

ANIMAL KEEPERS' FORUM



JUNE 2009

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

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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 drawing of a Greater Kudu (Tragelaphus strepsiceros) drawn by Natalie Lindholm of the Dallas World Aquarium, Dallas, TX. One of the tallest and longest-horned antelopes, the Greater Kudu can weigh up to 600 lbs. [272kg] with horns up to 6 ft. [1.82m] in length. Found throughout eastern and southern Africa, in mixed woodlands, bushlands, hills and mountains, it feeds on leaves, flowers and fruits and can live up to eight years in the wild. This species is characterized by its narrow body, long legs, large ears, and brown coat with white vertical torso stripes. Both the Greater Kudu and the lesser kudu have distinctive stripes and spots covering their bodies, and males have fringe under their chins and impressive spiral horns. Females form small groups of six to 20 individuals and their calves. Male kudu are generally solitary, but can form groups of their own, and only join female herds during the mating season. The male hierarchy is based on size and age. Greater Kudus tend to bear one calf, although occasionally there may be two. To begin with, the calf will wait for the mother to feed it, but later it will become more demanding in its search for milk, and after a few months even aggressive. For the first two weeks of a calf's life they hide where predators cannot find them. For four to five weeks after that they roam with the herd only during day. Males will become self-sufficient at six months old. Females become self-sufficient at around one to two years old. Predators of the Greater Kudu generally consist of lions, leopards and hunting dogs. Although cheetahs also prey on Greater Kudus, they are unable to bring down a mature male, so usually go for the more vulnerable females and offspring. When a herd is threatened by predators, an adult (usually female) will issue a bark to alert the rest of the herd. Despite being very nimble over rocky hillsides and mountains, the Greater Kudu is not fast enough (and nor does it have enough stamina) to escape its main predators over open terrain, so instead relies on leaping woodland and cover which their predators have a hard time getting round. Despite their wide range, the Greater Kudu is thinly populated in some areas due to habitat loss, predation, hunting and disease. Humans are converting much of its natural habitat to farmland and hunt it for its hiaz and beautiful twisting horns. Greater kudus may live up to 20 years of age when kept in captivity. Thanks, Natalie!

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.kscoxmail.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



New Material Added to Member's Only Section of Website

If you haven't checked out the Member's Only section of the AAZK website recently, you're in for a treat. Downloadable pdfs of all of the papers, posters and workshops from the 2006 (Chicago), 2007 (Galveston) and 2008 (Salt Lake City) AAZK Conference are now available.

The section now contains a listing of all AAZK Chapters (searchable by State), a listing and links to all AAZK Institutional and Commercial Members as well as Conservation Partners; downloadable pdfs of past columns including People Skills for Animal People and The Water Column; the Australasian Society of Zoo Keeping Husbandry Guidelines; The Keeper's Role in Zoo Animal Health by veteran zookeeper Judie Steenberg; Zoonotic Diseases Handbook; Zoonotic Disease Transmission and Bloodborne Pathogens; past and current editions of AAZK INSIGHT e-newsletter; the International Congress on Zookeeping Newsletter; information on how to form an AAZK Chapter; and information on all AAZK Committees.

Remember, in order to access this portion of the website, you must register as a user. This is a simple process, just follow the prompts. Please remember that changing an address on the Member's Only section does not change your address for receipt of your monthly issue of *Animal Keepers' Forum*. To change your address on the AAZK database for mailings, either go to the link on the Reminder Bar of the homepage, send an email to AO at aazkoffice@zk.kscoxmail.com, or call to leave new contact information at 785-273-9149.

All "user applicants" for the Member's Only section must be approved as valid AAZK members and this is done each weekday from AO. There is lots of good information and resources, so if you haven't registered yet, do so soon and don't miss out on these special features available only to active AAZK members.

Change in Editors for Enrichment Options Column

Rachel Cantrell Daneault, Disney's Animal Kingdom, is stepping down as editor of the monthly Enrichment Options column in *AKF*. We want to thank Rachel for all her efforts in providing informative and useful information for this column since 2004.

Taking over as co-editors for the Enrichment Options Column will be Julie Hartell-DeNardo, Lead Keeper at the Oakland Zoo, Oakland, CA, and Ric Kotarsky, Senior Zoo Keeper of Primates at the Tulsa Zoo & Living Museum, Tulsa, OK. We welcome Julie and Ric to the editorial team!

We encourage all members to share their enrichment ideas and experiences with their colleagues through the Enrichment Options column. Submissions may be sent electronically in MS Word only to akfeditor@zk.kscoxmail.com. Any photos, graphs or charts should be sent as separate jpps or tifs attachments to the email. Be sure to include proper photo credit and suggested captions are appreciated. Those submitting should also include their name, title, facility and contact information (daytime phone and/or email). We look forward to hearing from many of you on your enrichment ideas!

Calling All Artists!

We are currently soliciting artwork for consideration as future covers for *Animal Keepers' Forum*. While we will occasionally use color photos on the cover, as with the special Geriatric Animals issue, we will continue the long-standing tradition of featuring original member-generated artwork. If you are interested in submitting artwork please remember that drawings should be crisp and clean (pen and ink works best) and may be submitted as high resolution jpps or tifs or sent as hard copy via regular mail. They do not have to be sized for *AKF* cover--we can take care of that aspect. If sending by mail, please use cardboard stiffening to make sure it does not get damaged in transit. Original artwork will be returned upon request. Send artwork files electronically to akfeditor@zk.kscoxmail.com.

Artists are asked to include a brief paragraph about the species featured in their artwork for the About the Cover section, as well as their name, title, institution and contact information (daytime phone or email address).

From the Executive Director

I'm wondering how the extremely difficult financial situation across the country is affecting the profession. Budget cuts, layoffs, furloughs and staff reduction have occurred, or will occur at facilities all across the country. This certainly adds stress to an already difficult and dangerous job. Stress in any form, professional or personal, is a distraction. Distraction is the fundamental cause of injury incidents in the animal keeping profession. In these difficult and stress-filled times – I implore keepers everywhere to stay focused and stay safe.

For our members who may face the loss of their jobs in the coming months, the ability to access the Association's web page to review job openings at other facilities is critical. I would encourage you to check out the Job Posting section at http://www.aazk.org/job_listings.php and also the job opportunities section of the Association of Zoos and Aquariums website at <http://www.aza.org/joblistings/>

I also recently returned from Toledo where I was an instructor for the Advances in Animal Keeping Course, a partnership in education between AAZK and AZA. This course has approximately 50 hours of advanced instruction on varying techniques currently employed in the profession, woven with the opportunity to interact directly with subject matter experts on any subject animal related. This class is an excellent way to build on skill sets and knowledge and both AAZK and AZA have scholarships to facilitate attendance. Scholarship applications may be found on the AAZK webpage.

I hope to see many of you in Seattle in September for the ICZ/AAZK Conference. Even in these tough financial times, the opportunity to interact and learn from our international colleagues should not be missed. The program assembled by the Conference Committee is both educational and exciting in its diversity of subject matter. Check out the program, keynote speakers, and other information by going to the AAZK webpage [www.aazk.org] and clicking on the Conference logo in the right hand tool bar.



A handwritten signature in black ink, appearing to read "Ed Hansen", with a large, stylized flourish at the end.

Ed Hansen
AAZK Executive Director

Coming Events

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

July 18-19, 2009 - First African Symposium on Zoological Medicine – at the Johannesburg Zoo, South Africa. Financial assistance available for vets from other African countries. For more details contact Teresa Slackie- vetadin@jhbzoo.org.za

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. The Annual Conference Program will begin with leadership training and the Icebreaker on Wednesday, October 21. General Sessions will be held on Thursday, October 22 and Saturday, 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 from each of the four categories 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. There will be a variety of formats for presentations including individual papers, workshops, panel discussions and poster presentations. Zoo Day will be held on Friday, October 23 and will culminate with a special dinner celebrating ZRAs' 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 Saturday, October 24, and the 2009 Annual Conference will end on Sunday, 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>

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>



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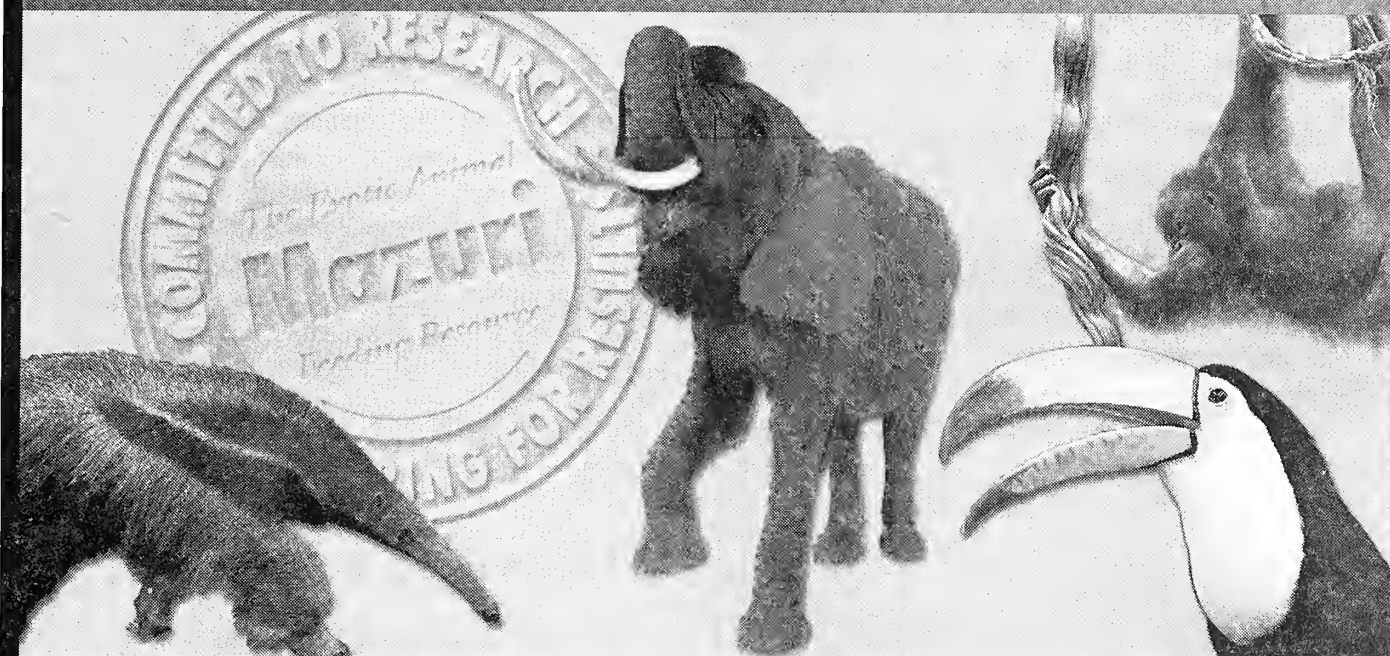
The 3rd International Congress on Zoo Keeping and the 36th American Association of Zoo Keepers National Conference will be held in Seattle September 24th thru 29th 2009. It is being hosted by the Puget Sound Chapter of AAZK and Woodland Park Zoo. This is the first joint conference of ICZ and AAZK and the first time ICZ has ever been hosted in the U.S. Registration is now open! Please visit www.pugetsoundaazk.org for registration instructions and more conference information. All registration must be done online.

- We have some exciting plans that include incredible speakers and workshops that will benefit every delegate who attends.
- In May the Woodland Park Zoo has opened a new Humboldt penguin exhibit that we are excited to share with all of you.
- Join us for fun as we explore Washington with our Pre/Post trips. Check out the website for more information.
- This year the Chapter Challenge has many ways to participate and win. Help us achieve our goal of having 100% participation from ALL AAZK Chapters!
- 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!!

Any Questions? Check our website at www.pugetsoundaazk.org.

We look forward to seeing you this year in Seattle!

~ Peter McLane - PSAAZK Chapter Liaison



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AAZK Announces New Members

New Professional Members

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Lindsay E. Class, **Kansas City Zoo (MO)**; Jamie Palmer, **Saint Louis Zoo (MO)**; Lydia Lathem, **Alexandria Zoological Park (LA)**; Jennings Benner, **Baton Rouge Zoo (LA)**; Erin Holman, **Oklahoma City Zoo (OK)**; Diana Crocker, **Ellen Trout Zoo (TX)**; Marjorie Pepin, **Houston Zoo (TX)**; Marikay Altes and Katie Plaeger, **San Antonio Zoo (TX)**; Kari McKeehan, **Texas State (TX)**; Ginny Saiki-Desbien, **Wildlife World Zoo (AZ)**; Krista Wareing, **Reid Park Zoo (AZ)**; Stuart Wells, **Phoenix Zoo (AZ)**; Laurie Wearne, **Talking Talons (NM)**; Kathryn Gilmore and Crystal La Cour, **Los Angeles Zoo (CA)**; Sally Hunter, **San Diego Wild Animal Park (CA)**; Lori Komejan and Trisha Haddad, **San Francisco Zoo (CA)**; Ross Beswick, **Tree Frog Treks, LLC (CA)**; William Pendleton, **Liberty Middle School (CA)**; Tracy Cramer, **Woodland Park Zoo (WA)**; Ari Spector, **Cat Tales Zoological Park (WA)**; Kadie Singleton, **Wildlife Safari (OR)**; and Maxine Pigeon, **Toronto Zoo (Ont. Canada)**. We no longer print the names of those Professional Members who do not list their facility on their membership application/renewal (There were ten for April, May and June).

New Institutional Members

Safe Haven Rescue Zoo

Imlay, NV

Lynda Sugasa, Executive Director

Utica Zoo, Utica, NY

Elizabeth G. Irons, Executive Director

(Continued on next page)



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AAZK Announces New Members (cont'd)

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Mickey Ollson, Director
Wildlife World Zoo, Litchfield Park, AZ

Renewing Contributing Members

James R. Williams, Esq., Pound Ridge, NY
Kevin Shelton, Tampa, FL
Natalie Lohman, San Diego, CA
Thomas C. Roy, Southfield, MI
Ron Manseau, Detroit, MI
Bonnie Jacobs, Chicago, IL
Shirley Busch, San Diego, CA

New Commercial Members

Nebraska Brand, North Platte, NE
Lloyd Woodward, General Manager

Renewing Commercial Members

PetAg, Inc., Hampshire, IL
Darlene Frudakis, President and COO

Renewing Institutional Members

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Wheeling, WVA
Joe Greathouse, Curator of Animals

Tiger World, Inc.
Rockwell, NC

LeaM. Jaunakais, Director

Jacksonville Zoo & Gardens
Jacksonville, FL

Detroit Zoological Society
Royal Oak, MI
Ron Kagan, Director

Chicago Zoological Society
Brookfield, IL
Dr. Stuart D. Strahl, President & CEO

St. Louis Zoo, St. Louis, MO
Jeffrey P. Bonner, President

Cedar Cove Feline Conservation Park
Louisburg, KS
Larry Fries, Director

Topeka Zoological Park
Topeka, KS
Michael Coker, Director

The Tracy Aviary
Salt Lake City, UT
Timothy Brown, Executive Director

Wildlife World Zoo
Litchfield Park, AZ
Mickey Ollson, Director

Phoenix Zoo
Phoenix, AZ
Bert Castro, Director

Out of Africa Wildlife Park
Camp Verde, AZ
Dean and Prayeri Harris, Founders

Tregembo Animal Park
Wilmington, NC
Sherry Tregembo, Owner/Operator

The Toledo Zoo
Toledo, OH
Ann Baker, Ph.B., Director

Cleveland Metroparks Zoo
Cleveland, OH
Steve Taylor, Director

Exotic Feline Rescue Center
Center Point, IN
Joe Taft, Founder/Director

Kansas City Zoo
Kansas City, MO
Randy Wistoff, Director

Baton Rouge Zoo
Baker, LA
Phil Frost, Director

Tiger Creek Wildlife Refuge
Tyler, TX
Brian Werner, Executive Director

Amarillo Zoo
Amarillo, TX
Larry Offerdahl, Director Amarillo
Parks & Recreation

Denver Zoo
Denver, CO
Craig D. Piper, President/CEO

America's Teaching Zoo at Moorpark College
Moorpark, CA
Lori Bennett, Dean

Wild Things
Salinas, CA
Charlie Sammut, Owner

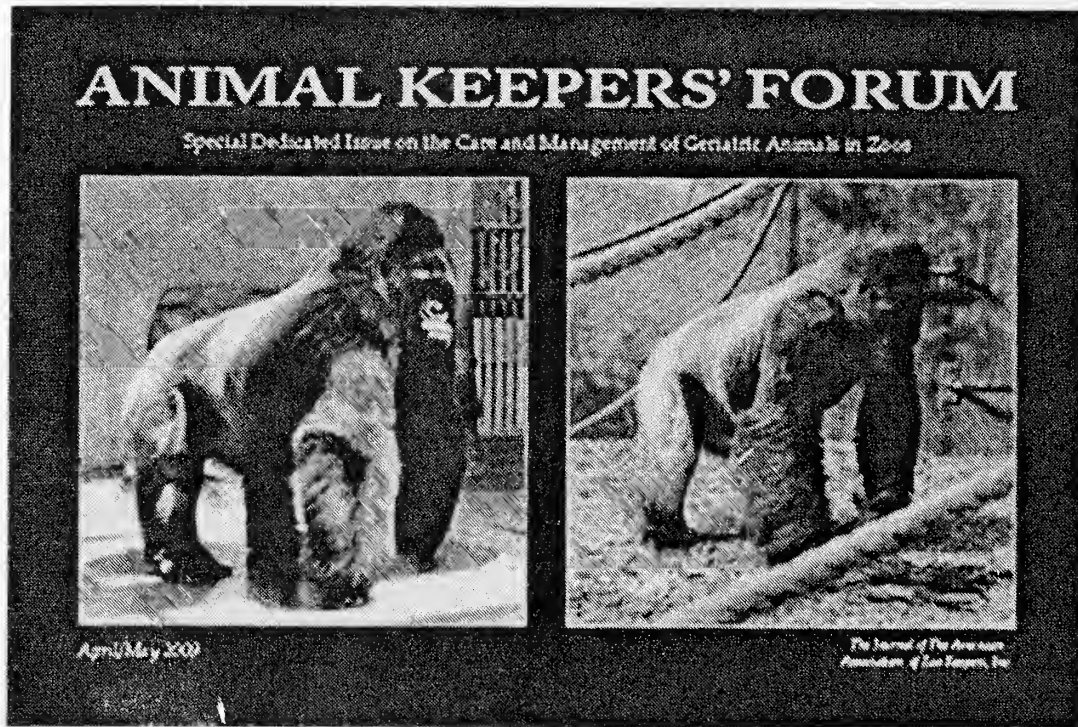
Cougar Mountain Zoo, Issaquah, WA

Point Defiance Zoo & Aquarium
Tacoma, WA
Gary Geddes, Director

Calgary Zoo Library
Calgary Zoo, Botanical Garden & Prehistoric
Park
Calgary, Alberta, Canada
Alex Graham, President & CEO

Greater Vancouver Zoo
Vancouver, BC, Canada

Special Double Issue of Animal Keepers' Forum Dedicated to the Care and Management of Geriatric Animals Available for Purchase



- From the President - Remembering the Golden Girls
- Acknowledgements from the Editor
- The Future is Now: New Strategies for Geriatric Care at the Oakland Zoo
- Some Thoughts on Veterinary Considerations on the Management of the Geriatric Zoo Patient
- Pachyderm Milestones
- The Oldest of the Old
- An Easy Way Out: PVC Ladder Assists Geriatric Animals
- The Old Hippo That Could
- It's a Geriatric Jungle Out There
- Joint Disease and Its Management in Captive Bear Species
- Never Too Late (Training a geriatric white rhino)
- Assiniboine Park Zoo's Debby the Polar Bear
- The Widower - Care of a Geriatric Bird at The National Aviary
- The Care and Management of Geriatric Gorillas in Captivity and The Role of Louisville Zoo's Husbandry Program
- Gravity and Hydrotherapy Procedures as a Way to Reduce the Possibility of Stiffening Joints in Elephants After an Injury
- A Public Relations Professional's Look at Geriatric Animals and Euthanasia
- Donna the Hippo is 57 years Old
- Using Cue Conditioning to Facilitate Voluntary Separation for Supplemental Feeding in a Geriatric 0.1 Scimitar-horned Oryx (*Oryx dammah*)
- World's Oldest Asian Elephant Lived to be 86 Years Old
- Some Considerations in the Care of an Elderly Red-Ruffed Lemur
- Collaborative Management and Interpretation of Arthritis in a Geriatric Giraffe
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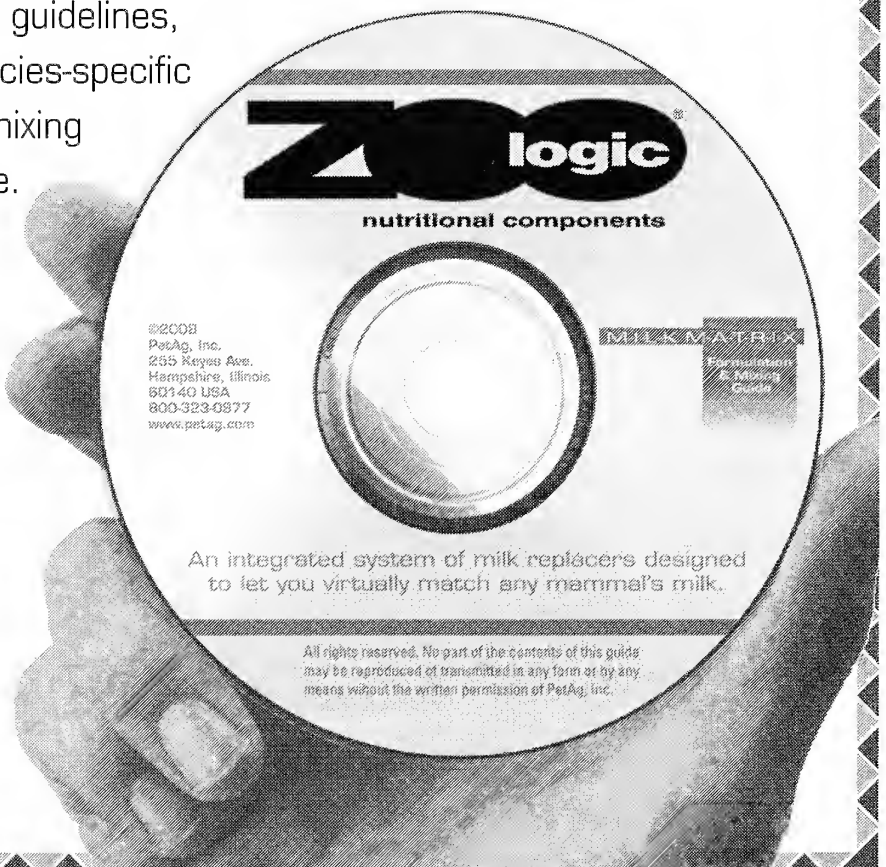
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“Bowling For Rhinos-Sponsored by Blue Rhino®”

Reminders for 2009

The 2008 Bowling For Rhinos events raised over \$273,000. This was down slightly from our best year on record \$316,000 in 2007, but still a great year. Well done!

Please see the BFR website <http://aazkbfr.org> and check to see that your Chapter's BFR contact info is current. Please email any updates to: ppear3@pear3.org. Reminder, there is a \$25 registration fee for BFR events which covers administrative costs so that 100% of all donation can go directly to rhino conservation.

The International Rhino Foundation will likely not be able to fund any Bowling For Rhino Trip winners this year. They sincerely hope that when donations increase, they will again be able to offer these trips again. The top 2 money raiser trips to Lewa in Kenya WILL continue as always. To be eligible to win, all funds must be received by **Sept. 1st**.

Mail to:

Patty Pearthree, c/o BFR, 318 Montibello Dr., Cary, NC 27513.
If you have any questions or problems, please call: 919-678-0449.

An additional way to raise funds for BFR is now available. Please visit: <http://www.motherearthfundraising.com> and select AAZK-BFR to be the recipient of 20% of proceeds. This is a site which sells eco-friendly products such as baked goods, coffee, cleaning products and fluorescent bulbs.

With the downturn of the economy, it is going to be one of our toughest years. At the same time, the need for funds is intense as tourism declines and poaching pressure increases. It will be a challenging year but one that we can meet if we work together.

Bowling for Rhinos is AAZK's biggest conservation effort. There are a number of people who are the true heroes in making AAZK's "Bowling For Rhinos-sponsored by Blue Rhino®" successful. Year after year, they tirelessly organize their event with little recognition. Their reward is knowing that they are helping to conserve wildlife worldwide.

In 2007, AAZK, Lewa and Anna Merz began recognizing these dedicated members by rewarding them with a chance to see first-hand the results of their dedication. Anna Merz has offered to host an individual and a companion, if they wish, for one week at Lewa Wildlife Conservancy in Kenya. The winner's expenses would be paid and the companion would need to be able to stay in the same room as the winner. The companion would need to pay travel expenses. Travel would occur in October.

Winners must be AAZK members in good standing. These trips will be awarded on an "as warranted" basis by the AAZK Board of Directors.

Rules for Honorary Bowling For Rhinos Trip Winner:

- Travel will occur the following year in October. This coincides with Anna Merz's trip to Lewa for the fall Lewa Board meeting.

- Anna will “host” the trip winners which entails paying all their expenses at Lewa (except souvenirs & tips) for one week.
- The cost for the trip winner’s plane fare, transport cost & hotel in Nairobi (roughly \$2,250) will be covered by Lewa. AAZK Inc. will hold back \$2,250 from the total BFR amount sent to Lewa in order to cover these costs.
- Recommendations for trip winners will be made by Patty Pearthree to the AAZK BOD. Patty may solicit recommendations from AAZK members in case there are deserving members of which she is unaware.
- Winner will sign a “holds harmless” waiver for AAZK, Inc. prior to travel.

Cindy Colling is the 2009 recipient of this trip. Cindy has help organize Detroit’s AAZK Bowling For Rhinos for nine consecutive years and raised over \$100,000 for conservation worldwide. A fellow AAZK member says “Cindy has done it all. She has raised money for the event, gathered sponsors/ auction items, served drinks at a local establishment as a BFR fundraiser and helped organize the silent auction for many years. She is always willing to step up to the plate to volunteer.”

Cindy’s tireless efforts have not gone unnoticed in the conservation field and so it is with great pride that I announce she be awarded with a free trip to visit Lewa Wildlife Conservancy in Kenya in October, 2010. She and a companion will be hosted by Anna Merz on their adventure to be first hand observers of the wildlife that benefits from Cindy’s hard work and dedication. Congratulations, Cindy for a job well done year after year. ~Patty Pearthree, National BFR Coordinatior

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*Training Tales Editors – Jay Pratte, Zoo Atlanta; Kim Kezer, Zoo New England;
and Angela Binney, Disney's Animal Kingdom*

Operant Conditioning 0.3 Ostrich (*Struthio camelus*) at the North Carolina Zoo

By

Dana Urbanski, Keeper II

North Carolina Zoological Park, Asheboro, NC

Purpose: Through training, safely perform a physical exam, vaccinate and draw blood on 0.3 ostrich without using restraint devices (baffle boards or physical restraint).

Background: The Forest Edge exhibit at the North Carolina Zoological Park houses three seven year old female ostrich (Redbird, Bluebird, and Yellowbird) in a mixed species exhibit with zebra and giraffe. The ostrich are accustomed to “gating,” or coming into designated holding stalls every morning. These stalls have a specially coated floor and are approximately 10ft. x 10 ft. [~3m x3m]. The ostrich are locked in the stalls between 30-45 minutes each morning to eat their grain while keepers service the exhibit. The ostrich are trained before they are released onto exhibit.

Training Background: In August of 2005 I began a training program with the ostrich. This was the first time a training plan had been implemented for these particular animals. The first task was to desensitize the ostrich by free feeding and then establishing the bridge while I was in the stall with them. Once they were calm being in close proximity to me, a training program was initiated. Training project forms and shaping plans were created. These forms help to organize objectives and target specific behaviors. Training sessions were 5-15 minutes long and were done three to four times a week.

“Hooding” became the first training project. Hooding the ostrich became top priority so that annual physical exams could be done without the use of baffle boards and physical restraint. The ostrich were much calmer and more relaxed with the hoods on. The stress level of the ostrich, keepers and veterinary staff was also reduced. The success of the hood training prompted new training projects such as targeting, stationing, steady, physical exam desensitization, scale training and currently, leg and foot desensitization. Through the implementation of these training projects, hoods are no longer necessary when doing annual physical exams simply because the ostrich have become accustomed to daily tactile training.

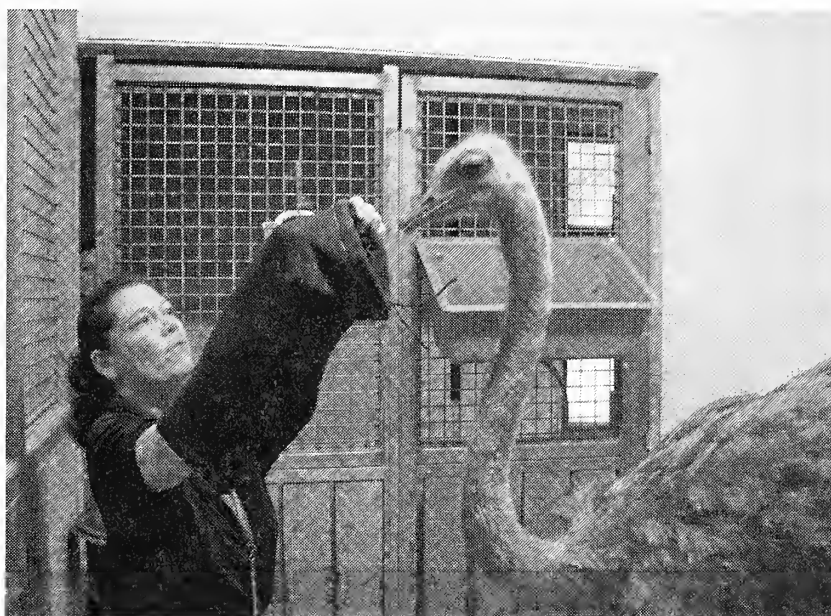
Training tools:

- 1) **Hood** – made from the bottom two feet of a dark colored sweat pant leg, with the wide end sewn with a draw string.
- 2) **Target** – a colored paddle approximately 3ft. long [~1m].

- 3) **Whistle** – dog training style with lanyard to wear around neck.
- 4) **Platform metal scale** – approximately 3ft. x 4ft. [0.914m x 1.219m] and 3” [7.62cm] off the ground with a black fatigue mat on top to help prevent slipping.
- 5) **Reward bucket** – a small plastic measuring cup or hip bucket that can be worn on the waist line and hang on the hip for easy access to rewards.
- 6) **Training forms and shaping plans** – forms that help organize training projects.

Trained behaviors:

1) **Hooding** – Place the hood over trainer’s right forearm with hand sticking out the wide end, when the ostrich comes down for a treat the hood can be pulled over the ostrich’s head using the left or free hand. The ostrich were reinforced with repeatedly whistling and praise. Once the hood was removed the ostrich received bonus apple rewards. This behavior took about three months of desensitizing and training.



2) **Targeting** – Using the paddle target, ask the ostrich to touch the target with its beak. Ostrich are extremely curious and this came easy to all three. Within a week they were all targeting.

The author training the hooding behavior with 0.1 ostrich at the North Carolina Zoological Park.
(Photo: Becca Wentz, Keeper I)

3) **Steady** – Using a paddle target as a visual focus item, ask the ostrich to steady. The ostrich should stand tall with neck straight up in the air and not peck at the target. I bounced back and forth with target and steady until both behaviors were learned. This behavior took three months for the ostrich to learn.

4) **Stationing** – Ask the ostrich to stand at a designated point in the stall, using a small plastic shovel and Wiffleballs® clipped to the caging as visible stations. This behavior proved to be more difficult for me since I had to run around to reward three ostrich at their stations. The ostrich learned this behavior in about two months, but they quickly became bored with it. I would like to reintroduce this behavior and use two people to offer rewards and have the ostrich station in a line along the stall meshing.

5) **Hands on** – Touch the ostrich on their wings, back, keel and neck. This was more of a desensitization project. The ostrich were rewarded for standing and allowing a keeper to touch a body part. A target was used to keep the ostrich focused. Two keepers were used to get the ostrich accustomed to having multiple people in their stall and one person could touch and one could reward. The words wing, back, keel and neck were used before touching the specific body part.

6) **Scale training** - Ask the ostrich to walk onto a platform metal scale and stand in the middle so a weight can be taken. After the weight was taken I had to ask the ostrich to walk out the door leading into a paddock so the next ostrich could be weighed. Scale training the ostrich took about three months. The scale was temporarily moved into a different stall for management reasons and it took the ostrich two weeks to relearn this behavior.

7) **Needle desensitization** - Using a blunt needle, press against the inner wing and say the word wing. This behavior was trained in five months and required two keepers.



0.1 ostrich trained for cooperative blood collection from a wing at the North Carolina Zoological Park. (Photo: Jay Peck, Keeper)

8) **Leg and foot desensitization** - This behavior also requires two keepers, one person to touch the leg or foot and one to give the reward. Starting at the thigh and working down to the feet, touch then put firm pressure on the leg or foot. This behavior is very useful when putting on new leg bands.

9) **Foot target** - Ask the ostrich to raise its foot and touch the target that is approximately 2" [\sim 5cm] above the foot. This behavior is currently being trained.

Training obstacles: Two training obstacles I encountered were finding the right bridge and reward. I quickly learned that using a whistle kept my hands free rather than fumbling with a clicker. After trying several food items, I discovered the ostrich really enjoyed apple pieces versus grapes or bread.

The next big hurdle was how to deliver the food reward. Bluebird and Redbird would take the apple pieces very gently from my open palm but Yellowbird did not. I started to throw the apple pieces on the ground for Yellowbird and this continues to work well for her .

Training all three ostrich also became a challenge. I started separating the ostrich into two or three stalls. This proved to be useful for several reasons. The ostrich learned shifting and did not panic being alone in a stall. Each ostrich learned behaviors at their own pace, so I could work on different behaviors with each bird when they were separated.

Discussion: Working safely around the ostrich is the most important aspect of training. Ostrich are large strong birds that can seriously injure a keeper. Fortunately the three females that are housed in the Forest Edge exhibit are very well tempered. They show seasonal aggression toward each other with mild threats such as hissing, raising head and neck, and flaring their wings but have not shown aggression toward any keepers. They tolerate up to four people in an enclosed stall and can be stalled separately without much behavioral sign of anxiety or stress. Ostrich usually wall hug or pace by the door when they are stressed.

Here at the North Carolina Zoological Park we are very fortunate to have a behavior management consultant who comes to the zoo once a week. All of the training plans and shaping plans are approved by the training consultant, supervisor and curator of the area. The majority of the training goals are for medical husbandry. Target training for the ostrich has proven to be a very effective tool for moving the birds past an object that is new to them or for having them focus on the target while changing a leg band. Scale training has been a tremendous success because we are now able to get monthly weights on all the ostrich.

The time of the annual physical exams was changed after a discussion with the Curator of Birds and zoo veterinarians. The decision was made to have the exams earlier in the year, coinciding with breed-

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ing season. This was more beneficial because the ostrich were more likely to sit down and tolerate more tactile conditioning.

Conclusion: Training began in 2005 when the ostrich were four years old.

Since that time the ostrich have had four annual physical exams without restraint and the veterinarians have been able to successfully draw blood from wing veins. The ostrich have responded well to the training and participate routinely. Training has been enriching for the ostrich and the keepers alike.

Acknowledgements:

Julie Grimes, Behavior Management Consultant
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Terry Webb, Curator of Mammals of the North Carolina Zoo
Dr. Ryan DeVoe, Senior Veterinarian of the North Carolina Zoo
Jennifer Ireland, Animal Management Supervisor of the North Carolina Zoo
Bill Parker, Jay Peck and Becca Wentz, Keepers of the Forest Edge exhibit

Behavioral Husbandry Committee (By Angela Binney):

I hope this paper will inspire more keepers to implement behavioral husbandry programs with their ostrich. This program proves that ostrich are in fact capable of learning (despite their less than scholarly reputation)! I admire the dedication and perseverance of the author and her colleagues at the North Carolina Zoo. The program illustrates the long term benefits of team work and consistency.

I would like to add a note about safety in reference to training male ostrich (note the animals in this program were all females). If you are a keeper of a male ostrich, you are probably already aware that males tend to be much more aggressive than females, especially during the breeding season. Therefore, this type of hands-on training is only suited to female ostrich. Male ostrich can be trained to shift into a holding area, which can increase safety for those who are forced to 'watch their back' while servicing habitats of male ostrich. Scale training through a fence is probably attainable as well (outside of the breeding season, I suppose). A visual barrier that blocks direct view of the trainer may decrease association of the keeper with the reinforcer. You don't want to do anything to lower the flight distance (if there is any) for a male ostrich, as this obviously could create a safety issue. The reinforcer for shifting and for scale training can be pre-positioned in a food pan prior to starting the session or dropped in when needed by a remote feeder. The idea is to deliver reinforcement to the bird without it looking like it is coming directly from the keeper. Of course every situation should be considered separately and any training projects should be evaluated by zoo management for potential safety issues prior to implementation. Stay safe and happy training!



New Database to Help Zoos Manage, Find Animals

It's a herd. It's a crane. No, it's the super animal database! And if testing goes well, this global software system will be soon coming to a zoo near you to revolutionize how captive animals are bred, cared for and perhaps even saved from extinction.

"It's not that the (animal) data doesn't exist; it's that the data is scattered all over the place," said Elisabeth Hunt of the Minnesota-based International Species Information System, or ISIS. "Being able to get it quickly, efficiently and accurately in one place is going to make a huge difference in keeping (endangered) populations from disappearing."

Hunt is the director of training and support for ISIS, which maintains records for more than two million animals, living and dead, held by more than 800 zoos in 74 countries. It is developing the next step in zoo record-keeping, which began with handwritten letters and log books, evolving to typewriters and punch cards. It more recently progressed to a range of computer software programs bearing intergalactic acronyms like ARKS, SPARKS and MEDARKS.

In December 2008, Hunt's team begins testing a new software system called ZIMS - short for Zoological Information Management System - that will bring together all of the information in these scattered systems. Programmers in India and the United States will write code and work out the bugs, culminating in a test rollout at select zoos in 13 months.

When completed, ZIMS will be a one-stop online shop, allowing zookeepers and aquarium administrators to click and surf for real-time information on animals in other facilities around the world. They can find suitable matches for animal mating. If one animal dies mysteriously, they can check for similar animals in other zoos and call to compare notes. Globally, zoologists can use ZIMS to better estimate how many newborns that zoos must annually produce to keep a given endangered species from sliding closer to the brink. ZIMS would be a quantum technological leap forward for studbooks.

Heavily relied upon by zoos and aquariums, studbooks are the personal dossiers kept for a particular species - a record of their vital statistics: birth and death dates, sexes, locations and parentage. Studbooks began more than 200 years ago but have only flourished for the last 80 years. There are currently more than 1,500 in use in zoos around the world. Right now, zookeepers, studbook keepers and veterinarians looking for different information on the same elephant would each have to look in a different database for it, said Laurie Bingaman Lackey of ISIS, who is considered the world's "studbook guru." With ZIMS, she said, "there will be just one entry for that elephant, and I'm looking forward to that."

At the Calgary Zoo, registrar Deanna Snell also can't wait, especially given that some of the current ISIS software is still DOS-based, the techno-equivalent of the Iron Age. "That's why there's urgency for ZIMS," said Snell. Snell tracks and ships about 500 animals a year for the zoo, which has 965 specimens, including Siberian tigers and Asian elephants. The present system can lead to hair-pulling frustration. Some studbook records may not be kept up in a timely fashion, and there can be a spider's web of governmental red tape getting an animal shipped over boundaries and borders. International shipments can take years, said Snell. Sometimes the animal dies waiting, or the animal it is to mate with gets too old.

And sometimes, says Snell, everything goes according to Hoyle only to be undone by the fickleness of amore. Like the female snow leopard they brought in from Bronx Zoo to mate. Love didn't bloom. It didn't even bud. If snow leopards slept in beds, there would have been two singles in that cage. "Everything seemed to be in working order and they just never bred," said Snell.

"We don't know why. It's just the way it is." (Source: *The DailyGleaner.com* 12/19/08 by Dean Bennett, *The Canadian Press*)

Introduction of a Young Hand-reared Japanese Macaque (*Macaca fuscata*) in a Group

By

Isabelle Berthonneau, Ethologist

Sabrina Ridel, TSA, Zookeeper

Suzie Dubuc, TSA, Zookeeper

Danny Menard, TSA, Zookeeper

Julie Séguin, Veterinarian, Research Coordinator

Patrick Paré Biologist, Director, Education, Research and Environment

Granby Zoo, Granby, Quebec, Canada

Summary

A young hand-reared Japanese Macaque has been gradually introduced into a social group from the age of three months-old at the Granby Zoo (Quebec, Canada). Little has been published on the subject. Many constraints were encountered during the whole process such as limited space, group conflicts, injuries, irregular observation time, and cold weather during winter. Overall, it took a little over two years for this young macaque to become part of the group. Extreme patience, commitment, great team work and a lot of imagination were the keys to this introduction.

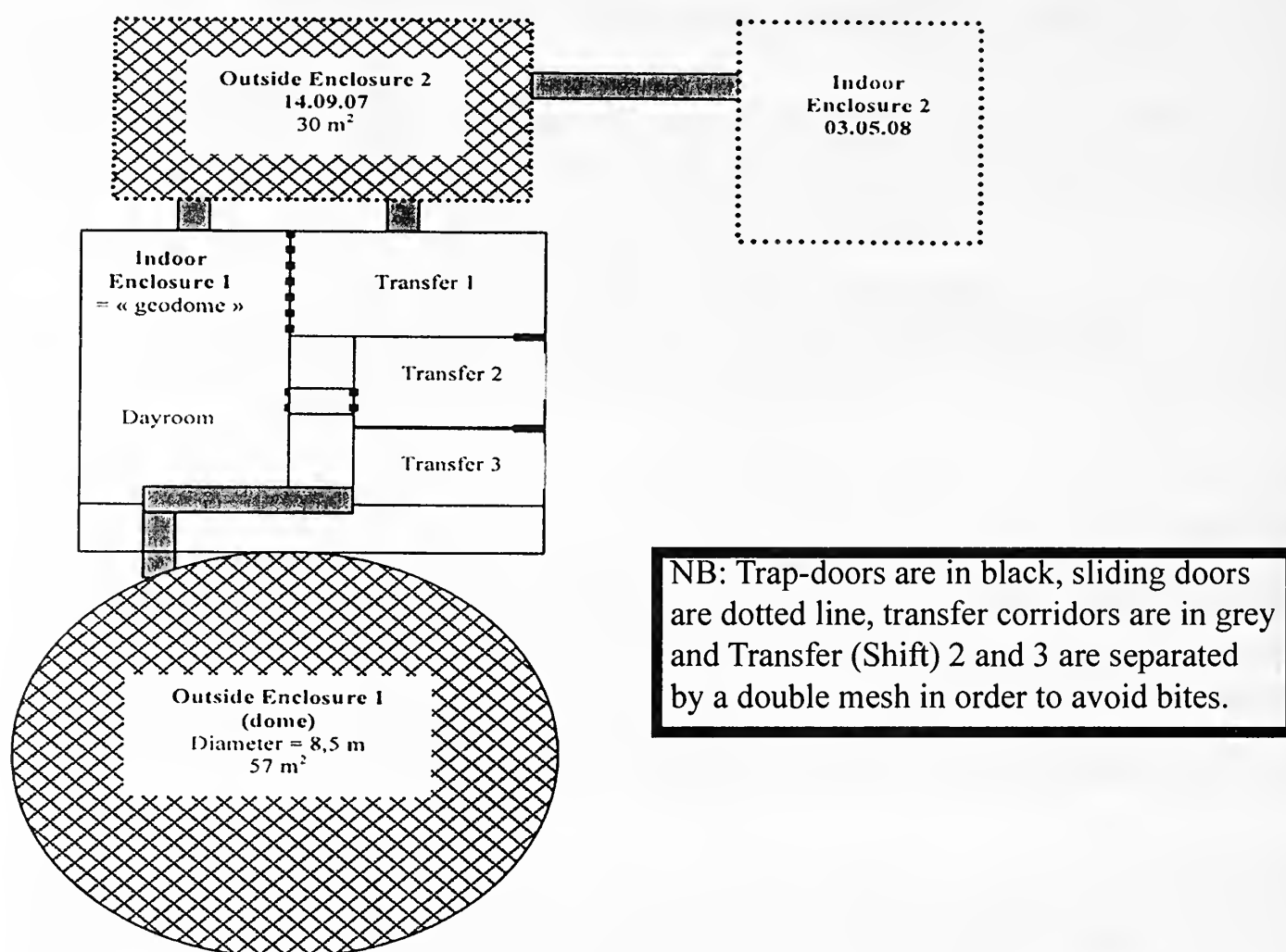
Remon's story

Remon was found shortly after his birth early morning on 16 June 2006, abandoned by his mother who was probably a primiparous female. At that time, the Granby Zoo had a group of 18 Japanese Macaques. Remon was quickly transferred at the veterinary hospital where he stayed one month in an incubator. He was given a blanket and a plush toy two-thirds of his height so he could hug them). After the first month, zookeepers made a progressive transition over three days from the incubator to his new cage. Remon was then moved to the macaque indoor quarters where he was kept in his cage close to the group without possible direct contacts. Visual, olfactory, and auditory contacts with the group were permanent. From that day on, human contacts were reduced as much as possible. At the end of July 2006, Remon was moved in a larger cage (4'x4'x4') placed, during the day, in a Shift Room 3 where the other macaques were not given access (Figure 1).

The first introduction period started when Remon was three months-old and lasted eight days. Iodine (who had lost her baby) was introduced to Remon with the hope she would accept him as her own. Lullaby and her baby Kitsi were introduced to Remon at the same time. Remon was quite destabilized at the beginning but eventually showed some interest, although both adults were not interested in him. Remon was then introduced successively to small groups with adult female Madjae, Iosa and her baby Miu; adult female Magia and Chilly; Ionica and her baby Shiwa; young female Zoe and male Yakou; then with all these individuals altogether. This period of introduction was stopped due to Remon's health problem (diarrhea). Therefore, Remon was moved back to the veterinary hospital for three weeks, and in September 2006 he was taken back to the macaque building; he was given access to the Shift Room 3 during the day to explore and exercise as usual.

The second introduction period started when Remon was five and a half-months-old, and lasted six weeks. Introductions to young Zoe and Yakou, with whom he had affinities, were positive. Remon showed affinity especially with Zoe, who was quite tolerant of him. Unfortunately, these introductions were stopped after Remon got his finger badly injured by Zoe or Yakou. This event showed his inexperience and was determinative in his learning of the macaque language. Medical treatments were done on site.

Figure 1: Enclosure of Japanese Macaques at Granby Zoo



When Remon was nearly nine months-old, social conflicts in the group had reached their peak and it was decided to divide the group in two smaller ones, Group 1 and Group 2, based on relationship and hierarchy levels. It was decided that Remon would be progressively introduced to Group 1 or Chianti's group (Table 1) because of the group's stability and individuals' good temperament. Group 2 was named Dom's group, Dom, being the dominant male. At that point, Remon had already been progressively introduced to all macaques in Chianti's group, except for the two adult males Linus and Chianti.

Table 1: Group 1 or Chianti's group composition. Remon was nine months old.

<u>NAME</u>	<u>SEX</u>	<u>BIRTHDATE</u>	<u>AGE-CLASS</u>	<u>STATUS</u>	<u>Previously Introduced to REMON</u>
Chianti	M	17/07/1992	Adult	Dominant	No
* Linus	M	04/07/1996	Adult	Subordinate	No
Iosa	F	21/09/1993	Adult	Dominant ++	Yes
Miu	F	06/05/2006	Infant	Iosa's daughter	Yes
* Ionica	F	10/08/1994	Adult	Dominant +	Yes
Madjae	F	06/07/2005	Adolescent	Ionica's daughter	Yes
* Shiwa	F	15/08/2006	Infant	Ionica's daughter	Yes
Lullaby	F	18/05/1996	Adult	Subordinate	Yes
* Kitsi	M	05/08/2006	Infant	Lullaby's son	Yes
Magia	F	21/06/1996	Adult	Subordinate +	Yes
Chilly	F	20/08/1993	Adult	Subordinate ++	Yes

* These are not part of the final group.

Methods used for the third step

From that point, the introductions occurred daily (various periods of the day, for duration of 50 minutes to four hours, sometimes two introductions on the same day) and were all observed two to three days per week by an animal behavior specialist hired by the Zoo. The presence of the ethologist notably facilitated the progression of the introductions. On the other days, zookeepers continued the introduction process and observations (depending on available time and other factors). Each period of introduction with new individuals was done under continuous supervision.



Remon was an abandoned infant at the Granby Zoo. (Photo: Zoo de Granby)

After several months, when it seemed

to be safe for Remon, observations were made intermittently, with the advantage of increasing the time of introduction. Introductions made with dominant macaques like Iosa and Chianti, the transition from continuous to intermittent observations was done with the help of cameras and a baby monitor. Thereafter, the animal care staff decided to quickly move on towards the final introduction with the entire group, for various reasons:

- Remon was weaned but still young, and should not be seen as a competitor by the older males.
- Our goal was to make Remon a socially competent macaque (e.g. displaying and understanding social behavior), and Remon was at the final development stage of his social behavior.
- Granby Zoo was fortunate to have in its group of Japanese Macaques a couple of babies of Remon's age. Most were weaned or soon to be weaned, thus less dependent on their mother and were keen to explore their environment and play with others, and the mothers were less protective of their babies. Play is essential for the development of young macaques, especially to learn social rules. It was a perfect timing for Remon, who could learn the social behaviors he needed to integrate the group.

The duration of introductions was increased gradually and introductions were as continuous as possible:

- To facilitate and accelerate the adaptation of the macaques to introduction periods with Remon
- To limit the separation time of the introduced macaques from the main group, thus to reduce stress and avoid hierarchy conflicts when they went back in the group

The periods of introduction were done indoors and close to the main group:

- To increase Remon's safety and facilitate human intervention, if needed
- The group could see Remon interact with its peers
- Individuals introduced to Remon could keep an indirect contact with the main group

Introductions had to be supervised in order to:

- Maximize Remon's safety
- Evaluate the behavior and progression of the dynamics between the macaques during each introduction
- Help the animal care staff to take the best decision possible in the short and longer term (e.g. which individuals to introduce, in what order, etc.).

Which individuals to introduce to Remon

At the beginning of this last introduction period, it was decided that one individual, considered safe and reliable to Remon, would be present at each introduction until Remon would definitively integrate into the whole group. Magia was chosen for the affiliative and protective behavior she displayed at times towards Remon. This female was without a baby, she was subordinate but respected by others. Even though she had few interactions with young macaques, she never showed aggressivity. It was difficult to predict to what extent Magia would socialize with Remon, but it was expected she would at least be an ally to Remon. Also, as Magia's rank was in the middle but stable, her separation from the group during the introductions with Remon would not greatly disturb the dynamics of the main group.

Lullaby and her baby Kitsi were the next to be introduced with Remon and Magia. Then Chilly was introduced, followed by Iosa and her baby Miu, then Madjae and eventually the dominant male Chianti. Contrary to the initial plans, Linus, Ionica and her baby Shiwa were not introduced to Remon. Even after many months living near the orphan (separated by a double mesh wall), both adults still displayed a lot of aggression towards Remon. Thus, they represented additional risks and challenges. In late December 2007, the dominant male from Group 2, Dom, died, causing a major destabilization in the group hierarchy. Early January, it was decided to take advantage of this situation to move Linus, Ionica and Shiwa into Group 2.

Introduction duration

Introductions occurred almost daily, indoors and lasted from 30 minutes to four hours depending on different factors :

- Supervision needed or not
- Presence of the ethologist on that day
- Outside temperature; on cold winter days (lack of space)
- Social conflicts amongst the macaques were higher when indoors
- Renovation work and other unpredictable event
- Number of introductions (1 or 2) done by day

Introduction location

- The first introduction was March 2007 at the age of nine months, at the beginning in Shift Room 3, where Remon was introduced to Magia.
- Then, Shift Rooms 2 and 3 were made accessible for the introductions. This left Shift Room 1 empty, while the rest of the group was in the dayroom.
- After one week, Chianti's group had access to the dayroom and Shift Room 1 to increase proximity with Remon and Magia.
- Two weeks later, five macaques were in the introduction group (Remon, Magia, Lullaby, Kitsi and Chilly) and were given access to all shift rooms while the rest of Chianti's group was in the dayroom.
- From fall of 2007, a second outdoor enclosure was completed. Chianti's group could then be kept in this enclosure while indoor introductions would take place in the dayroom. Auditory and some visual contact between the introduction group and the rest of Chianti's group could be maintained. As a result, the level of stress decreased during the introductions.
- Once Remon became familiar with the dayroom, the following introductions continued in the dayroom or shift rooms, the latter used especially to favor proximity.
- Then, from early 2008, the first introductions including Chianti started. The dayroom, Shift Rooms 1 and 2 were used. To allow Remon to escape, a wooden panel was designed to fit in the door between both transfers, with an opening just large enough for a young macaque like Remon to go through. Most macaques were part of each introduction, except for Iosa, Miu and Madjae, who were in Shift Room 3.
- In early spring 2008, with the return of warmer days and a fairly good stability within the group, introductions took place in the large outdoor enclosure, or dome.

Progression of the dynamics between Remon and the group

▪ **Magia**

From the beginning, Remon has shown a strong interest for Magia who, by DNA testing, was confirmed to be his biological mother. He put his trust in her and even stared at her when he needed protection. It took two and a half months to consider Magia safe for Remon and to keep them together without any supervision. As for Magia, she did not show much affiliative behavior, although she sometimes intervened to protect Remon even from Iosa, the dominant female.

▪ **Lullaby and Kitsi**

From the first introduction, Kitsi and Remon showed a strong affinity. With no doubt, Kitsi played a major role in relation to Remon's socialization and integration. Remon was mistrustful of Lullaby's threatening attitude and it took many months to display self-confidence in her presence. After eight months, Lullaby and Kitsi were added to the introduction group (Magia, Chilly and Remon) without any supervision. In October 2008, following SSP® recommendations, Kitsi was transferred to another zoological institution. This greatly affected Remon. However, Lullaby and Remon became closer and are now seen grooming each other.

▪ **Chilly**

This female is extremely quiet and, along with Lullaby, is today the adult who has the most contacts with Remon. Chilly was the first adult to be observed grooming Remon. Very early after the first introductions, she was left with Remon and Magia without supervision.

▪ **Madjae**

The first introduction with Madjae in April 2007 was probably premature. However, six months later, she was again added in the introduction group and her attitude with Remon was very positive. She was less impressive than an adult and had more experience than other younger macaques. She played a lot with Remon and at times became his ally. Madjae was the first macaque seen grooming Remon. After Kitsi left the Granby Zoo, Madjae became Remon's main play partner.

▪ **Iosa and Miu**

This introduction was the longest (about six months). At the beginning, Iosa, the dominant female, was quite aggressive with Remon, who remained afraid of her for months. Today, she ignores him while Remon, without being scared anymore, is still wary of her presence. Remon played sometimes with Miu, although not as much as with Kitsi and Madjae. He seemed to mistrust her (probably due to her dominant status).

▪ **Chianti**

Early January 2008, on the first introduction, Remon already knew Chianti was the dominant male; he often tried to draw his attention to display appeasement faces. Chianti saw Remon as a stranger, chasing him many times. It took a while for Chianti to accept Remon. Today, Remon understands Chianti's status but is not afraid of him anymore, often sitting next to him or following him. Remon does not hesitate to look for an ally with stares towards Chianti when a conflict rises. Chianti ignores him most of the time.

▪ **Group**

Within the group, Remon displays every social behavior that we could expect from a normal macaque with some differences.

- Remon has a lot of social interactions with young macaques (mostly play)
- Social interactions with adults are limited, but are getting more frequent
- Remon's grooming times are shorter than average in the group, although the positive side is that they occur!
- At times, Remon displays erratic behaviors, which for most of them can be associated with stress; sucking his big toe, turning on himself, or isolating himself during a quiet period, when the others rest by pairs.



Remon playing in the snow at the outdoor Granby Zoo exhibit. (Photo: Zoo de Granby)

Factors which facilitated the introduction

- Physical proximity between Remon and the group from the beginning
- Early physical contacts between Remon and other macaques
- Young individuals in the group
- Zookeepers' good knowledge of each macaque temperament
- During human interactions, the physical and verbal contacts were greatly reduced as well as a blanket and a fluffy lion toy.
- During the introductions, the observations of an ethologist assisting the animal care staff helped with the decision-making
- The possibility to create groups based on individuals' temperament and potential risk for Remon

- Strategies to minimize stress, such as creating two smaller groups from the large initial one, developing a daily introduction routine, and building two new enclosures (one indoor and one outdoor).
- Construction of a new dayroom in order to give more space for the two groups.
- Chianti, a dominant male, with a good temperament
- The Zoo commitment to use the resources to facilitate the introductions and the well-being of its macaques
- An incredible determination from everyone involved and the conviction that it was possible.
- Frequent team meeting.

Factors which interfered with the introduction

- Too little space available at the beginning
- Cold temperatures during winter which reduced time for Group 2 to stay outside, and time for indoor introductions
- Unexpected events such as health problems, injuries, and lack of space in the beginning

Conclusion: Since mid September 2008, Remon has been living with Chianti's group 24 hours a day. As a hand-reared infant, one would have expected him to remain isolated from the group, if not possibly killed. The outcome is brighter; Remon plays, grooms and is groomed, understands and displays all normal social skills. Although Remon has less interaction than other macaques of the same age, he is now part of Chianti's group. We have done everything we could to ensure Remon's safety and minimize the stress to each individual during these two years of introductions. As for his future in the group, we are quite confident Remon will do fine. For those who wonder if one day he will be an alpha male, we really don't know. Oh well, so what? As long as he feels safe and has a couple of buddies he can trust and play with. Not so bad for this courageous little guy.

Special thanks to: Karl Fournier, Coordinator of Animal Care; Marie-Josée Limoges, DMV, MVSc, Head, Veterinary Services; Brigitte Mercier, DMV, BScPht, Vétérinaire; Alain Fafard, Director, Animal Care & Conservation

The Formation of a Lion (*Panthera Leo*) Pride at The San Diego Zoo's Wild Animal Park

By *Kymerlee Nelson*

*Keeper in Heart of Africa, Collections Husbandry and Science
San Diego Zoo's Wild Animal Park, Escondido, CA*

Abstract

Following SSP® recommendations two, 3-½ year old, female, Transvaal lions (sisters) were bred to a 3-½ year old male. These pairings resulted in two litters (2.2 and 1.2) born four days apart. Following the behaviors of lions in the wild, the two litters, dams and sire were successfully introduced to form one large pride.

Introduction

Lions are the only truly social cats living in groups called prides. A pride is generally composed of a group of related females and several non-related males (although males are generally related to one another). The African lion is listed as vulnerable in the IUCN Red List and can be found in Appendix II of CITES. The AZA felid TAG set a target population size of 350 lions; both generic and pedigreed animals. Currently, there are 133 lions at 43 institutions managed by the Species Survival Plan (SSP®), with a target population of 150 cats (SSP® 2007).

Captive breeding is determined by genetic analysis of the population with a goal of retaining 90% gene diversity for 100 years. The captive pedigreed population descends from 52 founders and is tracked and managed by the species coordinator and SSP® Institutional Representatives. A Master Planning meeting is held each year where breeding recommendations and animal transfers are made.

In the wild it has been shown that females younger than 36 months rarely conceived (Hanby & Bygott, 1987) and that the mean age of first reproduction for females was between four (Bertram, 1975; Hanby & Bygott, 1987) and six and a half years (Packer *et al.*, 2001). In captivity this age is reduced and reproduction is seen as early as 18 months. Wild females generally come back into estrous when their cubs are 18 months old (about 10 months from the end of lactation) and her next litter can be expected to be born 24 months after the birth of any surviving cubs (Bertram, 1975).

Female pride members have been observed to come into estrus synchronously and therefore birth synchrony has been observed (Bertram, 1975; Packer & Pusey, 1983). The female typically births one to four cubs in a secluded area away from the pride. It is not until the cubs are four to six weeks old that their dams will introduce them to the pride (Bertram, 1975; Packer & Pusey, 1983; Pusey & Packer, 1994). At this time, the dams and cubs will often form or join a crèche, with cubs varying in age up to 150 days (Pusey & Packer, 1994). Cubs will also be introduced to pride males, but the males play no role in the rearing of the offspring. The sire's primary responsibility is to provide a secure territory for the females of his pride and their offspring.

The main advantage to forming a crèche appears to be the communal defense of the cubs against invading males (Pusey & Packer, 1994). Females of the same crèche are known to associate closely with each other. Generally all females are present with their cubs or all are absent, leaving the cubs unattended for short periods of time (Pusey & Packer, 1994). Females in a crèche will allow cubs of other females to nurse. There is evidence, however, that females can distinguish between their own offspring and other cubs, but are virtually indiscriminate with cubs of first order relatives (Pusey & Packer, 1994). Cubs wean at six to eight months of age, but will begin eating meat at two to three months (Bertram, 1975; Pusey & Packer, 1994); although cubs remain dependent on their mothers for two

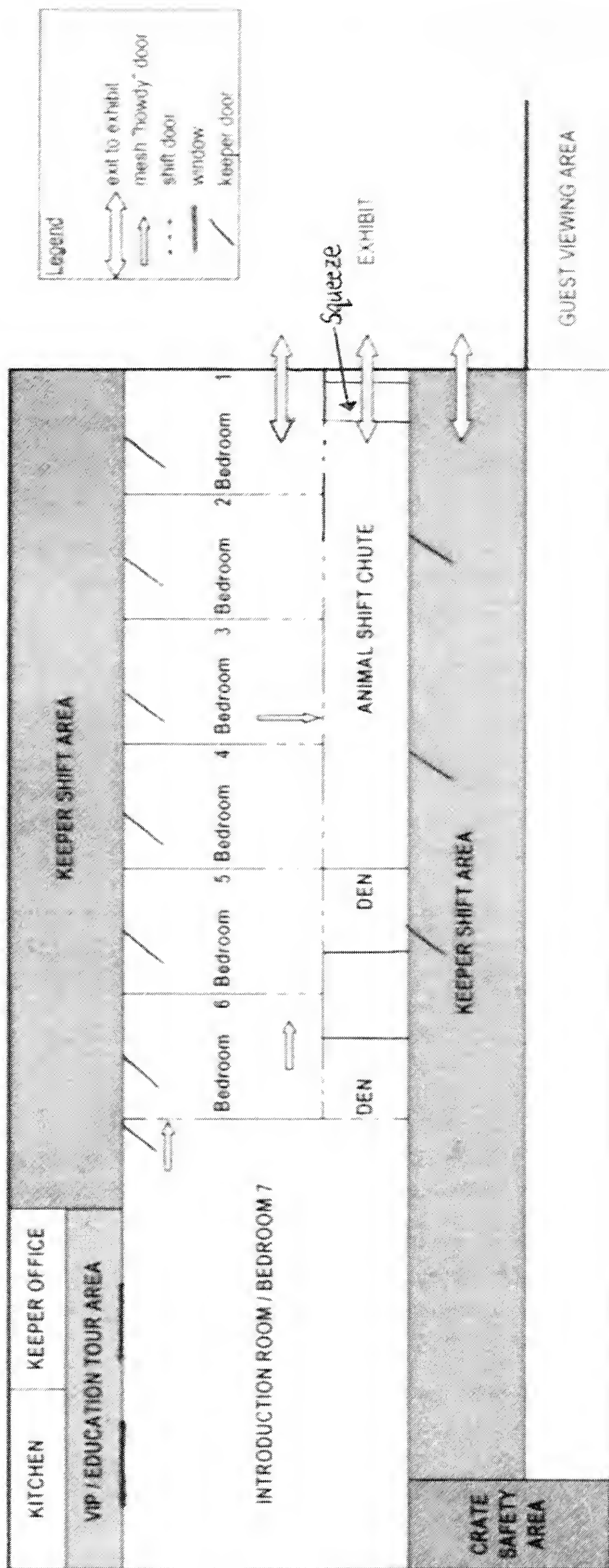


Figure 1: House Diagram

years (Bertram, 1975; Pusey & Packer, 1994; Packer & Pusey, 1997).

Average age of dispersal from the natal pride is two to four years for males (Pusey & Packer, 1987) but males as young as 13-20 months may be forced out as a result of a pride takeover (Packer & Pusey, 1983) and no males were observed with their natal prides past 65 months (Hanby & Bygott, 1987). Most females are integrated into their natal prides but for those who emigrated all had left by four years of age (Hanby & Bygott, 1987; Pusey & Packer, 1987).

Methods and Results

Following SSP® recommendations two, 3-½ year old, sibling female, Transvaal lions, Mina and Oshana, were bred to a 3-½ year old male, Izu. These pairings had previously resulted in Oshana giving birth to 0.2 on 16 May 2006 and Mina to 2.1 on 19 July 2006. The females were separated from their litters on 14 July 2007 due to aggression between dams and cubs. Soon thereafter, Izu bred Oshana from 18-20 July 2007 and Mina from 20-22 July 2007, resulting in pregnancy for both.

The adults remained together during gestation. However, keepers separated the females individually overnight, starting on Day 105 (counted from the first observed day of breeding) for Oshana and Day 104 for Mina. Each lioness was provided with two rooms and a birthing den (see Figure 1).

Oshana's den measured 51.1"l x 60.5"w x 63"h [1.297m x 1.536m x 1.60m] and Mina's den measured 82"l x 60.5"w x 63"h [2.08m x 1.536m x 1.60m]. The dens were separated by a distance of 79" [~2m] and, initially, the metal mesh sides of each den were enclosed with plywood. This ensured each den was a private area and prevented visual contact between the lions. Cameras were installed in both dens (Q-See model QS1CC2 Night Vi-

sion Color Video Camera) and adjacent rooms (Swann Twin Value Pack 2 camera video surveillance) so the cats could be observed with minimal disturbance. The data was recorded on a DVR (Q-See model QSNDVR8/16R).

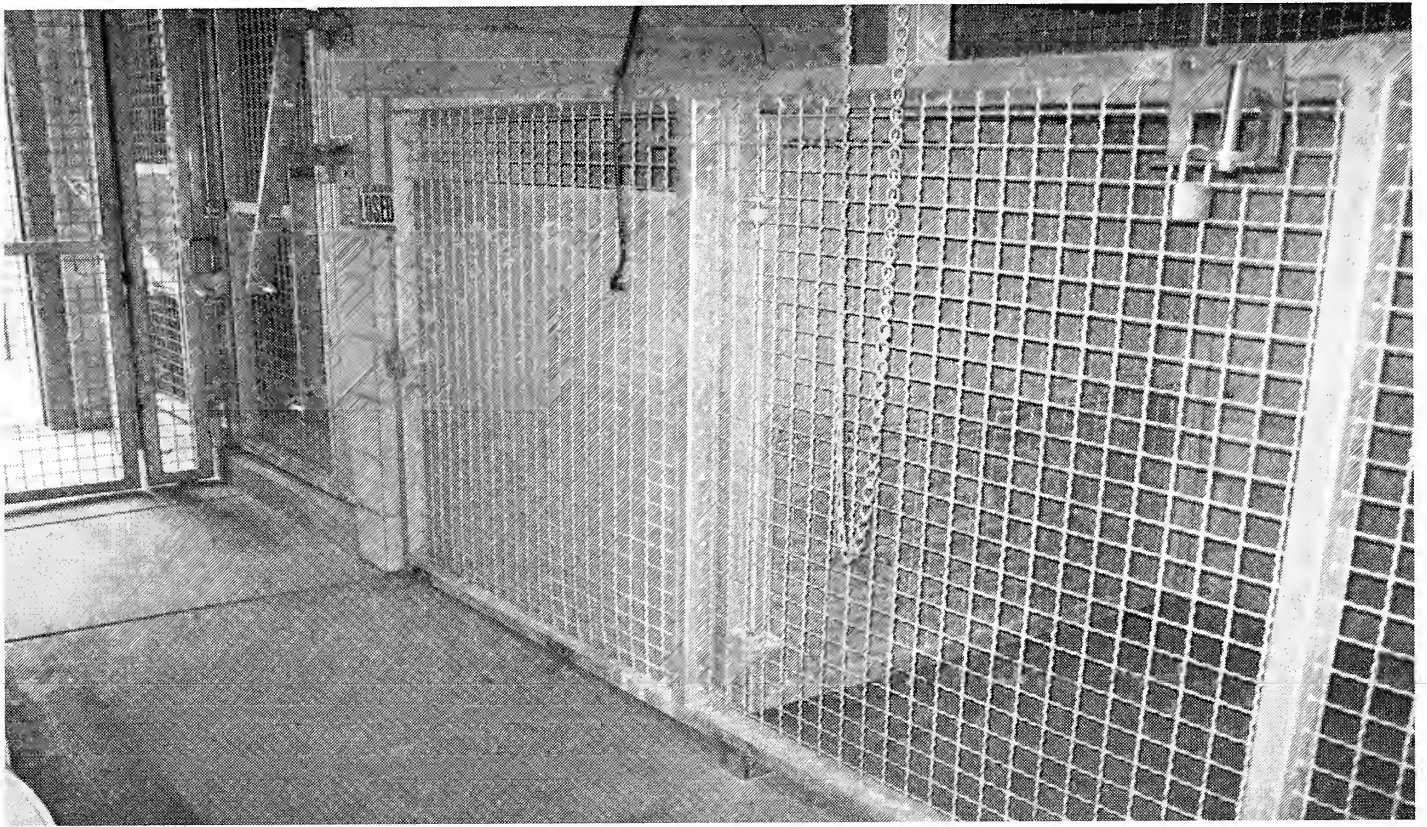


Figure 2: Photo of the den set-up

Behavioral indications (pacing, vaginal grooming, vaginal discharge) prompted the keepers' presence on the birth nights. Consequently, keepers observed both lioness' give birth in their respective dens. Oshana gave birth to a litter of 2.2 on 2 November 2007 and Mina to 2.1 on 6 November 2007. Oshana kept her cubs in the den for the first two days while Mina moved her cubs out of the den within the first few hours. Both dams were very interested in each other's cubs and spent a lot of time observing them through the mesh howdy doors (see Figure 1).

Keepers observed dams and cubs from a distance until 15 November, at which time the keepers separated them in order to determine their sex. The initial interaction between the cubs and keepers was brief, lasting only three minutes. The dams were given rabbits in an attempt to divert their attention from the cubs during this separation. Oshana consumed the entire rabbit, but Mina appeared to be affected by this initial separation as she ate only the head of the rabbit. In order to desensitize the cubs for handling during vaccinations, keepers separated them from the dams on a daily basis. At first the separations lasted only a couple of minutes, but were extended to 10 minutes as the cubs got older and the dams relaxed. These separations also allowed us to get regular weights on each cub to monitor their growth. Initially weights were taken by a keeper holding a cub and standing on a scale. When the cubs became too difficult to handle without a high risk of injury to the keeper, weights were taken using a scale built into the squeeze cage at the exit of the house to the exhibit (see Figure 1).

On 29 November the plywood panels surrounding the dens were removed. Oshana became highly agitated by this change and began a frantic pace pattern with no regard to the safety or position of her cubs. It was decided the wood surrounding her den would be replaced. Mina adjusted well with this new set-up and the cubs' sire, Izu, was given visual access the following day.

In preparation for physical introductions, keepers shaved a patch of fur in a unique location on each cub on 18 December. The shave marks allowed for quick and accurate ID's of all cubs. These shavings were refreshed every couple of weeks until the cubs could be reliably distinguished from one another. The first physical introduction of both dams and all seven cubs occurred on 19 December,

when the cubs were 46 and 42 days old. The mesh door separating the two groups was opened as both females waited on either side. Oshana immediately went into Mina's den to investigate. Keepers observed no aggression by either female, in fact, both groomed all cubs, indiscriminate of maternity. Interestingly, Oshana called all of the cubs into one of the dens and lay down with them while Mina lay in the adjoining room. After approximately four hours, all cubs seemed restless and the groups were separated. These morning introductions continued for 18 days until 5 January 2008, when the groups were joined as a permanent crèche.

With the crèche complete, Izu was given visual access to his *entire* family on 6 January. Housed in Room 3 of the house (see Figure 1), with a mesh door separating him from the chute, he watched as all of the cubs and dams were released into the chute. This time Oshana appeared to be very comfortable with the situation, remaining calm and greeting Izu through the mesh.

The crèche was given access to the exhibit on 24 January. The exhibit measures 33,000 sq. feet [~ 0.75 acres] and is contained by either a solid barrier (glass or concrete) or by a 15x15 ft. [4.57m x 4.57m] dry moat (see Figure 3). The entire exhibit area is surrounded with electrified wires to discourage passage across this boundary. In order to allow the cubs to familiarize themselves with the area and the dams to show the cubs the boundaries, they were permitted outside for approximately two to four hours per day. These limited outings lasted 11 days.



Figure 3: Aerial View of Lion Camp

The last step was to physically introduce Izu and complete the pride. Finally, on 5 February, he was introduced to his family. A brief 10-minute introduction in the lion house showed Izu to be unfazed by the cubs and both females were very excited to be reunited with their mate. This resulted in a complete pride of 10 lions! Even though Izu showed a great deal of patience with his cubs on exhibit, the staff wanted to ensure no aggression developed while in the confines of the lion house. For this reason, it was decided Izu would be given his own bedroom each evening.

The complete family pride remained together until the cubs were almost one year old. Beginning in mid-October 2008 keepers made several observations of Izu sternly reprimanding his male offspring and keepers worried he may start to show a sexual interest in his daughters. For these reasons the cubs were separated from their parents on 30 October 2008.

The cubs were last picked up on 17 February when they were 3 ½ months old. We did continue to have physical contact until 28 February when the cubs were given their final set of vaccinations. Keepers continued to work around the cubs until 6 May, when the cubs were six months old. At this point the cubs were becoming more assertive and were beginning to boldly approach keepers in the area causing the protected contact policy to be implemented.

Discussion

Introducing the cubs at such a young age proved to be an excellent approach. With the previous litters of 2006 being two months apart in age, there was a large size difference between the cubs. In addition, Oshana was extremely protective of her litter. Therefore, the two litters were not introduced to each other until they were 10 ½ and 8 ½ months old, respectively. Due to aggression issues, the dams were not involved in the new grouping.

Keepers felt it was beneficial for the dams to have visual access to each other through the entire birthing process of their second litters, if they desired. In fact, Oshana watched with great interest as Mina gave birth. Mina removed her first cub from the den, into the bedroom, shortly after birth. Oshana was very calm with its presence. By 8 November, when Oshana's cubs were six days old, they were moving freely in and out of the den into the adjacent Room 7. By allowing Mina access to Room 6, with a mesh gate separating her from Room 7, Mina had her first visual of Oshana's litter on 16 November. Two days later Mina carried all her cubs into Room 6 so they too could watch Oshana's cubs. With both dams and all cubs comfortable with one another during visual access, it alleviated any fears the dams would become aggressive, once physical contact was allowed.

As the physical introductions progressed, the biggest concern was whether the cubs were nursing regularly when they were all together. When the cubs were let together each morning they were very excited and immediately started playing, this explosion of activity caused the dams to become restless and not settle for the cubs to nurse. Keepers often observed cubs readily nursing after the respective litters were separated and dams settled. It was suggested by other institutions that the cubs be separated nightly until they were yearlings to ensure adequate nutrition. Observations of the nursing attempts of the cubs while together showed they were indiscriminate of the female and this prompted keepers to allow the daily introductions to progress. Keepers theorized that by leaving the cubs together full time it would eliminate the initial frenzy of activity and allow the lions to relax. Within a week all cubs were nursing normally, in fact keepers would often see one female move to a separate room, leaving all cubs to try to nurse from the other!

After close consideration of several methods that could be used to identify the cubs, keepers chose to shave patches of fur since it was a long-lasting mark. The shave marks were also relatively easy to refresh and did not stand out to our guests. When the cubs were still congenial enough to be handled, it was simple to shave them but as they grew more independent the squeeze cage was used to restrain the cubs, in order to refresh the mark. Having a quick and accurate method of identification proved invaluable when it came to monitoring the cubs' individual growth and development.

As the lion cubs matured and spent more time on exhibit, the biggest management struggle keepers faced with the 10-member pride was bringing them off-exhibit. The trained adults knew that by coming inside they would be rewarded with the carnivore diet. In fact, they are usually waiting by the exhibit doors, leading into the lion house, at the end of the day. Unfortunately, there was little motivation for the cubs to come inside, despite their dams' best efforts to call them, until they began eating the meat diet at four months old. A recall whistle was blown and a high value item, such as a bone or a rabbit, was given as a reward for the cubs coming into the house. By mid-April the cubs were reliably coming inside, when called, to be fed the regular meat diet.

In addition to the seven cubs born to Izu, Mina and Oshana, an eighth cub was born to different parents on 6 December 2007. This single cub had to be hand-raised from two weeks of age due to a

lack of maternal care. Keepers wanted to ensure that this single cub was socialized with other lions as he grew and matured. Starting 8 February 2008 cubs were separated from the pride for short periods of time to act as playmates to this hand-raised cub. These periods of separation of dams and cubs gradually lengthened in time reaching 12 hours on 16 May and 24 hours on 11 June. Keepers feel that a soft separation was beneficial to ease the stress on all individuals at the time of the final separation but need not last almost nine months. A period of seven days proved to be sufficient with the previous litters of 2006.

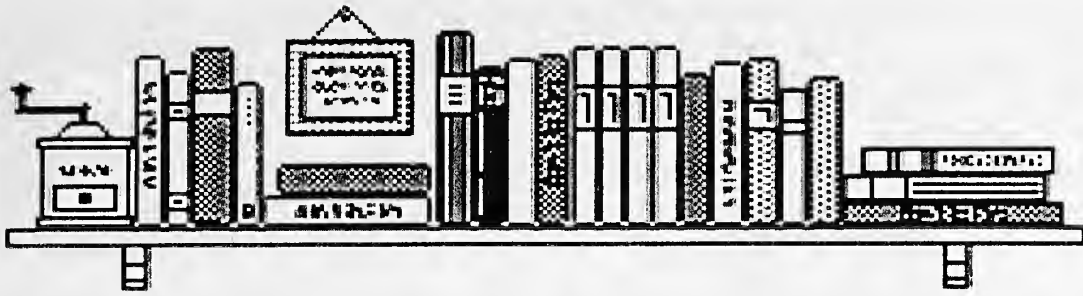
Although the complete family pride remained together for only a short time, park staff are excited that the introductions were a success. This large pride allowed keepers to educate and illustrate to the guests some of the inner aspects of lion society.

Acknowledgements

I would like to thank all members of the HOA team for their advice and support of this paper, in particular Janet Lawhon for her help in summarizing the events of 2006. I would also like to thank Autumn Nelson and Karen Barnes for their research of other facilities and their guidance and direction of the formation of the pride at Lion Camp.

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Book Reviews

The Center for North American Herpetology announces the April 2009 publication of the **Sixth Edition of Standard and Common Current Scientific Names for North American Amphibians, Turtles, Reptiles and Crocodilians**

By Joseph T. Collins & Travis W. Taggart

Color covers Softbound iv + 44 pages

ISBN 0-9721937-1-5 Cost: Free (see below)

The first edition of this widely-used compilation, published in 1978, listed 454 species (or kinds) of native amphibians, turtles, reptiles, and crocodilians, and was quickly adopted nationwide as a source for common names for these North American (north of Mexico) animals, names that could be consistently used worldwide to avoid confusion, both in writing and speaking.

This new sixth edition lists 621 kinds of native amphibians, turtles, reptiles, and crocodilians in the United States and Canada, an increase of 167 species (27%) since the first edition in 1978 and an increase of 232 species (37%) since 1956, which demonstrates clearly how much the diversity of these animals in North America was previously underestimated.

Also of interest in this sixth edition is the updated section on alien species, those creatures that are not native, have escaped, or have been released in North America, and have established breeding populations in the United State or Canada. Most significant of these are the large Indian Python and Boa Constrictor, which are now breeding residents of southern Florida. These constricting serpents reach large sizes, and can have a serious impact on native wildlife, as well as small livestock and neighborhood pets.

The standard common names in the fourth edition (1997) of this list were used exclusively in the well-known *Peterson Field Guide to Reptiles and Amphibians of Eastern and Central North America* (third edition expanded, 1998, Houghton Mifflin Co., Boston), and the standard common names in this sixth edition will be adopted for the forthcoming next edition of the Peterson Guide, which has the widest distribution of any book ever written about these creatures worldwide. Use of standardized common names achieves stability, comprehension, and ease of use throughout the United States and Canada, and thus has the potential to create closer cooperation among biologists across the nation, so that they may work together in the common cause of conserving and protecting these often-neglected creatures.

Users of the CNAH common names list are reminded that in this edition, as in the previous fifth edition, no space is wasted with citations for verifying or justifying scientific name changes or any speculative discussion based on unpublished data. The web site of The Center for North American Herpetology, which is the most frequently-accessed academic herpetological web site in the world, already contains all such citations for changes in this sixth edition and demonstrates once again that CNAH leads the herpetological community worldwide with its ability to organize and deliver in a timely and modern (electronic and print) fashion the scientific information so necessary to our profession. The CNAH website can be accessed at <http://www.cnah.org>

Single copies of **Sixth Edition of Standard and Common Current Scientific Names for North**

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The Center for North American Herpetology is a non-profit 501c3 foundation established in 1994 and headquartered in Lawrence, Kansas.

Frogs and Toads of North America

By Lang Elliott, Carl Gerhardt, and Carlos Davidson with a Foreword by Joseph T. Collins

Published March 2009 by Houghton Mifflin Company

ISBN: 978-0-618-66399-6

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“About a hundred species of frogs and toads are found on the North American continent north of Mexico, providing a diversity of seasonal calls that are fascinating to most people but often difficult to sort out. Lang Elliott, Carl Gerhardt, and Carlos Davidson have addressed this situation in an exemplary fashion, with excellent recordings and exquisite photography accompanied by an informative and organized text, all bundled together in a book and compact disc that will provide hours of enjoyment for people who like to spend their time outdoors.” ~ from the Foreword

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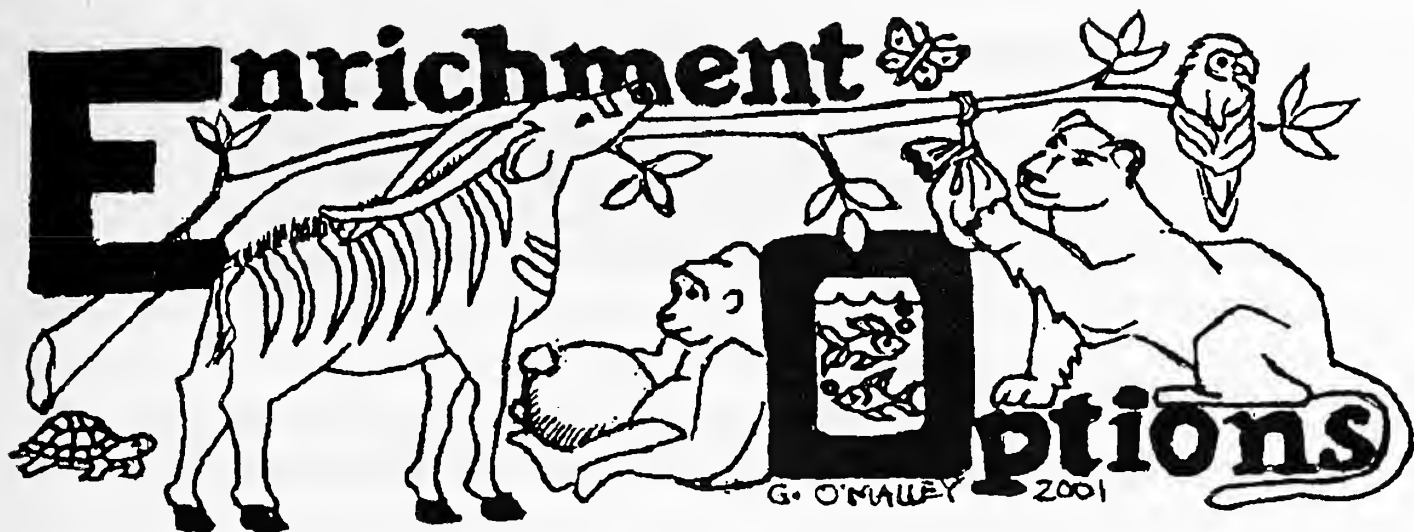
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EO Editors - Julie Hartell-DeNardo, Oakland Zoo and Ric Kotarsky, Tulsa Zoo & Living Museum

Enriching the Days of Our Elephants

By Gina Gambertoglio, Elephant Keeper, Oakland Zoo, Oakland, CA

One of the biggest challenges of caring for elephants is coming up with non-food related, indestructible novel enrichment objects. Although it is difficult to come up with barrels, and feeders to increase foraging time, it is more difficult to come up with objects that can keep an elephant interested for long periods of time without the calories! An even larger challenge is to come up with something that is not destroyed after just one use. Over the course of the past year my fellow keepers and I have come up with some new and very successful ideas.

Tire Barrels of fun: Thrashing but Lasting

Some of the most engaging enrichment toys are something the elephants can smash and spar with. The problem with most of these toys is that they are destroyed after a single use. We have found that some of the most successful play toys can be as simple as tires that are also easy to provide. The combination of two plastic 50-gallon drums and a large tractor tire has managed to make it through multiple play sessions daily, and after a month, is still standing.

Materials Needed: 2- 50 gallon plastic drums, 1 tractor tire, 15 feet ¼ inch chain, 4 ¼ inch clevises, hole saw bit and power drill (see Diagram A)

We called a local tractor company and they were more than happy to donate as many tires as we wanted. The plastic barrels were also donated. We drilled holes through both barrels lying horizontally and strung chain through both barrels to connect them through the tire. The barrels are placed through the tire center, each sticking out about half way. The barrels were also reinforced in two spots by chain and clevises to hold them together to prevent them from coming out of the center of the tire. The hardest part about this toy was hanging it. Since the tire was very heavy and we wanted to hang it about elephant head height we used a backhoe tractor to get the toy high enough to hang from the top of our shade structure. We hung it at about head level and in the corner of two beams of the shade structure, so besides being able to throw it, they could smash it as well.

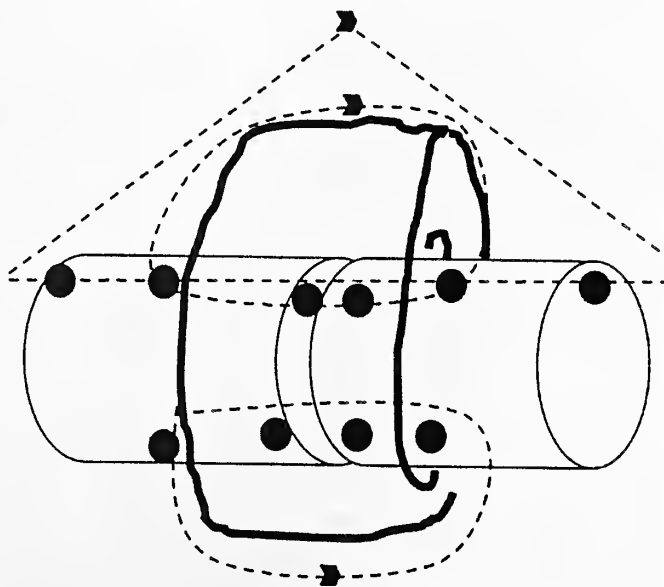


Diagram A

Two of our more playful elephants, Donna, 29, and Osh, 14, have had play sessions lasting up to a half hour. In the morning when we are working on foot care, Osh usually starts a play session with the tire. Backing up with his ears out and head up Osh charges at the toy and smashes it against the beam. We think what makes this enrichment item so successful is the combination of the plastic and the rubber tire together; the elephants smash the plastic barrels, while the tire gives a nice bouncy indestructible rebound. The barrels lasted for about two months; which is a long time considering there is a play session almost every day.

Elephant Chime or Musical Back Scratcher?

When looking for new enrichment ideas it is important to consider all senses. In this case we were looking for an interactive sound enrichment option and came up with a design for a giant elephant chime.

Materials Needed: Aluminum plate (2.5 ft x 8 in), 5 aluminum cylinder pipes in different lengths (4 ft, 3.5 ft, 3 ft, 2.5 ft, 2 ft) (4 in. diameter, ¼ in. thick), 5 feet ¼ inch chain, 15 ¼ inch clevises, drill bits and power drill (see Diagram B)

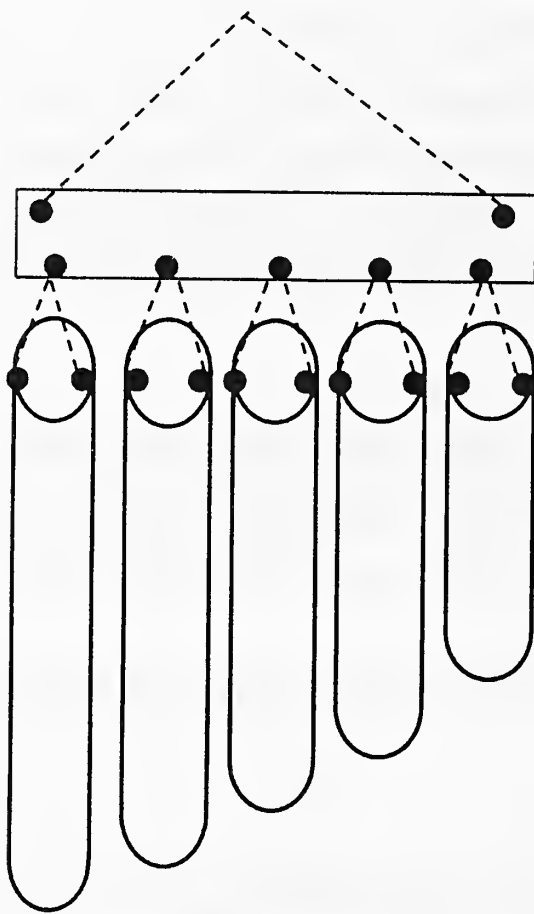


Diagram B

Assembly was easy but slightly time consuming due to drilling multiple holes through metal materials. Five holes were drilled in the plate as well as on both sides of each aluminum pipe. The aluminum plate is used to hold the chime cylinders. Using clevises and chain, attach each cylinder to the plate. It is important to drill the holes in the steel plate close enough so the pipes clang together with ease. We recommend hanging the chime high enough so the elephant can walk through it. Our chime is hung on two cable pulleys on our shade structure. Other metals can be used for the pipes, but aluminum is very light and carries sound well. We also created one for the exhibit and hung it from tree stumps stuck in the ground.

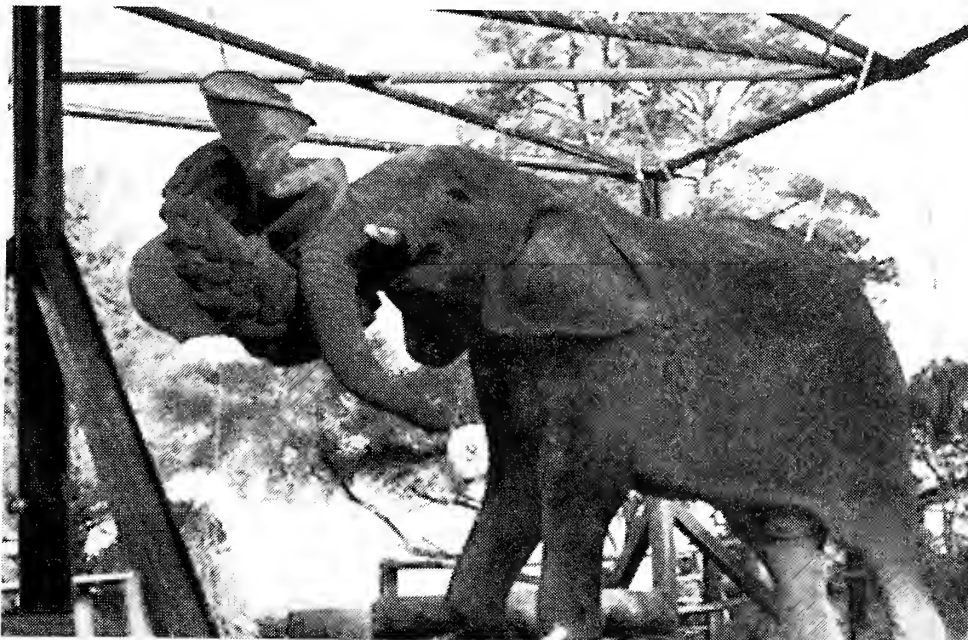
The main idea with this enrichment was that it would be something the elephants would touch and hit every day to hear the noise it produced. The outcome has been very successful and almost every morning we hear the chimes being hit from afar. The elephants will hit the chimes during play sessions, but what was not expected was that they also walk straight through the chime and use it as a back scratcher!

Mylar® Mirror on the barn wall

This enrichment was great because it served a cognitive purpose, something that can be difficult to achieve with elephants in a simple way requiring minimal effort. Mylar® is a very shiny reflective type of paper and can be found online for about \$20. Using this paper was more practical than trying to use an actual mirror, because it is cheaper and non-breakable. The biggest challenge was setting up the paper so there were no ripples in the image. We set up the Mylar® on the divider door in the barn stall with duct tape and a ladder. The paper might not be good for multiple uses if it has been damaged or touched a lot by the elephants, because it will crinkle and ruin the image on the paper. A piece of Plexiglas® could be put over the paper to make it last longer and might help make the image smoother. The only safety concern is if the elephant ripped the paper down and ingested it.

Materials Needed: 2 mil Mylar® (25 ft x 54”), duct tape, ladder, wall surface

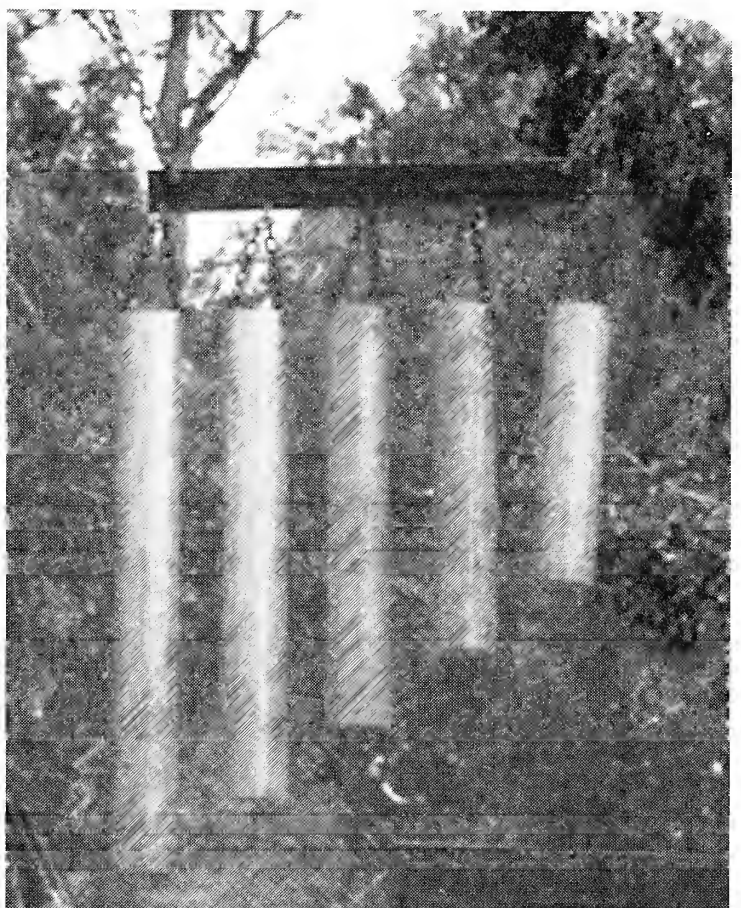
Interestingly, each elephant had a different response; although I am not sure any of them realized they were looking at themselves. We took pictures and recorded each introduction. Donna ripped the paper down but thrashed it around with no interest of eating it. Osh was very hesitant to go near the paper once he saw the reflection. He put his ears out and then turned and very quickly walked away. We had to encourage him with food treats to come back and check it out again. Lisa approached the Mylar® with caution and ears out and swiped at it with her trunk and eventually stopped showing interest. When M’Dunda approached the Mylar® she was not comfortable stepping inside the barn and would only come within ten feet of it. She took some food treats and encouragement to step inside the stall but would only stay on the opposite side of the stall. Donna was very aggressive toward the Mylar® reflection. Several times Donna charged and hit the Mylar® with her head and trunk. The divider door was open slightly and when Donna charged it she would then look behind the door, almost as if she was



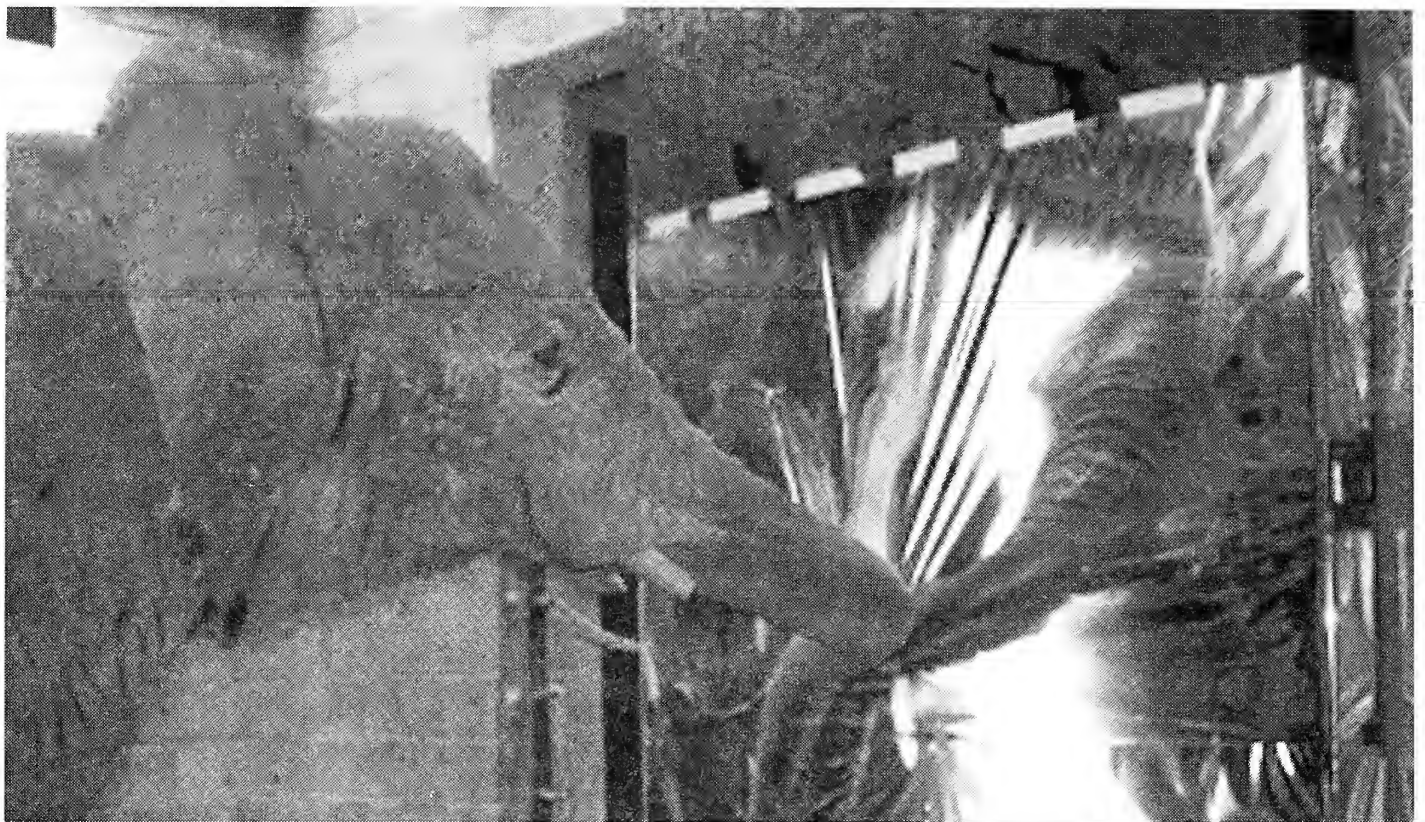
looking for the elephant on the other side. Each session lasted for at least a half hour, and if done every few months could be novel each time.

At left: The tractor tire/barrel enrichment is rebuilt each month.

At right: The windchime enrichment not only provides audio stimulation, but can also serve as a backscratcher for the Oakland Zoo elephants.



*Photos provided by the author
and the Oakland Zoo*



Several of the Oakland Zoo's elephants were hesitant about approaching the Mylar® mirror enrichment device, but Donna charged it regularly and even looked behind the door as if looking for another elephant.

Covering all of the senses is part of building a unique and thriving enrichment program. The elephants at the Oakland Zoo have a daily enrichment schedule which focuses on food and scent. Items such as fresh grass, eucalyptus bark, and teaspoon sized dabs of peanut butter, relish, jelly, etc. and spritzed perfume and air freshener are hidden around the exhibit. Because the three enrichment objects listed above are time consuming to build, and cost more money they are built once a month. Also, to keep them novel, they should only be given every once in a while. Of course these items are open to modification and improvement. We hope the ideas in this article can be used by other zoos to help enrich elephants and to encourage the building of enrichment without food. Whether these ideas are used, or have been used before, we encourage all elephant keepers to continue to share and search for new enrichment ideas, as it is one of the most rewarding challenges of the job.

(Ideas appearing in this column have not necessarily been tested by the editors for safety considerations. Always think ahead and use good judgement when trying new ideas. You are invited to submit material for the Enrichment Options Column. For guidelines for articles acceptable for this column's format contact the editor at akfeditor@zk.kscoxmail.com. Drawings and photos of enrichment are encouraged. Send to: AKF/Enrichment, 3601 SW 29th St., Suite 133, Topeka, KS 66614-2054, USA. Eds.)

**The 7th Annual Turtle Survival
Alliance Symposium on Chelonian
Conservation and Biology
August 5th - 8th, 2009
St. Louis, Missouri**

The Turtle Survival Alliance (TSA) is pleased to announce their 7th Annual Symposium, hosted by the St. Louis Zoo. This event is the largest gathering of non-marine chelonian biologists and captive breeding specialists in the world. We understand that these are tough economic times and are making an effort to keep costs to a minimum. This meeting will be an extraordinary value, with an icebreaker, zoo tour, awards banquet, BBQ and auction, and breakfasts included in the cost of registration. Double rooms will cost under \$100.00/night.

Mark your calendars and register early for substantial savings. Discounted rates are available to TSA members, so join today! For details on membership, registration, program and events, please visit our website at <http://www.turtlesurvival.org>

The venue is the Hilton at the Ballpark in downtown St. Louis and they are dedicating an entire wing of the hotel to us, so when you leave your room the elevator opens at the TSA meeting. The hotel will be honoring group rates both before and after the meeting if you are interested in extending your stay in St. Louis.

Those interested in speaking should contact TSA Program Co-Chairs Chuck Schaffer at

chelonian1@aol.com or Andrew Walde at awalde@hotmail.com For vendor information, or to volunteer, please contact Conference Chair Lonnie McCaskill at lonnie.mccaskill@disney.com.

**Call for Student Poster and Paper
Presentations**

TSA is committed to engaging our student members in our conference venues. We realized that conference attendance can be costly to our student membership, therefore, we have lowered the student membership to \$25 and conference registration fees to \$75. In addition, we have arranged for "student" rooms at the conference hotel which will accommodate up to four students for each room; students will share the hotel expense with the other students in the room. Educators and other chelonian enthusiasts: this is a perfect venue for students to present their research at a professional conference in a friendly atmosphere. Visit our website for more information at <http://turtlesurvival.org/> or contact Beth Walton at walton.beth@gmail.com.

Registration and hotel information will be up on the TSA website soon, so be sure to check for updates and announcements. The program will be international in scope but will feature several North American sessions including Graptemys, Southwestern Kinosternids and Dermatemyis. Wet labs and hands on workshops will again be offered. Special thanks to our conference title sponsor, ZooMed, who every year works closely with the TSA to insure a special event.

Pre-Registration Rates:

(Effective through July 5, 2009)

Member \$125.00 Non-Member \$175.00
Students/Minors \$75.00

Late Registration Rates:

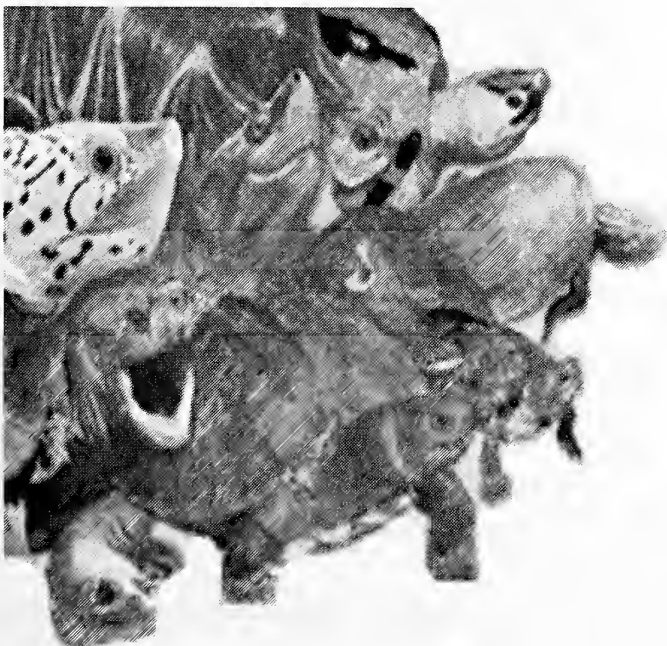
(Effective July 6th, 2009)

Member \$225.00 Non-Member \$250.00
Students/Minors \$150.00

Registration Daily Rates

All Attendees: \$75.00 per day

We hope to see you there!



Feeling Boxed In? You're Not Alone ... Aquarium Octopus Really Gets Into His Lunch

If bad news about the economy and the environment have got you feeling boxed in lately, and you're hungry for a change, you're not alone.

The New England Aquarium's young octopus, named Truman, recently squeezed his 30-pound, 7-foot-long body into a 14-inch square acrylic box in pursuit of food. The Houdini-like maneuver isn't unheard of, but it's rarely seen, aquarium officials said.

Truman's caretaker, biologist Bill Murphy, said he intended to feed Truman with a couple of crabs placed inside a six-inch square clear acrylic cube and he locked it. He then placed that cube inside the larger 14-inch square cube with a different latch. Murphy then placed both cubes inside Truman's tank. Placing food inside a locked box is used as an "enrichment activity," aquarium officials said.

Octopi are very intelligent and they like the mental stimulation, so Murphy uses three different sized boxes with three different locks that are puzzles for Truman to open in order to get his food. "I start the octopus off with the small box and once he has mastered that lock I switch to another box, and once he has mastered each individual box, I put a box inside a box to keep him active and challenged," Murphy said.

Usually Truman is nocturnal and eats at night, but on this particular day he was too impatient to undo the lock on the larger box and he squeezed his eight muscular, tentacled legs and large head through a tiny two-inch hole in the exterior box. Octopi are able to do this amazing shape changing as the only hard part on their bodies is their small beaks.

Quite literally boxed into a 14 x 14 inch space, Truman then enveloped the smaller box and worked to undo that latch to try to get to his lunch. After 30 minutes, his hasty strategy had not worked. Visitors saw one leg appear from the box and then another until Truman emerged into the larger tank in his normal full size.

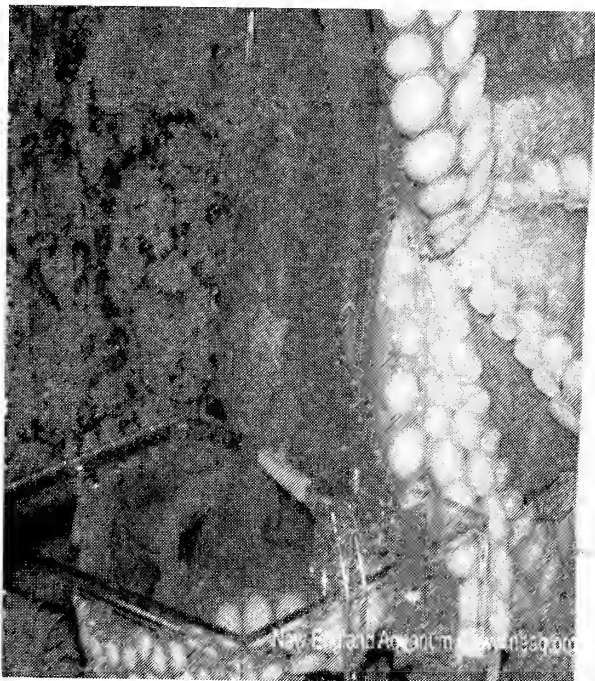
Source: TheBostonChannel.com 3/5/09

Did you ever just have one of those days?



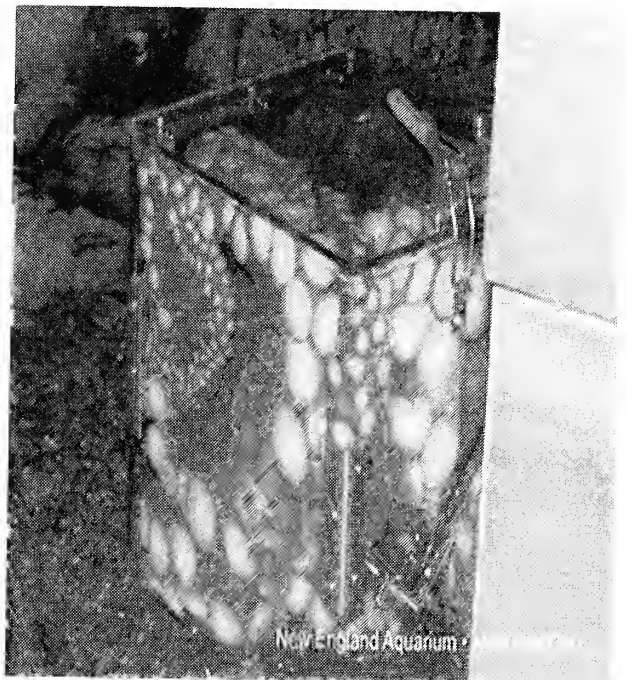
At left: The cube containing Truman's lunch is placed inside a larger cube to make him work for his meal.

At right: Truman begins investigating the cube to see how he can get at the crabs inside.



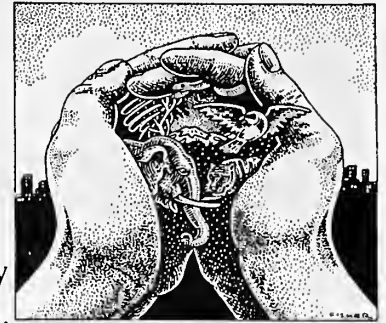
At left: Truman begins to maneuver his seven-foot-long body into the enrichment cube.

At right: Once in the acrylic cube, Truman discovers he had no room to maneuver to open the smaller cube containing his lunch.



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

Gray Wolf Off the List - After being hunted to near extinction, the gray wolf (*Canis lupus*) was added to the Endangered Species List in 1974. Thanks to conservation efforts since that time, the gray wolf now numbers near 4,000 in the Great Lakes region, 1,300 in the Rocky Mountain states, and between 8,000 and 11,000 in Alaska. These numbers have led the US Fish and Wildlife Service to remove the gray wolf from the Endangered Species list. Ed Bangs, wolf recovery coordinator for the USFWS said, "The populations are viable, they are in great shape, they have extreme genetic diversity and so the Endangered Species Act did its job to bring wolves back."

Hunting of gray wolves is now allowed in several states, although it is still illegal in parts of Wyoming where the wolf population has not recovered. States such as Idaho and Montana plan to resume hunting, but no hunting has been proposed in the Great Lakes Region. Bangs assured the public that conservation groups would be closely monitoring the gray wolf population in coming years. However, environmentalists are already outraged and have vowed to sue to reverse the de-listing.
Source: AFP, 5/6/09

Lone Pig in Lockdown - In a country where pork products are illegal, it can be difficult to find a pig. Indeed, you can no longer see any pigs in Afghanistan, although one still exists in the Kabul Zoo.



The pig, named Khanzir (Pashtu for 'pig'), has been placed in quarantine due to the public's concerns about swine flu. The director of the zoo has said that Khanzir is healthy and enjoying a quarantine space with plenty of windows and fresh air. "The only reason we moved him was because Afghan people don't have a lot of knowledge about swine flu, and so when they see a pig they get worried and think they will get ill," said director Aziz Gul Saqib. Saqib also expressed interest in obtaining a companion pig for Khanzir at a later date saying, "it is a dangerous and difficult time to get a new pig for our pig." *Source: BBC News, 5/7/09*

Obama Administration Works to Fix the Damage - Former President George Bush made some last minute changes to the Endangered Species Act but now the Obama administration is working to fix some of that damage. During the last days of his term, George Bush undermined the power of the ESA by passing a law that would allow federal agencies to take action that may affect an endangered species without first consulting scientists at the U.S. Fish and Wildlife Service and the National Oceanic and Atmospheric Administration. For decades, this consultation was automatic, but under Bush's rule an agency could skip this step if it decided, on its own, that no species would be harmed. Thanks to Secretary of Commerce Gary Locke and Secretary of the Interior Ken Salazar, biologists at these two agencies must once again be consulted before other federal agencies can undergo projects such as building dams or roads that could potentially be harmful to endangered species.

However, causing great concern among conservation groups is Secretary Salazar's refusal to overturn another last minute Bush decision. The "polar bear rule" reduces the protection for polar bear habitat because it exempts any activities that occur outside the polar bear's habitat. This is a problem because polar bear habitat is directly impacted by activities that take place out of the bear's natural range every

day - namely, greenhouse gas emissions and global warming which affect the polar bear's summer ice. Salazar's refusal to overturn the rule means that corporations can continue their activities with no recourse under the Endangered Species Act for how their behavior might affect the polar bear. The Administration argues that greenhouse gas emissions will be handled under other government regulatory bodies and not the Endangered Species Act. However, conservation groups such as the Center for Biological Diversity say that "addressing greenhouse gas emissions under the Endangered Species Act is no different than addressing any other pollutants that have been effectively addressed under the Act for years, such as DDT and other pesticides that had severe impacts to the bald eagle." Officials at the center intend to challenge the polar bear rule in court.

While conservationists are pleased to see the Obama administration addressing some of the damage caused by former president Bush, they are disappointed that the "polar bear rule" still stands. *Source: Center for Biological Diversity 5/8/09*

Struggling Economy Impacts Zoos - The Wildlife Conservation Society is just one of many zoo organizations having to make tough decisions during this economic downturn. The Society, which has been running five facilities in New York for 114 years is "undergoing restructuring" to try and cut costs while upholding the integrity of its zoos. Part of this restructuring plan includes closing exhibits at the world famous Bronx Zoo. The World of Darkness and the Rare Animal Range exhibits will be closed and the animals will be sent to other institutions. The World of Darkness currently houses such species as nocturnal primates, bats, and porcupines; while the Rare Animal Range houses deer and guanaco. These two exhibits were up for review as they have high maintenance costs and relatively low public interest, according to reports.

The WCS asserts that they are maintaining the integrity of their institutions. This summer the Bronx Zoo will see the opening of a Hyena exhibit and an Aardvark exhibit, while the Central Park Zoo will open a new Snow Leopard exhibit. The Society goes on to say, "our cost savings will be achieved in part with operational cuts, not with any compromises as far as the care and safety of our animals." *Sources: Associated Press, Bronx Zoo website 5/1/09*

Over \$300,000 to Go Toward Reptile and Amphibian Conservation - Secretary of the Interior Ken Salazar has announced that a grant in the amount of \$319,833.00 will be awarded to a multi-state project that will help with reptile and amphibian conservation. The federal grant, which will be led and coordinated by the Missouri Department of Conservation, will aid a project that includes 14 states. The project seeks to evaluate reptile and amphibian species that may have vulnerabilities to climate change and priority habitats. "There are still so many gaps in our knowledge of amphibians and reptiles," said Priya Nanjappa, Amphibian and Reptile Coordinator for the Association of Fish and Wildlife Agencies. "This grant will help provide the basic tools and resources necessary at a national scale, which will assist management of these species at a local scale." *Source: Fish and Wildlife Service, 4/24/09*

No Stimulus for Zoos, with an Exception - Earlier this year a \$787 billion stimulus bill was passed in order to help ameliorate America's struggling economy. Among the wording of the bill is a provision that stops state and local governments from spending any money on "casinos, golf courses, swimming pools, aquariums, and zoos."

This part of the stimulus package came as a huge blow to zoos across the country, many of which are run by state and local governments. Zoo directors say the decision is unfair, especially because zoo projects meet stimulus goals: projects that are "shovel-ready", educate children, raise environmental awareness, and create jobs.

However, one zoo is not having this problem. The National Zoo, because it is a federal entity, is not exempt from stimulus funds. In fact, the Smithsonian Institution plans to spend approximately \$11.4 million to make improvements in the zoo visitor center, the vet hospital, and the big cat complex.

Contrary to feeling slighted by this decision, other zoos are using the National Zoo to further their argument for stimulus funds. "Zoos and aquariums don't belong on that list now, and they never did belong on that list," said Steve Feldman spokesman for the AZA. Feldman went on to say that the projects at the National Zoo have "no difference between those projects and projects in St. Louis or Sacramento or Boise, Idaho." Despite the economic downturn, admission numbers remain steady at the nation's zoos and aquariums, as the public looks for entertaining, family-friendly places close to home. Many zoos across the country are being forced to close exhibits, lay off employees, and lower their operational costs due to budget cuts and the lack of stimulus assistance. *Source: propublica.org, 5/9/09*

Illegal Hunting Curtailed by Robots - Across the United States, Fish and Wildlife departments are using technology to help thwart illegal hunting. Robot animals, which look and act like the



Photo: Custom Robotic Wildlife

real thing, have helped officers catch poachers in multiple states over the last several years. The animals are molded out of fiberglass and then wrapped in actual animal hides obtained by officers through illegal hunts. The bodies are equipped with radio controlled motors which allow nearby wildlife officers to move the animal's head, ears, and tail from a remote location. In addition, reflective eyes are used to help enhance the believability of the animals. Officials have created decoy wild turkeys, moose, white-tailed deer, and black bear. Some conservations estimate that one animal is illegally poached for every one animal

that is legally hunted. The Humane Society of the United State's Wildlife Land Trust donates the expensive robots to law enforcement agencies across the country. Bob Koons, executive director, says the decoy operations are worth it and have "been extremely successful." *Source: National Geographic News, May 7, 2009*

200 Species of Frogs Found in Madagascar - Biologists have discovered over 200 new species of frogs in Madagascar. However, a new study shows that political unrest on the island is having an impact on conservation efforts there. "The political instability is allowing the cutting of the forest within national parks," said researcher David Vieites. Madagascar, the world's fourth largest island, is an important area because of its extreme biodiversity. More than 80% of the mammals there are found nowhere else on earth. The discovery of over 200 new species could double the number of amphibians globally. Almost a quarter of the newly discovered species have not been found in unprotected areas, illustrating the need to keep the areas currently under protection safe. *Source: Reuters, 5/6/09*

Zoo Launches Breeding Program to Save Scottish Wildcats from Extinction - The UK's first captive breeding program for Scottish wildcats [*Felis silvestris*] is about to be launched at an English zoo amid fears the animals could be facing extinction.

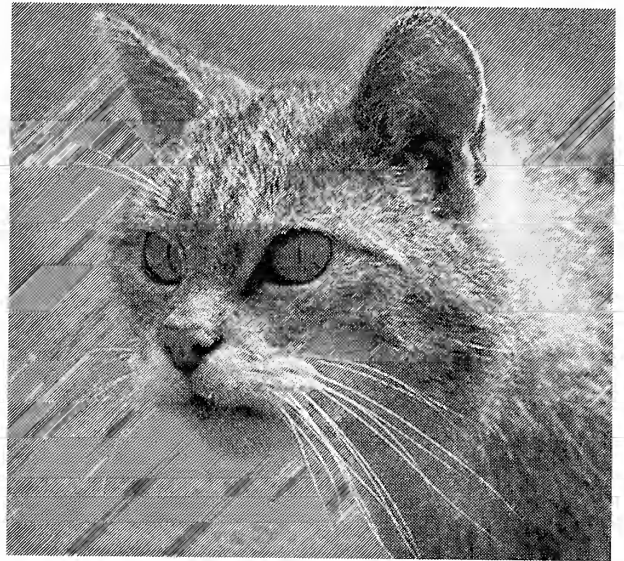
Port Lympne Wild Animal Park in Kent is to recreate the wildcats' natural habitat in an enclosure designed to encourage the animals to hunt and breed as they would in the wild. The breeding cats will not be on display to the public. Human interaction will be kept to a minimum, making it easier for them to be returned to the wild. They will be fed through hatches and trap doors to encourage them to forage for food.

Their enclosure, which will feature a copse of trees and a running stream, will initially house a pair of wildcats and any offspring. As the animals multiply, separate enclosures will be built to accommodate up to five breeding pairs.

Scotland is the last mainland stronghold of the wildcat, which had disappeared from England and Wales by 1862. The animals have died out as a result of breeding with stray domestic cats, disease and the vanishing of their natural habitat. It is estimated there may be fewer than 400 left in the wild.

Neville Buck, who is leading the project at the park near Hythe, said: "This is a way of helping us safeguard the future of the species."

The project will be funded by donations. It is the brainchild of the Aspinall Foundation, which runs the park and has successfully reintroduced lowland gorillas to the Congo. The group intends to take on one endangered species a year. Several other wildlife parks have expressed an interest in the programme which, if successful, could be extended across the UK. (Source: *News.scotsman.com* 5/4/09; *ZooNews Digest* #591)



Scottish Wildcat

(Photo courtesy of British Wildlife Centre)

Rare Species Born in Spain - Two rare species have recently been born at zoos in Spain. A white rhinoceros (*Ceratotherium simum*) has been born at the Zoo Aquarium in Madrid. The calf is the first in Spain to be conceived by artificial insemination. The 65-kilo male calf was born to a 12-year-old first-time mother just 20 minutes after her water broke. A little over an hour later, her baby was on its feet and having its first feed, after more than 500 days of gestation.

The calf is the world's third white rhino to be conceived by artificial insemination, after two which were born in the zoo in Budapest. The Madrid Zoo said in a press release that the mother, Marina, will be inseminated again in around 30 days' time, along with Olimpia, another white rhino in Selwo Aventura in Estepona, Málaga.

Visitors to the Madrid Zoo who will help choose the new baby white rhino's name. (In other news from Spain, the arrival of five more Iberian lynx cubs takes to 13 the number born in captivity in Spain this year.

The cubs were born in two centres - El Acebuche (Doñana) and La Olivilla (Sierra Morena) - as part of a breeding program to protect what is considered to be the most threatened wild cat species in the world. With this year's thirteen surviving cubs, a total of 37 lynx cubs have been born in captivity in Spain since 2005, when the program began.



This is the first year that cubs born in captivity in La Olivilla from mothers also born in captivity have managed to survive, which is a huge step forward for the conservation of the species. The breeding in captivity program is now registering exponential growth, going from the first two surviving cubs born in 2005 to the 14 that survived last year. It is hoped that the number of cubs born this year will exceed last year's total. Source: *TypicallySpanish.com* 5/4/09 and *thinkSPAIN.com* 4/7/09))

Scientists Warn Rare Animals Pushed Closer to Extinction - Nearly 50 rare mammals including tigers, leopards, sambar and fishing cats could face extinction, warn conservationists. The International Union for Conservation of Nature [IUCN] list of vulnerable species also included more than 70 other mammals from India on its alert "red list".

Professor Luigi Boitani of Sapienza Universita di Roma, an IUCN partner organization, said: "The trend is particularly dramatic for southeast Asia which suffers from increasing human activities, with deforestation being the major issue." The union report adds that almost one in four of the world's 5,487 mammal species is at risk of disappearing forever and at least 76 mammals have become extinct since 1500.

Dr. Bibhab Talukdar, a leading conservationist in India and member of the National Board for Wildlife, said: "Species are threatened mostly due to poaching and habitat encroachment. "We should now concentrate on how best to minimize this through active conservation methods. This is an opportunity for us to improve efforts and bring endangered species out of IUCN's red list."

Of the Indian mammals on the red list, 10 have been listed as critically endangered, 39 as endangered, 48 are vulnerable to extinction and 29 in the near threatened category, showing a sharp decline in their population. The list also indicates that 16 species of mammals are from India's Western Ghats, including the protected areas of Goa. The list puts the sambar [*Cervus unicolour*], the largest Indian deer, in the vulnerable species category and the leopard [*Panthera pardus*], found in protected areas in Goa, in the near threatened species category. The rare fishing cat [*Prionailurus viverrinus*] has moved from vulnerable to endangered species due to heavy loss of habitat. The Asiatic wild ass [*Equus hemionus*] and the tiger [*Panthera Tigris*] were also on the endangered list. Poaching, habitat destruction and pollution are some of the reasons causing the number of species to decline. Apart from mammals, 14 Indian tarantulas have found their way on to the list for the first time due to the danger they face from the international pet trade. Source: Irish Examiner.com 4/10/09 by Dielle D'Souza, India



Female sambar deer
(Photo: Wikipedia)

Taronga Zoo's Last Flamingo Euthanized - Taronga Zoo staff are in mourning - and in shock - after one of their oldest inhabitants, a pink flamingo [*Phoenicopterus chilensis*] called Yellow Band, had to be put down. The mourning is understandable, given Yellow Band had been part of the zoo since 1948 and is the last of its flock. The shock came when an autopsy found Yellow Band, believed for more than 60 years to be a female, was in fact a male.



"Flamingos are exceptionally hard to sex - you have to do it surgically. Anyway she, I mean, he seemed to enjoy female behaviour too," Zoo spokeswoman Danielle McGill said.

His death marks the end of an era at Taronga - which cannot import more of the birds because of laws to protect Australia from avian flu. Once thought to breed and live in small flocks, research has shown flamingos are among the most sociable birds preferring to live in flocks of thousands. But a 1980s bid to encourage breeding by using

mirrors to give the impression of a larger flock didn't work and 20 flamingos eventually dwindled to only Yellow Band. Source: The Daily Telegraph 4/9/09

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