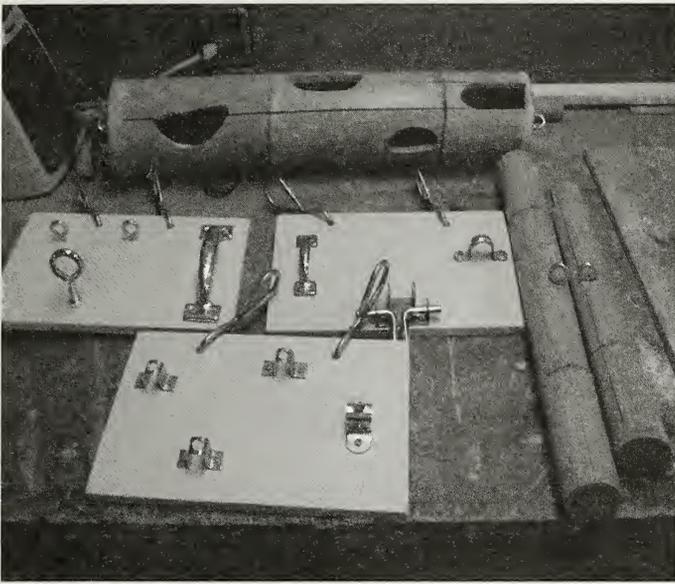
Giraffe Enrichment at Brookfield Zoo

*By Amy Roberts, Lead Keeper, Habitat Africa & Wolf Woods and
Sarah Feliciano, Senior Craftsman/Exhibits
Brookfield Zoo, Brookfield, IL*

In an effort to continually advance our animal care and management we are initiating several changes to our giraffe husbandry program including making improvements in enrichment, training and feeding strategies. Specifically, for the purposes of this article, I will describe a new enrichment option we developed. Living in Chicago our giraffe herd spends nearly half the year in their indoor exhibit that has horizontal cables that form the front perimeter of the exhibit. We wanted to create an effective method of using the cables to provide enrichment. The cables can be accessed during the day without entering the exhibit itself so we would have the ability to add or change items throughout the day. Hopefully, attaching enrichment to the cables would also draw the giraffe closer to our guests.

At the Brookfield Zoo we have an Exhibits Team who have described themselves as, "Who you call when the job does not fit into anyone else's job description". They are a creative team of individuals with diverse skills. One Exhibits Team member, Sarah Feliciano met with me to discuss some of my ideas. I relayed to Sarah I hoped for a feeding device to hang from the cables that was safe, easily cleaned and would not fray the cables since ideally I wanted the device to slide along the cable making it more challenging for the giraffe. Sarah was provided the enrichment chapter from the AZA Giraffe Husbandry Resource Manual to learn more about giraffe enrichment.

What we created is a PVC pipe sleeve that slides along the cable very easily and has four attachment points for affixing various enrichment devices such as feeder jugs made from five-gallon water containers, bamboo rain stick, spoons, Horseballs brand balls, and so on. Each attachment point has a maximum weight of 50 lbs. [22.68kg]. The sleeve itself is unobtrusive and goes fairly unnoticed when no enrichment is attached. The PVC sleeve has an end cap on each end with holes drilled in the caps to allow the exhibit cable to pass through. This helps prevent the cable from fraying or wearing through the PVC while still allowing the sleeve to slide along the length of the cable. Polypropylene pipe clips, which can be purchased from Indelco Plastics™ Corporation, were used in conjunction with eyebolts to allow four attachment points. The clips easily snap apart and therefore needed to be secured with screws to the sleeve to make them giraffe-proof.

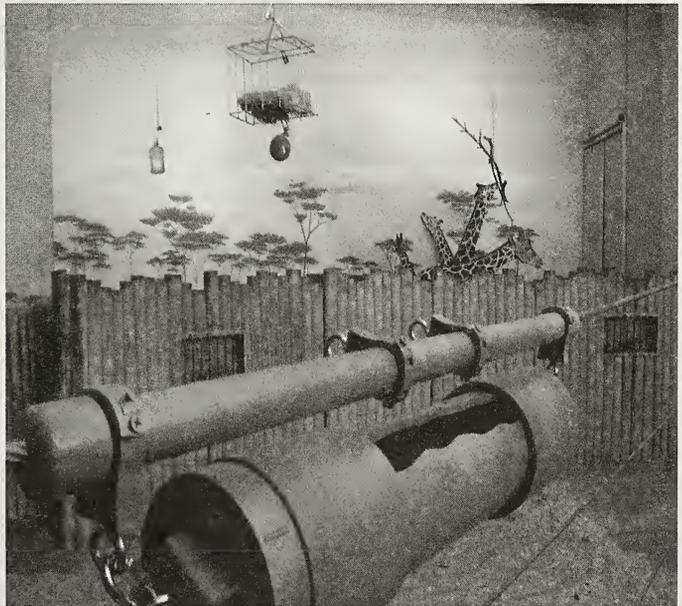


An example of some of the devices we attach (photo by Sarah Feliciano)

The two widest attachment points allow for attachment of feeder tubes constructed out of 4" [10.16cm] PVC pipe and threaded end caps that allow easy access. A slot was cut along the length of the pipe and eye bolts were added to the ends of the screw caps with lock nuts so the giraffes could not remove them. All PVC pipes were lightly sanded and wiped down with acetone in preparation for painting. They were then painted with Krylon® Fusion spray paint which is designed for plastics.

Large diameter bamboo was also used to create another horizontal feeder. The open ends were capped with epoxy and eye bolts with lock nuts were added to facilitate attachment to the sleeve. The natural bamboo chambers were left intact and irregular holes were cut strategically along the length of the bamboo to allow the giraffes to access each chamber.

The two inner attachment points on the cable sleeve allow for the attachment of a licking board our giraffe seem to really like. Sarah created this licking board based on an idea from the Conservation Station Mammals Team at Disney's Animal Kingdom®. Additionally, we can use the attachment points to hang singular items (shown in photo).



A view of the sleeve used to attach enrichment devices (photo by Sarah Feliciano)

Overall, this has proven to be a very effective way to safely attach various enrichment items to horizontal cables while still allowing movement of the items along the cable and easy changing of the items. The giraffe spend a significant amount of time interacting with the



Jawara using the licking board designed to attach to exhibit cabling.

(photo by Jim Schultz, Oakland Zoo Staff Photographer)

enrichment and I often hear positive comments from our guests. Initially, one giraffe was able to get an enrichment item off one of the devices prompting us to strengthen our attachment protocols to include tightening threaded connectors with pliers rather than just hand tightening. We chose to place the sleeves at the highest cable but since we can only access this with a ladder we are planning to add some sleeves at lower level cables before next winter. We look forward to sharing more information as we progress with our improvements.

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- Burgess, A. (2004) The Giraffe in Captivity: Enrichment. The Giraffe Husbandry Resource Manual. American Zoo and Aquarium Association, Silver Spring, MD

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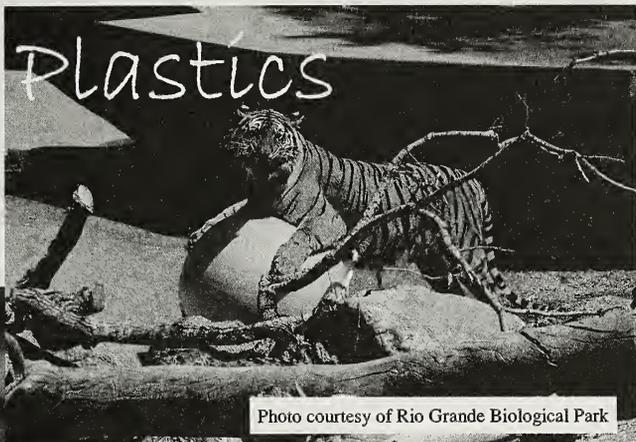


Photo courtesy of Rio Grande Biological Park

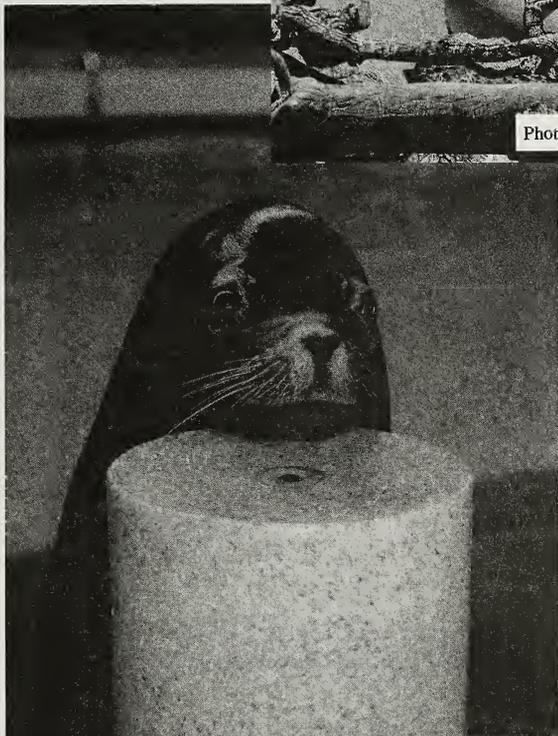


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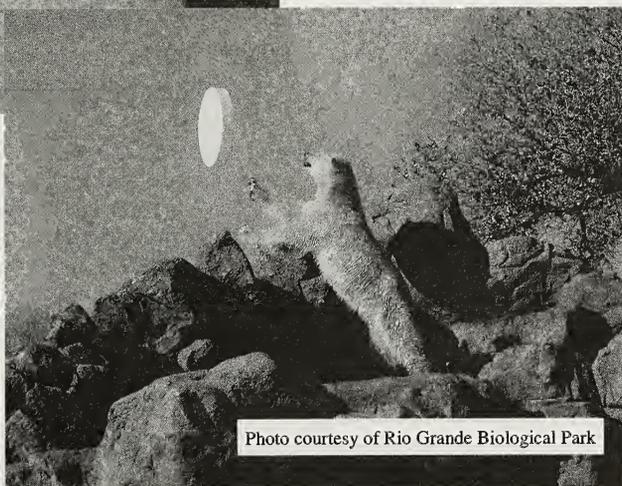


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The 3rd International Congress on Zookeeping and 36th American Association of Zoo Keepers joint conference, will be held in Seattle, WA from 9/24/09 through 9/29/09. Following the success of the past conferences of both organizations this joint conference is sure to be just as successful, educational and

most of all fun. The ICZ and AAZK present an excellent opportunity for zoo keepers and zoo professionals from around the world to come together and share a wealth of knowledge. We hope you will join us to enhance the zoo keeping field and look forward to seeing you there.

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This year registration will be offered only online. To register click the registration link on our website www.pugetsoundaazk.org

Accommodation:

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Seattle weather is unpredictable with September temperatures ranging from 52°F to 70°F [-11-21°C] Bring layers of casual clothes including sensible walking shoes. It's always a good idea to have some light rain gear!

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We are thinking Green for this conference. More information about our and your efforts will be posted soon. There will also be a Conference Photo contest!!

SEE YOU IN SEPTEMBER!!

Any Questions? Email: pugetsoundaazk@gmail.com or
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PBI's Long-Range Strategies to Save Polar Bears

Senior Keeper Helps Lead Polar Bear Sustainability Initiative

By Barbara Nielsen, Polar Bears International

www.polarbearsinternational.org

(Editor's note: This article originally appeared in the Fall 2008 issue of the Polar Bears International Newsletter, Vol. 15, No. 4)



As the Arctic sea ice continues to diminish, members of PBI's Zoological Advisory Council have focused their efforts on creating a set of contingency plans that will help save the polar bear as a species. The team will fine-tune these options as part of a joint meeting with PBI's field scientists early next year.

"Our goal is to have the plans in place so that we're ready to respond to a rapidly changing situation on the ground," says Amy Cutting, co-chair of PBI's new Sustainability Initiative and Senior Animal Keeper at the Oregon Zoo. "We're developing a menu of options to protect and preserve the polar bear into the future. We're trying to think not just about the short-term rescue of individual animals, but about the future of the species on the planet."

Rapid Response Teams

Cutting, who chairs the initiative with Carmi Penny, Curator of Mammals at the San Diego Zoo, says that the group first met in February 2008 to discuss conservation options for polar bears, given the rapidly changing situation in the Arctic. PBI's science advisors had indicated that climate change was beginning to dramatically affect some polar bear subpopulations and that the rate of sea ice loss seemed to be accelerating. In response, the committee began to develop a variety of options to present to polar bear specialists and managers.

"We believe that having well-researched and well-funded contingency plans will enable the international community to react quickly as polar bear habitats, populations, and political environments change over time," says Cutting.

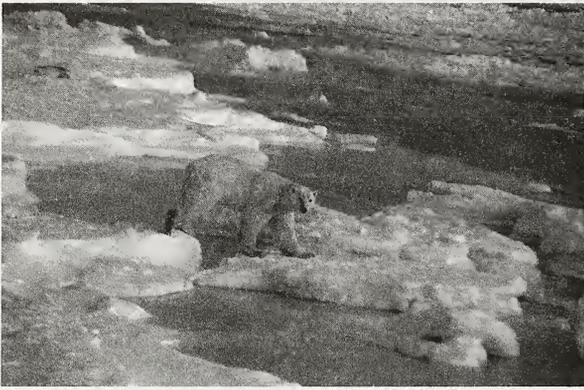
The group's major objectives include a rescue and rehab team, an orphaned cub and nuisance bear placement team, a refuge and protection team, and a research team. Each will draft plans to respond to all possible contingencies predicted to occur as the sea ice melts and polar bear habitats shrink.

"Having different plans to choose from may speed the reaction time of different agencies when a response is needed," Cutting says.

All participants in the initiative will be involved with each of the four teams; each team will have a leadership structure as well.

Rescue and Rehab Team

This team, led by William R. Winhall, Assistant Curator of Mammals at SeaWorld of San Diego, is developing rapid response crews for every possible contingency. Potential scenarios include rescuing polar bears from hazardous spills along new oil fields and shipping lanes, relocating "nuisance" bears that are driven ashore by melting ice, helping communities develop "Polar Bear Alert" programs similar to the one in Churchill, and possibly providing a rehab-and-release program for polar bears that would



A lone polar bear wanders across increasingly fewer ice flows as global warming continues to impact the Arctic ice pack. (Photo: © R & C Buchanan/Polar Bears International)

place them in remote locations in the Arctic as other habitats shrink. The group is busy determining the most likely scenarios, developing networks with other responders, and working out needed resources.

Orphaned Cub and Nuisance Bear Placement Team

Placing orphaned or nuisance bears in quality zoos is an option for each government with wild polar bears. A variety of political and regulatory hurdles are involved, however, and it is up to individual governments to decide

whether the option is right for them. This team—led by William R. Winhall, SeaWorld of San Diego, Dr. Randi Meyerson, American Zoo Association Polar Bear Species Survival Plan® Coordinator and Mammal Curator at the Toledo Zoo, and Dr. Holly Reed, Chief Veterinarian at the Point Defiance Zoo and Aquarium—is developing a set of criteria and an institutional agreement to serve as guidelines for any government that decides to place orphaned or nuisance polar bears in zoos. The goal is to ensure that only quality zoos with appropriate facilities, skilled personnel, and quality programs would receive polar bears from the wild and that a trained response team would facilitate the transfer, thus ensuring that the bears are successfully transported and able to adapt to life in human care.

The team will also provide husbandry workshops to train staff members working with bears in zoos and will create a close network of experienced professionals and special advisors to serve as a resource for all polar bear keepers. The team's primary objective is to keep as many bears in the wild as possible, and to help sustain wild populations during the impending crisis, so zoo placement is suggested only as a last resort. Bears who do find their way into zoos, however, will still contribute to the survival of wild populations through research collaborations and reproductive technology development.

Refuge and Protection Team

As the sea ice melts and habitats for polar bear subpopulations change, scientists believe that we may lose a great deal of quality polar bear habitat. It is difficult to predict whether the bears will starve, adapt, or concentrate in remaining habitats in protected, more northerly areas. This depends primarily on how their main prey, seals (and the fish that feed those seals), respond to the changes in the ice. Scientists predict, however, that there will likely be a few pockets of multi-year ice in the Arctic that will sustain some number of polar bears, even when most of the ice they currently inhabit is gone. The refuge and protection team—led by Amy Cutting of the Oregon Zoo, Dr. William A. Rapley, Executive Director of conservation, education and research at the Toronto Zoo, and Dr. Don Moore, Curator of Mammals at the Smithsonian's National Zoo—will work toward protecting some of these pockets of habitat from unnecessary disturbance. Team members



The days of solid pack ice that polar bears use to hunt from may be coming to an end.

(Photo: © R & C Buchanan/Polar Bears International)

hope to work with First Nations, conservation groups, Arctic communities, and government agencies to develop wildlife refuges where the remaining bears can be safe to raise families, thus sustaining some remnant populations of polar bears in the wild. These bears can then repopulate the Arctic should the sea ice return.

Research Team

The more we know about polar bears, the better equipped we are to protect them. This team, led by Dr. Terri L. Roth, Director of the Center for Conservation and Research of Endangered Wildlife (CREW) at the Cincinnati Zoo, will compile data from recent PBI-funded research with polar bears in zoos, including hearing and scent studies, reproductive physiology work, and behavioral well-being research. The committee will share these studies with field biologists to enhance their knowledge and to illustrate collaborative opportunities for research. Field biologists need new technologies, developed and tested with zoo polar bears, in order to collect data more quickly and easily from wild populations. There is some indication that traditional mark-and-recapture studies, which have produced a wealth of information from wild polar bears over recent decades, may soon be impractical as the ice thins and helicopter landings become too hazardous.

Zoo scientists will also prioritize the development of reproductive technology to ensure genetic diversity—everything from harvesting gametes (eggs and sperm) from bears in the wild to reintroducing genes from zoo bears through artificial insemination. Should the climate shift and the ice return, zoos will be ready to boost the genetic diversity and productivity of remnant wild populations as they radiate back out across the Arctic.

Preparation Is the Key

Cutting says that PBI's field biologists and zoological advisory council members have recognized the need to dovetail their efforts at this critical juncture.

"It's unclear what the different nations and Canadian provinces that have polar bears will choose to do about the anticipated impacts of climate change on polar bears," she says. "What we do know is that conservation groups and government jurisdictions will come under increasing pressure to do *something* when the situation gets critical. A thoughtful and concerted effort will be most effective



Amy Cutting, a senior animal keeper at the Oregon Zoo is Co-chair of PBI's new Sustainability Initiative. (Photo by Michael Durham, Oregon Zoo Photographer)

PBI's Sustainability Initiative

Initiative Chairs

- *Carmi Penny, Associate Director of Collection Husbandry Science, San Diego Zoo*
- *Amy Cutting, Senior Animal Keeper, Oregon Zoo*

Advisory Team

- *Dr. Randi Meyerson, American Association of Zoos and Aquariums (AZA) Polar Bear Species Survival Coordinator and Mammal Curator, Toledo Zoo*
- *Dr. Holly Reed, Chief Veterinarian, Point Defiance Zoo and Aquarium*
- *Dr. Terri L. Roth, Director of the Center for Conservation and Research of Endangered Wildlife (CREW), Cincinnati Zoo*
- *Joanne Simerson, Senior Animal Keeper, San Diego Zoo*
- *William R. Winhall, Assistant Curator of Mammals, SeaWorld of San Diego*
- *Megan Owen, Conservation Specialist in the San Diego Zoo's Applied Animal Ecology Division*
- *Geoff York, Senior Program Officer, Polar Bear Conservation, WWF Arctic Program*

To further the work of this initiative, PBI hosted a research summit in early 2009 that included both field and zoo biologists. The two groups began to work together more closely after PBI hosted the International Polar Bear Husbandry Conference in 2004. Both realize that the potential for working together has barely been tapped. At the winter 2009 meeting, scientists discussed the various options that fall under the umbrella of PBI's Sustainability Initiative and explored more opportunities for collaboration.

"Because of their daily access to polar bears, zoos provide a unique opportunity for the long-term monitoring of diet, behavior, sensory and cognitive testing, reproductive physiology, and other issues critical to our knowledge of the species," says Bob Wilson of PBI. "Zoos also have the ability to launch rescue and rehab programs and other efforts that may prove vital to polar bear conservation. By working in tandem with field scientists, they can help ensure the survival of the species."



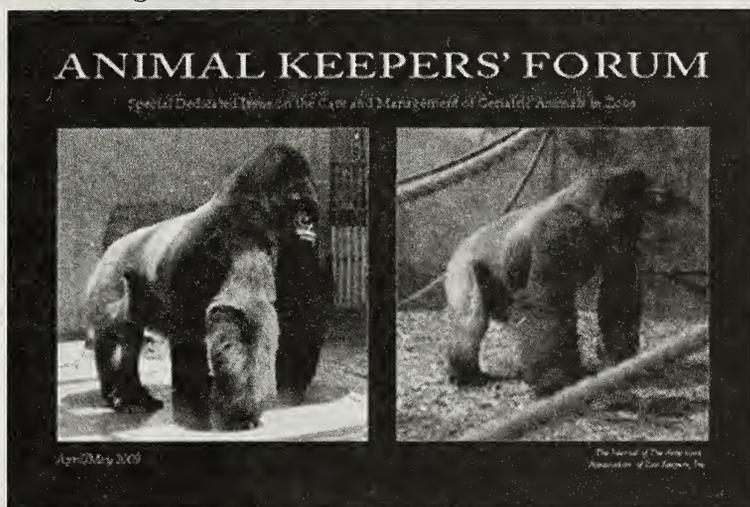
A mother polar bear and her three cubs trek across the frozen tundra towards what may be an uncertain future for this endangered Arctic species. (Photo © R & C Buchanan/Polar Bears International)

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THIRD TRAINING and ENRICHMENT WORKSHOP for ZOO ANIMALS 16-20 November 2009

Presented by Active Environments and Shape of Enrichment. Hosted by The Oakland Zoo, Oakland, CA, USA. Instructors: Gail Laule, Margaret Whittaker, and Val Hare. This unique five-day workshop will present an array of topics relating to behavioral management with particular emphasis on positive reinforcement training techniques (PRT) and environmental enrichment (EE).

The workshop is designed for keepers, managers, supervisors, curators, and veterinarians working with a wide array of animals held in zoos. This workshop emphasizes the behavioral management approach to caring for captive animals, with focus on environmental enrichment, positive reinforcement training, and the problem-solving process. Workshop format includes lecture, discussion, small group projects, demonstrations, and multiple hands-on training and enrichment opportunities with Oakland Zoo's diverse collection. Skills taught are directly related to enhancing staffs ability to manage captive animal behavior, improve animal welfare, and enhance the overall care and management of captive animals. The Workshop format is designed to maximize the value for each participant and as much as possible to address specific situations, needs, problems, and objectives. Be prepared to interact, share, and participate to make the experience as useful and relevant to you as possible.

The registration fee (TBD) includes the following:

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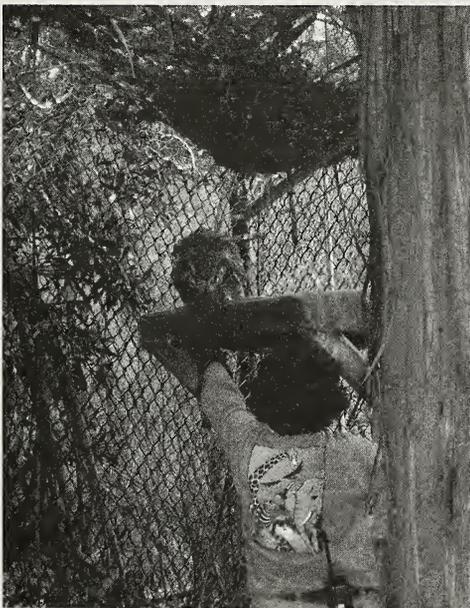
Thinking Outside of the Mew

*By Margaret Rousser, Lead Keeper Children's Zoo
Oakland Zoo, Oakland, CA*

Editors Note: This article was first published in *Wellspring*, Winter 2009 Volume 10; Issue 1.

Raptors, and especially great horned owls (*Bubo virginianus*) are popular animals for education programs and the Oakland Zoo is no exception. In August of 2004, the Oakland zoo acquired a four-month-old female great horned owl named Olivia from a local wildlife rehabilitation center. She was fully flighted, but imprinted and suffered from cataracts in both eyes. She had also been introduced to traditional falconry equipment such as jesses and a lead and was comfortable wearing them.

The Zoo free lofted Olivia in an 8' x 8' [2.4m x 2.4m] mesh cage with several perches and a nest box. While at the zoo she also received surgery to remove her cataracts. Although she was handled regularly by both keepers and education staff, she frequently exhibited some mildly aggressive postures and vocalizations. When keepers went in to service the area, she was calm and relaxed, however when approached with a glove, her demeanor changed. She would begin by fluffing out her feathers, and hunching her back, followed by hissing and clacking her beak. When the glove was presented in front of her, she would aggressively bite at it. However, once outside of the enclosure, she calmed down and became a great presentation bird. As a result, the aggression inside the cage was never fully addressed and she continued to be handled through it.



Example of previous aggression
(photo by Margaret Rousser)

In August of 2007, a large flight aviary became available and the staff jumped at the chance to give Olivia more space to fly. The aviary is 15' ft. wide by 36 ft. long [4.5m x 10.97m] and backs up to a very steep hillside. There are several perches and nest boxes available. Once she became comfortable in this new aviary, the aggression worsened. She frequently began her posturing and hissing before the keepers even entered the exhibit and began to fly away rather than step up onto the glove. Soon after, she began to fly aggressively at the keeper with her talons out, causing minor

injuries several times. At this point we realized that we couldn't wait to address the issue any longer and something had to be done. The steep hillside of the exhibit wasn't safe for keepers when Olivia was being aggressive and as an education animal, we needed to be able to allow many people to handle her. Our first thought was to tether her and start the manning process all over again, but our curator challenged us to find another way. If we could train so many other animals using only positive reinforcement, why not an owl?

Switching to a positive reinforcement-based system from a traditional falconry-based one required us to completely re-invent what we were doing. The most important part of this discovery process was to begin observing every subtle nuance of Olivia's behavior before we even began to enter her aviary. We learned to be very aware of her aggressive precursors such as feather fluffs and head orientation. When we observed these behaviors, we would freeze in place. We theorized that previously, a retreat in the face of aggression had inadvertently reinforced it. We would avoid retreating from her at this time so that the precursive behavior was not reinforced by our subsequent absence. Instead, we would wait for her to assume a relaxed body posture with her feathers down. We also avoid advancing towards her during precursor behaviors in order to prevent escalation of the aggression.

Soon, the precursors began to show less intensely, the feathers, though fluffed, would not be as erect, and the head orientation and horns were not as focused. At this point we began to approach with the glove. We agreed that for safety sake, we would not approach Olivia if she was above eye level for the keeper, but since she spent a lot of time on the ground, this was rarely a problem. Most often when training sessions occurred, Olivia would choose to be on the ground. We continued the approach-freeze method in this stage of the training, but when precursors resolved, we would slowly advance towards her. Once we got within 10 feet of her, we would try to get as close to her level as possible, which meant that we needed to be on the ground. Since Olivia's aggression often occurred at the introduction of the glove, we kept the glove visible during this process, but down low and close to our bodies to keep it non-threatening.



The new approach to presenting the glove. (photo by Margaret Roussier)

At approximately three feet away from the bird we would begin to move the glove closer to her always keeping the glove down low. If she was on the ground, we rested it on the ground, if she was on her perch, we kept it below the level of the perch. Again we would freeze when we saw precursors and advance or retreat only when the precursors resolved. Once we got the glove right in front of her feet we slid it up against her legs with very light pressure. Initially she bit at it a couple of times, but then grabbed it with her foot. While she was gripping the glove, we slightly raised it to encourage her to step up with the other foot.

Finally, success! When both feet were on the glove, we held the jesses and immediately reinforced her. We chose pinkies as reinforcement because she likes them and they are easy to handle. Then she was immediately placed back on the perch and the keeper left. We continued with this method, gradually increasing the amount of time she spent on the glove and increasing the amount of reinforcement, until we could take her out of her exhibit comfortably and walk her around or take her to

presentations. When we began to include our education staff again, we stressed the importance of positive reinforcement and we now require them to take pinkies with them on programs. Of course we have to balance the number of pinkies she gets with her regular diet since pinkies do not contain the same nutritional value, but we have found that 4-5 pinkies a day do not make much of a difference in either her eating habits or her weight.

Conclusions

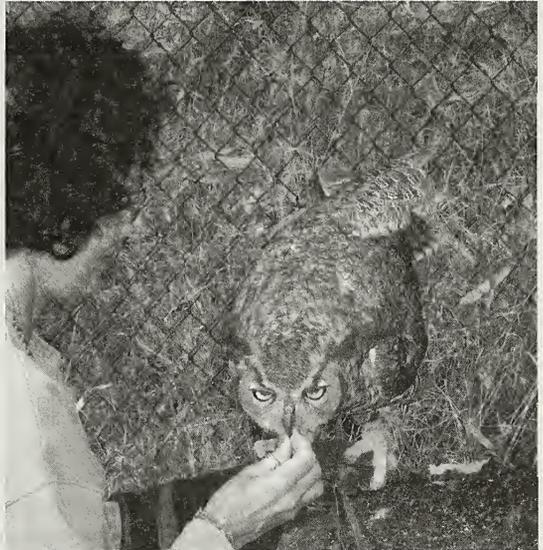
This method required a lot of patience on our end. Not using the traditional falconry methods to which we were accustomed slowed the process down, however, we do believe that this way was significantly less stressful for the bird which made the extra time worthwhile.

Acknowledgements: Chris Allen, Leo Foster and Colleen Kinzley

ATC Comments:

By Jay Pratt, Zoo Atlanta

Having worked for the last year with raptors, and specifically two large owls similar to the one described by the author, I cannot emphasize enough the value of this training. First, these birds, like most that are used in free flight shows or education programs, are fully flighted (not clipped, able to fly when and where they choose). There is nothing preventing them from taking off and leaving, or choosing not to come to the glove, remaining in spaces inaccessible to handlers. Positive reinforcement works with a system of rewards that hopefully encourage the bird to participate. Flying to and responding to the handler become positive experiences, and so they will continue to choose these actions.

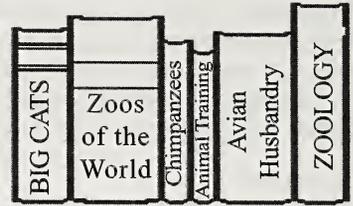
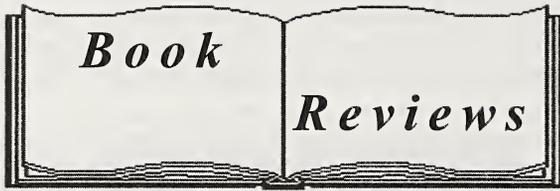


Olivia on the glove receiving her pinkie as reinforcement.
(photo by Margaret Rousser)

Second, having had angry and stressed raptors and owls on a glove on my arm, the pressure and potential risk in not having a positive relationship with such powerful birds is very high. They do not release their talons until they want to, and they can be difficult to handle without risk of injury to the trainer or the animal. The training described by the author addresses these concerns over stress and aggression, and should result in a positive experience for the trainers and the animals.

This type of training is not solely within the province of show animals either. Any keeper who works with an animal that is aggressive or suffers stress from human proximity can train that animal in a similar manner. Watch for body language changes that signal progress, and reward those with favored food items. Incremental shaping of positive behavior can absolutely bring about calm and receptive responses in nearly any animal, protected or free contact. Know the species, know what behaviors you are hoping to elicit, and set yourself and the animals up for success.

You are invited to submit material for the Training Tales Column. Drawings or photos of training are encouraged. Contact Jay Pratte at jpratte@zooatlanta.org for more details or to submit an entry.



Reptiles & Amphibians of the Southern Pine Woods

By Steven B. Reichling

Published October 2008

University Press of Florida, 15 Northwest 15th St., Gainesville, FL 32611-2079

ISBN: 978-0-8130-3250-4

320 pgs. 126 illus. \$29.95 (paperback)

*Review by Chris Shupp, Keeper II
Cypress Swamp, North Carolina Zoo
Asheboro, NC*

The title of this book “Reptiles & Amphibians of the Southern Pine Woods” leaves little mystery as to what you will be reading about. However, you will quickly come to realize that southern pine woods are a varying, delicately balanced ecosystem, not just stands of pine trees. The author goes into great detail while breaking down the differences between pine flatwoods, pine savanna, pine ridge, pine rockland and even pine plantations. He does this not only through his descriptions, but also through several color plates centrally located in the book. He also identifies the herp species that, if you’re lucky, you might find within that particular habitat.

The species accounts are very detailed (several pages for each), but you never get the sense that they are too drawn out. A detailed account of the natural history and status is provided for each species as well. Often a story of when and where a species was found provides a personal touch and allows visualization to take place more readily.

A note of interest is how far the author goes in encouraging conservation minded herp enthusiasts to go out and respectfully look for these animals. By generating awareness of these often fragile species hopefully it will encourage all of us to do what we can to protect these animals and their habitats.

Finally, at times this book shows the future of the southern pine woods as dire. Yet it is also a book of hope that we will see the value and importance of the pine woods and the animals that live within them and make the necessary changes to ensure their ultimate survival.

Restraint and Handling of Wild and Domestic Animals - Third Edition

By Murray E. Fowler, DVM; Professor Emeritus of Zoological Medicine at the School of Veterinary Medicine, University of California at Davis, Davis, CA.

Published 2008 by Wiley-Blackwell, 350 Main St., Malden, MA 02148

ISBN# 0-8138-1432-4

Hardback, 470 pages, illustrated in color

List price: \$120

*Review by Jacque Blessington, Keeper
Kansas City Zoo, Kansas City, MO*

As the title indicates this is the third book that Murray Fowler has published on Restraint and Handling. The book itself is broken down in to three parts. Part 1 focuses on General Concepts. These concepts

include tools of restraint along with a separate chapter dedicated to rope work. Complications that may arise during restraint such as thermoregulation, stress and medical problems associated with capture/restraint each have their own chapter as well. The addition of several new chapters: Understanding Behavior for Restraint Purposes, Training for Restraint Procedures and Animal Welfare Concerns, helps to bring the old 'cowboy style' of capture and restraint into the current philosophies of zoos and aquariums.

Part 2 has nine chapters that focus primarily on Domestic Animals. Camelidae has been given chapter status and moved to this section (as compared to the 2nd edition). Each chapter identifies the danger potentials for each animal group along with their behavior and physiology. Physical restraint versus chemical restraint is the primary focus for domestic animals.

Part 3 has dedicated chapters to the Delivery Systems of Chemical Agents and Chemical Restraint itself. The remaining 11 chapters are committed to both the physical and chemical restraint of wild animals. Each chapter includes the danger potentials of various taxa along with anatomy, physiology and behavior of those taxa.

For several years now it has been said that the physical act of capture and restraint has become a lost art due in part to better chemical agents, species-specific squeeze cages and training. Much of the knowledge from the past was handed down from handler to handler. Unfortunately, many of the tried and true techniques have been forgotten as senior staff have left the field. This book, however, is one of the most if not the most encompassing resource that you will find in regards to restraint and handling. It is an easy read and with new color photos is a most impressive book to have at hand.

As the preface to the 1st edition reads "It is impossible for any individual to acquire a personal knowledge of all possible combinations of restraint and handling procedures for every species or even groups of species. However, the techniques presented have proved successful in the hands of experienced individuals and should serve as guides for anyone faced with similar problems."

This book is a 'must have' for anyone who performs capture and restraint (whether it is by physical or chemical means) as it provides many of those possible combinations of procedures and techniques.

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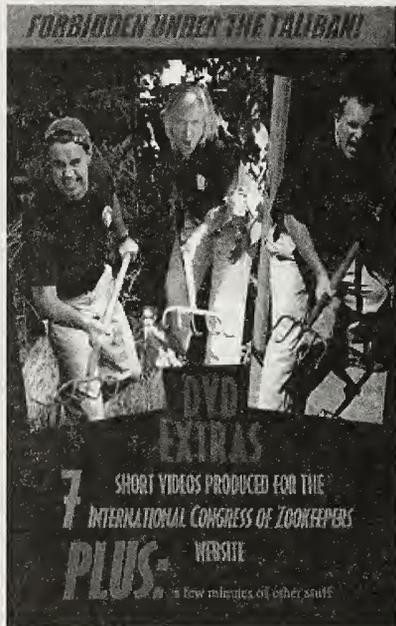
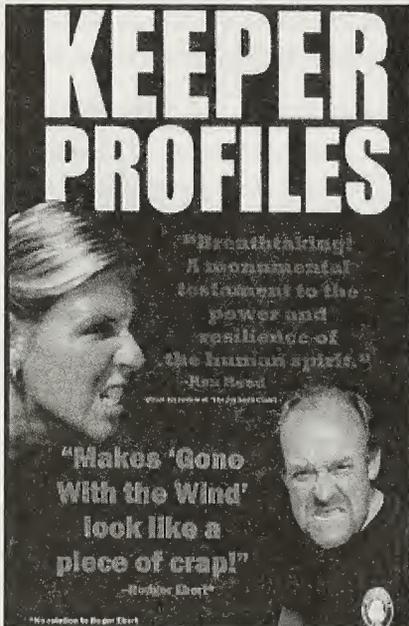
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Toronto Zoo Lion-tailed Macaques Get Geothermal Retrofit

By

Dave Ireland, Curator of Conservation
Toronto Zoo, Scarborough, Ontario, Canada

Winter at the Zoo

The Toronto Zoo is open 364 days every year. Our dedicated membership and a few lucky guests are treated to some wonderful experiences at the Zoo in winter months. For example, observing Amur tigers, Snow leopards and Przewalski's horses bounding through two-meter high snowdrifts is spectacular, or watching Arctic wolves, Wood bison and Bald eagles in natural outdoor winter habitats is amazing. However, not all animals in our 500 species collection enjoy the sub-zero temperature as much as those from Eurasia or the Canadian wilderness. Indeed, most of our species hunker down for the winter in the comfort of their indoor exhibit and holding areas, with short and intensely monitored excursions outside.

Very few of our outdoor exhibits are heated, and Keepers plan precisely when and for how long animals can remain outside. With the economic and environmental cost of conventional energy (like natural gas) so high, and climbing higher, it is not practical for the Zoo to heat large outdoor areas.

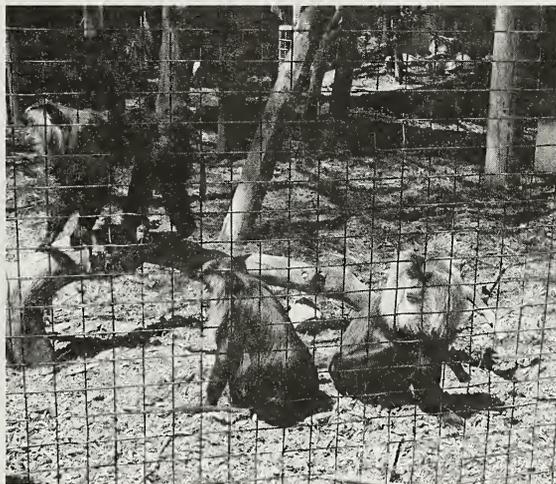
Enter our semi-tropical Lion-tailed macaque troop (*Macaca silenus*).

The Energy Dilemma

The Toronto Zoo Lion-tailed macaques are only visible to our visitors when the monkeys are in the 112m² (1200sq.ft.) outdoor exhibit. Historically the monkeys were provided access to the outdoors in winter when temperatures were above 0°C [32°F] and an electric radiant heater in the rafters provided a source of warmth. Animal Care staff requested additional heat for the monkeys to increase exhibit time and to provide better, more heterogeneous captive habitat.

After a few brainstorming sessions, it was suggested that we could potentially "heat" the floor of the outdoor exhibit space using a technology called geothermal power.

Geothermal energy is the oldest form of space heating (and cooling), and has been used for millennia by people, and animals, seeking caves and crevices in the Earth to avoid the harsh winter weather. Geothermal energy (from the Greek word *geo*, meaning earth, and *thermal*, meaning heat) is energy generated by solar radiation stored beneath the Earth's surface. New technology has allowed engineers to tap into Earth heat with ever more efficient techniques. Holes are drilled to depths of 50-300m [164-984 ft.] and tubes filled with glycol transfer the relatively constant temperatures at depth to the variable temperatures at the surface. When it's 30°C [86°F] in the summer, it is still 12°C [53.6°F] at depths, and when it's -20°C [-4°F] in the winter, it is still 12°C [53.6°F] at depths.



Toronto Zoo's Lion-tailed Macaque troop in their exhibit during warm weather. (Photo: Ken Ardill)

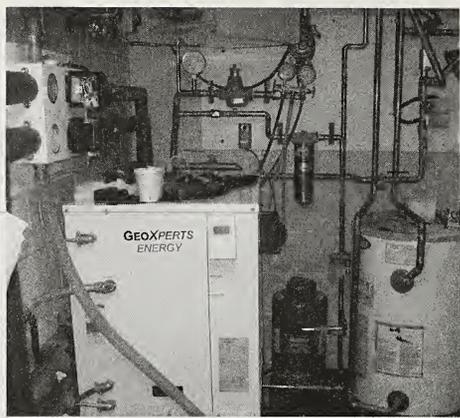
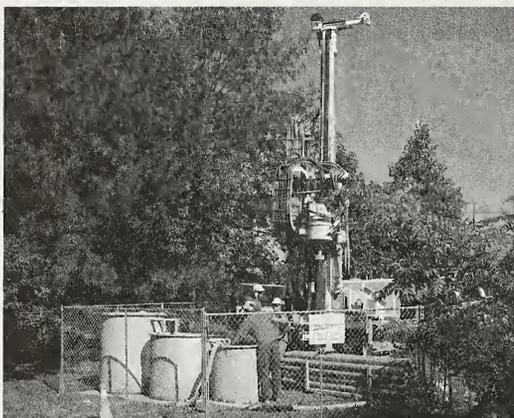


Photo at left shows engineers beginning the drilling process to access the geothermal power for the macaque exhibit. At right is the heat pump that heats the outdoor macaque exhibit during the cold Toronto winters allowing the animals year-round access. (Photo: Ken Ardill)

This is precisely what we installed at the Lion-tailed macaque outdoor exhibit in the late fall of 2008. Three 75m [246 ft.] deep holes were drilled and a 3-ton heat pump installed to transfer Earth energy to the floor of the exhibit. The newly created concrete floor encases several hundred meters of plastic pipes that carry super-heated glycol throughout the entire outdoor space. Finally, a layer of mulch between 10cm and 30cm (~4-12 inches) thick was spread over the floor to insulate the heat generated and to provide a substrate for the monkeys. The monkeys now have access to the entire outdoor exhibit all year long.



Macaque exhibit in winter prior to retrofit



Macaque exhibit in winter after retrofit

(photos by Ken Ardill)

Will the Arboreal Monkeys Use the Space?

We provide ropes and ledges, and enriching climbing surfaces for our arboreal monkeys. In the colder months, historically, our troop rarely, if ever, ventured to the ground: the exhibit was covered in snow and ice. Would the monkeys use the new space? To answer this question we required a serious human time commitment to monitor the monkeys.

Enter dedicated and passionate Toronto Zoo Volunteers.

From January to March 2009 17 Volunteers spent a total of 111 hours observing the location of each Lion-tailed macaque in their new “green” exhibit. Volunteers measured the ambient air temperature and the temperature at the surface and below the mulch layer. Results showed that the geothermal system was working: when air temperatures were -15°C [5°F] the ground below the mulch was $+15^{\circ}\text{C}$ [59°F].

Further, results showed the monkeys understood this: when the electric radiant heater was turned off, the monkeys spent 54% of their time on the ground. When the electric radiant heater was on (as an option to the ground-sourced heat), monkeys still spent over 40% of their time on the ground.



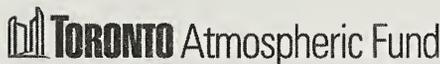
Top left: a member of the troop looks out at the snowfall in February in Toronto.
At Top right one of the macaque troop explores and forages in the mulch layers over the geothermally-heated exhibit floor.
At Bottom left members of the Lion-tailed macaque troop look out onto the snow-covered surroundings of their exhibit while sitting comfortably on the heated exhibit floor.
(Photos by Ken Ardill)

A Carbon-Neutral Solution

The main objective of the Green Macaques Project was to improve captive habitat for the monkeys, but a second objective was to educate our 1.5million visitors about the benefits of

sustainable development. Geothermal energy is the most reliable and efficient source of renewable energy in temperate climates like Ontario, and yet there are only a handful of systems in operation, and very few accessible to the public. Our new exhibit allows visitors to SEE (no snow outside in winter) and FEEL (there is a non-animal section of the exhibit where visitors can place their hands) the power of Earth's energy. All electrical needs of the exhibit and holding areas are sourced from wind and hydro, making the exhibit completely emission-free.

Acknowledgments



Constructing A Firehose Bed For An Aging Lion

*By Barry Poole, General Maintenance & Operations Supervisor
and Marie Magnuson, Animal Keeper/Great Cats
Smithsonian's National Zoological Park
Washington, DC*

In September of 2003 our male African lion (*Panthera leo*) Tsavo was 15 years old and had been alone for a year after the death of his brother, Tana. Lionesses Kisangali and Lusaka were just getting out of quarantine after arriving at the National Zoo from Wildlife Way Station (Angeles National Forest, CA). We had brought these two beautiful female lions to Washington in the hopes of forming a pride with Tsavo. We were not sure of the girl's ages, but the veterinary staff estimated them to be about 12 or 13 years old. Tsavo had been vasectomized when he was young since he had been housed with his mother.

The introductions went very smoothly and soon the copulating that is integral to forming a pride was taking up most of Tsavo's time and energy. As a matter of fact, since Tsavo had been vasectomized it was taking up a little too much of his time and energy. The girls were not getting pregnant of course and so they continued to cycle like clockwork. Tsavo's years started to catch up with him. He started to show signs of back trouble, including limping and ataxia, and after only a few months together we had to separate them so we could keep Tsavo inside. His back problems had gotten so severe that the staff veterinarians decided to keep him as quiet as possible and treat his back with steroids. The treatment was extremely successful and Tsavo was going back outside with the now-spayed Lusaka in the spring of 2005. Kisangali had sadly died of an infection during the winter.



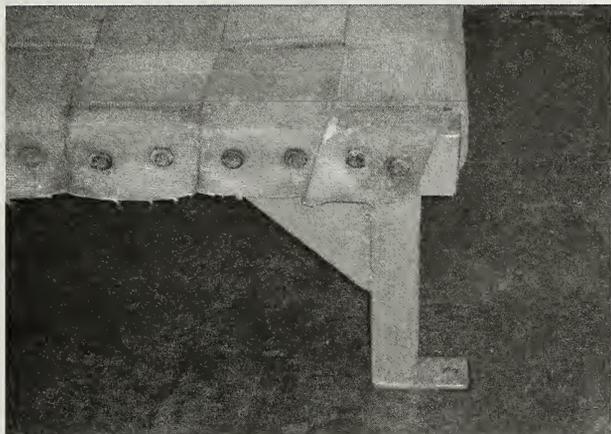
Firehose bed constructed to accommodate an aging African lion with back problems. *Photo: Marie Magnuson*

Jeanne Minor, a keeper who was working here at that time, suggested that a firehose bed might make Tsavo even more comfortable. Her idea was to weave the fire hose on a sturdy metal frame, much like a lawn chair. Barry Poole from the Metal Shop worked with Jeanne on the design and it has proven hugely successful.

The first thing that Barry did was to "skin" the hose, or remove the outer canvas layer. He used only the inner canvas and rubber layer so that the bed would dry in a reasonable length

of time and also to remove bulk from the weaving. The width of the fire hose you have will determine the final dimensions of your bed. The metal frame of Tsavo's bed ended up being 77"x36" [1.95m x .91m]. The woven part is made of six long pieces (warp) of 5 1/4" [13.33cm] hose woven with 14 shorter

pieces (weft). After you approximate the length and width of your bed add at least 15% for what is called “take up” by weavers. This is what is lost to the ups and downs of the weaving itself. Then add two to three feet to the length of each piece for loom waste. This will be the part of each piece that wraps around the metal frame and is fastened to it. This is an area where a foot too long is preferable to half an inch too short. When the hose is secured to the bed you can cut off the excess, but you will want to have plenty of hose to grab hold of when you start applying tension to your weaving.



Close-up detail of the metal frame for the firehose bed.
Note bed is bolted to the holding area floor *Photo: Marie Magnuson*

Barry started by weaving the hose together and then determining the dimensions for the metal frame. He then constructed the frame out of angle iron and u-channel with some triangular shaped braces at the corners. The legs have small tab feet to secure the bed to the floor. When Barry made a second bed for Bandit our spectacled bear (*Tremarctos ornatus*) (32 years old and counting!!) he used all u-channel iron. He felt it was easier to attach the weaving to and that it was stronger. When he started to apply

tension to the weaving, the angle iron would sometimes curve in under the pressure.

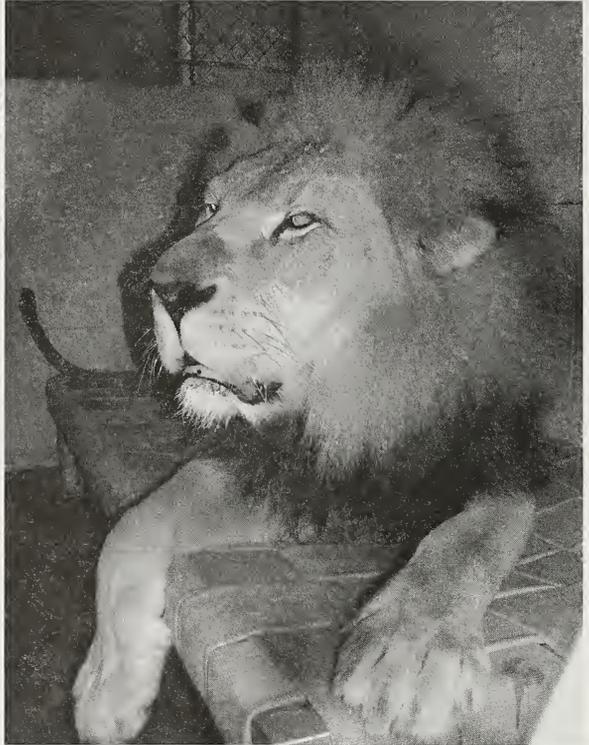
Next came attaching the woven fire hose to the bed. Barry bolted the hose to the frame using standard hardware. Each end of each piece of hose was attached with two 5/16” bolts. There are 1” washers under each bolt head and a 1 ½” fender washer and a lock washer under each nut. The long warp pieces were attached at one end first. Barry then tensioned each piece of warp and attached the other end, using a very cleverly modified vise-grip (see photo). Not only did the flat plates with teeth allow him to get a secure grip on the hose, but the large metal loop on the handle gave him a place to attach a tensioning device. With the one end of the warp secured to the bed, and the vise-grip attached to the hose, Barry could use a come-along or cranking tie-down strap, attached to the wall, to apply tension to the piece of hose. The tie-down straps are the ones used to secure a boat to a trailer. Be careful! You can actually bend the metal frame if you apply too much pressure. Once the weft was tight, the end was secured with the same hardware as before and the excess cut off.

Having secured all the long warp pieces, Barry then started on the shorter weft pieces. Starting at one end of the bed, he would attach one end of the weft piece; he could use the same tensioning set-up to tighten up the shorter pieces. To help manipulate the pieces into place he used a block of wood placed against the edge of the pieces and firmly tapped it with a hammer until it was in place. Since the weft tensioning puts pressure on the longer sides of the bed you have to be careful not to over tension and cause the sides to bow inward. Once again each piece was fastened to the frame and the end trimmed. The beds that Barry made are taut enough for a lion or bear (or keeper) to stand on with confidence, but still have enough give to be easy on a spondalitic back.

The bench that used to be in Tsavo's holding was removed and the bed bolted to the floor. He took to it immediately. Tsavo enjoyed his bed until his death at the ripe old age of 18. At that time Lusaka inherited it as senior lion, and continues to sleep on it now. When Lusaka was moved to the indoor enclosure nearest the Keeper Office her bed was moved with her. She lies on it while adding her comments to our morning meetings each day.

Photo at right shows 1.0 African Lion Tsavo on his firehose bed that was designed to help with his back problems. (Photo: Tracey Barnes)

Below 0.1 African lioness Lusaka began using the firehose bed following Tsavo's death at age 18 years. (Photo: Marie Magnuson)



“Virgin” Lizard Produces Fertile Eggs

It is being hailed as an “immaculate conception” -- but not in the Biblical sense. The world’s first birth from a virgin lizard at a reptile farm in the Reptile Village Zoo in Ireland has left scientists scratching their heads.

Nice, a 10-year-old Nile monitor lizard (*Varanus indicus*), has lived at the Reptile Village Zoo in Gowran, County Kilkenny, since she was a hatchling and never had any contact with a male lizard. Curator James Hennessy said the birth was a “miracle of nature”, which has never occurred in captivity anywhere in the world before.

“This phenomenon is known as parthenogenesis and has never been known to occur in this species before,” he said. Hennessy said Nice, who is one of two female Nile monitors at the zoo (the other is called Nasty) laid about 12 eggs. “Both the lizards lay eggs most years, but we usually just throw them out,” he said. “I decided to put the eggs in an incubator and see what happened. I’m still not 100% sure why I did it this year, but I’m glad I did.”

The egg should have hatched within 180 days, but as time went on, Hennessy realized something was wrong. He was devastated when he opened the egg to discover that the baby lizard had died before it could hatch. The fully-formed baby lizard is now preserved at the zoo.

Hennessy said it was still unknown why and how the “virgin birth” occurred. “It’s a huge deal. It’s just absolutely amazing. It’s still quite hard to believe, but I’ll be keeping a close eye on the eggs from now on,” he said. ‘Nice’, who is 4.5 feet long, was brought over to Gowran from Ghana as a hatchling.

Source: By Laura Keys from *Independent.ie National News* 7/2/09

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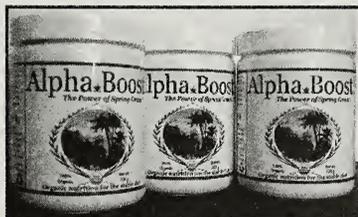
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Conservation/Legislative Update

Column Coordinators: *Becky Richendollar, North Carolina Zoo*
and *Greg McKinney, Philadelphia PA*



This month's column was put together by column co-coordinator Becky Richendollar

Afghanistan's Only Pig Out of Quarantine - Two months after being locked away due to fears over swine flu, Afghanistan's only pig went back out on exhibit at the Kabul Zoo. The pig was originally quarantined due to public concern about the H1N1 flu.

Zoo manager Aziz Gul Saqib told Reuters, "our people did not understand that the disease only passes from person to person and felt the swine influenza might even be spread from the zoo because we have a pig here."



The manager went on to say that, after zoos in other countries reassured them that the pig was safe, the decision was made to release him back on to exhibit. Some zoo visitors were uncomfortable by the release, but one said, "I think it's an interesting animal in terms of the way it looks. You can't really use it for anything...it is haram (forbidden) and you shouldn't eat it."

The pig, named Khanzir, is about eight years old and arrived at the zoo from China in 2002. There have been no reported cases of H1N1 in Afghanistan. *Source: Reuters, July 4, 2009*

Kabul Zoo visitors view their country's only pig put in quarantine in light of the H1N1 flu pandemic.

(Photo: Radu Sigheti)

Kenya's National Parks Not Free from Animal Loss - A new study shows that long-term declines of certain species are happening at the same rate inside Kenya's national parks as it is outside park boundaries.

"This is the first time we've taken a good look at a national park system in one country, relative to all of the wildlife populations across the whole country," said David Western a biology professor and founding executive director of the African Conservation Center in Nairobi. The study finds that "wildlife populations inside and outside of the parks are declining at much the same rate," according to Western. They also found that wildlife populations in Kenya, both inside and outside national parks, declined by 40 percent between 1977 and 1997.

The researchers compiled data from more than 270 wildlife counts over a period of 25 years. The scientists noted in their paper that many of Kenya's 23 national parks and 26 national reserve boundaries do not take into account the seasonal migrations of animals. So when land surrounding the parks is allowed to be developed for agriculture and other uses, migratory routes and important sources of food for wildlife are destroyed.

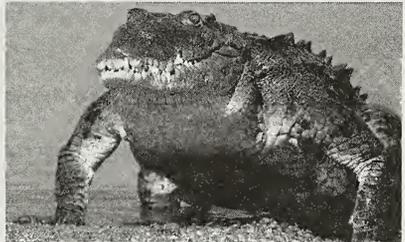


African elephant calves in Kenya. (Stock Photo)

very big park is much more difficult to protect from poachers. Furthermore, in the biggest parks there isn't an intimate connection between the park and the surrounding community, so there are no benefits going back. The small parks, such as Nairobi National Park, Amboseli, and Nakuru, are surrounded by people who are more educated and better off financially, so they don't see the parks with the same antagonism as the others and they're more amenable to conservation."

Western said that to protect Kenyan wildlife from further declines, the Kenyan government needs to set policies to share the profits of ecotourism with local communities so that they can reap the economic benefits of protecting the wildlife and ecosystems within and surrounding the national parks. In a separate study, Western found that "where we have community based conservation linked to a national park, the losses of wildlife are much, much less." *Source: Science Daily, July 7, 2009*

Park Service Puts Endangered Species on Ice - The U.S. National Park Service and the American Museum of Natural History in New York City have partnered to store tissue samples of endangered species from U.S. parks to the museum's storage facilities. The samples are stored in metal vats cooled with liquid nitrogen. Experts plan to use the samples to provide researchers with genetic information they need to trace migrations and conduct population estimates. The first samples will be blood samples from foxes on California's Channel Islands (*Urocyon littoralis*), followed by samples from the American crocodile and the Hawaiian goose (*Branta sandvicensis*). *Source: Greenwire, July 8, 2009*



The American crocodile (*Crocodylus Acutus*) is one of the endangered species whose tissue samples will be stored at the American Museum of Natural History in New York City. (Photo: Gianfranco Lanzetti)

Hybridized Salamander Threatens Parent Species - A study by Maureen Ryan and Jarret Johnson of the Center for Population Biology at UC Davis and Benjamin Fitzpatrick of the University of Tennessee has found that the California tiger salamander (*Ambystoma californiense*) is threatened by a hybrid of that species and a Texas salamander whose larvae are used as bait for fisherman. The original, California species is already threatened by encroachment on its habitat and by pollution. The hybrid species constitutes an additional threat that acts as an added stressor.

The hybrid out-competes the original species partly because they delay emerging from their larval stage and emerge at a larger size. The larger hybrids then prey on the native salamanders as well as

Western said a third contributing reason for declines in some species, such as elephants, has been the antagonism created by the parks within surrounding communities. Forced to settle in land outside the parks, some local tribes view the parks as threats to their survival.

"What happens is that wildlife now becomes a threat to their agriculture and their pastoral way of life," Western said. "So they willingly invite poachers to get rid of the wildlife."

"The most disturbing finding from our study is that the biggest parks do not provide insulation from wildlife losses," he added. "In fact, the biggest losses are occurring in the big parks, rather than the smaller ones. A



Tiger Salamander
(Photo: Gerald & Buff Corsi)

other threatened species like Pacific Chorus frogs that are not normally prey of non-hybridized California tiger salamanders. In addition to affecting the non-hybridized species, the hybrid salamander also out-competes other threatened salamanders, such as the endangered Santa Cruz long-toed salamander.

The hybrid salamander poses a unique problem. In some areas, the original salamander no longer exists, leaving the hybrid as the only remaining representative of the species. This poses the question of whether the hybrid, being itself partly native, should then be a protected species. The U.S. Fish and Wildlife Service

is currently working on the solution. *Source: The San Francisco Chronicle, July 5, 2009*

Biodiversity Efforts Fail to Make Progress - The IUCN recently released a report on failing efforts over the past five years to protect biodiversity in habitats around the globe. Governments had pledged in 2002 at a meeting of the U.N. Biodiversity Convention and the World Summit on Sustainable Development to stop the decline of biodiversity within their nations by 2010. The IUCN has determined that these goals will not be met.

Instead, a quarter of the world's mammals, a third of the amphibians, and almost half of the world's coral reef species are threatened with extinction. The IUCN is concerned that species are sliding into irreversible extinction while world governments are distracted by the problems brought on by the recession. Climate change may be exacerbating the problem.

The report urges governments to reduce energy use and overall consumption. It also suggests that governments consider the environmental consequences of the structure of their cities, trade practices, and infrastructure.

As the 2010 deadline approaches without significant progress, governments will have to reconsider their strategies if they wish to preserve the biodiversity still present within their borders. *Source: Associated Press, July 2, 2009*

The Ugly Need Not Apply - Laws and regulations that govern the protection of threatened and endangered species do not make a distinction between species based on charismatic star power. In practice, however, resources are more likely to be diverted to species that make good posters. This has changed recently, as science has come to understand that many of those overlooked species can serve as an indicator of the health of the larger ecosystem.

In California's Central Valley, this tension has played out in the controversy over the unlovely glassy-eyed smelt. The smelt lives only in the San Francisco Bay and the bay's river delta. Unfortunately, this is also a major water intake for California. As a result, the smelt has dropped to less than 10% of its recorded population high.

In 2007, a federal judge ruled that the smelt should be better protected. In response, the Fish and Wildlife Service issued rules that reduce pumping at certain times. Farmers argue that the restrictions have exacerbated the effects of the drought, and contributed to unemployment levels that may be as high as 40 percent. The issue ruling has been appealed and so continues to wend its way through the court system. The final fate of the smelt, which Rep. George Radanovich (R-Calif.) has referred to as a "worthless little worm" that "needs to go the way of the dinosaur" is still to be determined. *Source: The Washington Post, June 29, 2009*

Are Elephant Populations Stable These Days? - Illegal hunting (primarily to obtain ivory) and habitat loss have combined to cause dramatic declines in the numbers of both African and Asian elephants. In 1930, there were between five and 10 million wild African elephants, plying the entire African continent in large bands. Today that number is likely less than 500,000. The double whammy of poaching (illegal hunting) and habitat loss has led to a dramatic decline in populations of both African and Asian elephants in recent decades.

While Asian elephants were never as numerous as their African counterparts, their population numbers have also dropped precipitously, from an estimated 200,000 a century ago to less than 40,000 today. Conservationists fear that unless demand dries up for ivory, and people stop moving into prime elephant habitat, the world's largest land mammal could become just a memory within another hundred years.

Putting an end to habitat loss may be next to impossible as more and more people vie for fewer and fewer resources and move out further into the countryside, so conservationists working to save elephants tend to concentrate on reducing or eliminating poaching. While trophy hunting of elephants may have been big decades ago, today most elephant hunters are after the ivory in the tusks, which have been a hot commodity across Asia for years as raw material for highly prized and often ornate carvings. Despite elephants' inclusion in Appendix I of the Convention on International Trade in Endangered Species (CITES) in 1990—meaning the sale of tusks and other elephant parts is a violation of international law—poaching is bigger business than ever, with prices for ivory rising more than 16-fold in recent years.

Some countries, such as Tanzania and Kenya, are working hard to hold up their end of the CITES agreement, hiring patrols of young men—some of them former poachers themselves—to monitor local elephant populations and enforce national and international laws against killing these and other endangered species. Conservation groups like the African Wildlife Foundation (AWF) and the Wildlife Conservation Society (WCS) are working hand-in-hand with local officials to improve elephant habitat and keep poachers at bay. These organizations hope that the people in these regions can learn how to bring in revenues from tourism instead of hunting.

But elsewhere governments are not as committed to the ivory ban, let alone to following laws imposed by outsiders. Government officials in Zimbabwe, South Africa and Botswana, for example, argue that trade in ivory should be regulated, not prohibited. They maintain that countries that are managing their elephants well should be allowed to sell ivory in order to pay for conservation measures.

In part to test such waters, the first legal sale of ivory in a decade took place in October 2008, despite protests from conservationists. Buyers, mostly from China and Japan, eagerly snatched up some 100 tons of stockpiled elephant tusks—no elephants were killed recently or illegally for the sale—with the proceeds going to groups working to save the elephant and its habitat. But with the legal ivory sale has come an uptick in elephant poaching, leaving conservationists with that “one step forward, two steps back” feeling. *Source: Scientific American 4/09/09*

CONTACTS: CITES, www.cites.org; AWF, www.awf.org; WCS, www.wcs.org

In a related story, growing pressure from poaching and human encroachment has driven hundreds of elephants to migrate across Zimbabwe's borders and at least one leopard to stalk an upmarket suburb of that nation's capital. The independent Zimbabwe Conservation Task Force appealed in its latest monthly bulletin for more action -- and money -- to preserve the troubled nation's wildlife. In Zimbabwe's economic meltdown, “humans are encroaching more and more into areas previously reserved for wildlife,” the task force said.

As many as 400 elephants have crossed the Zambezi River, which separates Zambia from northern Zimbabwe, in recent months, said Johnny Rodrigues, head of the task force. Three elephants also roamed into the eastern border city of Mutare in late spring and state wildlife authorities “wanted to shoot them before they kill somebody,” he said.

The task force and a Zimbabwe animal group received official authority to capture and transport the elephants to Chipinda Pools, believed to be their original home area 125 miles (200 kilometers) to the

south. "The problem is funding for the relocation," Rodrigues said. State game rangers "won't wait much longer before destroying the elephants."

In northern Harare, rangers also wanted to track and kill at least one leopard, which also is suspected of having a cub. Rodrigues said the task force set up drugged, baited traps for predators so they could be returned to the wild, but none has been caught since a guard dog was attacked earlier this month.

Tourism and photographic safaris have dropped sharply during years of political and economic turmoil since the often violent seizures of thousands of white-owned farms began in 2000, disrupting the agriculture-based economy in the former regional breadbasket. Longtime ruler President Robert Mugabe blames Western sanctions for the economic crisis that has led to acute shortages of food, gasoline and the most basic goods. Poaching of small animals has intensified, with villagers torching the bush to drive even rodents and rock rabbits into traps for food, conservationists say. Rodrigues said more animal fencing was needed at wildlife preserves to combat poaching and the escape of animals from their natural habitat after being made skittish by gunfire.

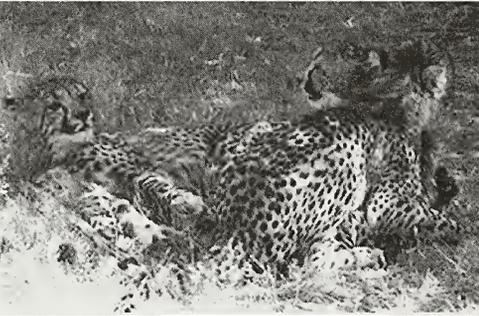
Conservationists already have raised the alarm for Zimbabwe's rare rhinos after a sharp increase in poaching over the past year because of a breakdown of law enforcement in the country. The head of the state Parks and Wildlife Management Authority, Morris Mtsambiwa, told state media that his nation faced censure from CITES, which regulates trade in endangered species, for the surge in rhino poaching blamed on "well-coordinated local, regional and international syndicates." He said one rhino poacher, identified as a former Zimbabwean army officer equipped with a heavy caliber rifle, had been shot and killed by rangers in southern Zimbabwe. The poacher's accomplices escaped.

Source: CTV.ca 4/27/09

Cheetah's Genome Resource Bank Grows - More than 280 semen collections from 85 individual cheetahs have been added to the Cheetah Conservation Fund's Genome Resource Bank (GRB) since 2002, the CCF has said. CCF banks serum, white and red blood cells and skin samples of all cheetahs. Currently, the GRB holds over 1,600 samples with back-up samples held at both CCF as well as at the National Cancer Institute in Maryland.

In addition, sperm was collected recently during an annual physical examination of resident cheetahs at the CCF. A statement from the CCF said sperm was collected of 11 adult male cheetahs for ongoing studies on the preservation and thawing of cheetah sperm. During the month of April, the CCF

International Research and Education Centre as annual physical examinations were conducted on their 47 resident cheetahs.



Cheetahs in Namibia (photo: AFS)

For the third year, Dr. Carlos Sanchez, Associate Veterinarian from the Smithsonian Institution's National Zoo and reproductive physiologist Dr. Adrienne Crosier worked together with CCF Executive Director Dr. Laurie Marker and her staff and volunteers for two weeks to anesthetize each cat, give vaccinations, overall physical health check-ups, including endoscopic exams and ultrasound.

The CCF said internationally, cheetahs suffer from gastritis, an inflammation of the stomach that is caused by spiral bacteria and impacts negatively on the animals' health, with stress being implicated as one of the possible causes of this disease. All CCF's animals were endoscoped to monitor presence or absence of gastritis. The long-term research into the causes, levels and effects of gastritis in cheetahs was undertaken in collaboration with Drs. Linda Munson and Karen Terio (University of California, Davis), and Dr. Scott Citino from the White Oak Conservation Centre in Florida.

"Over-all, CCF's cheetahs are very healthy and provide a baseline for this long-term international research project," said the statement. (Source: www.newera.com.na)

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