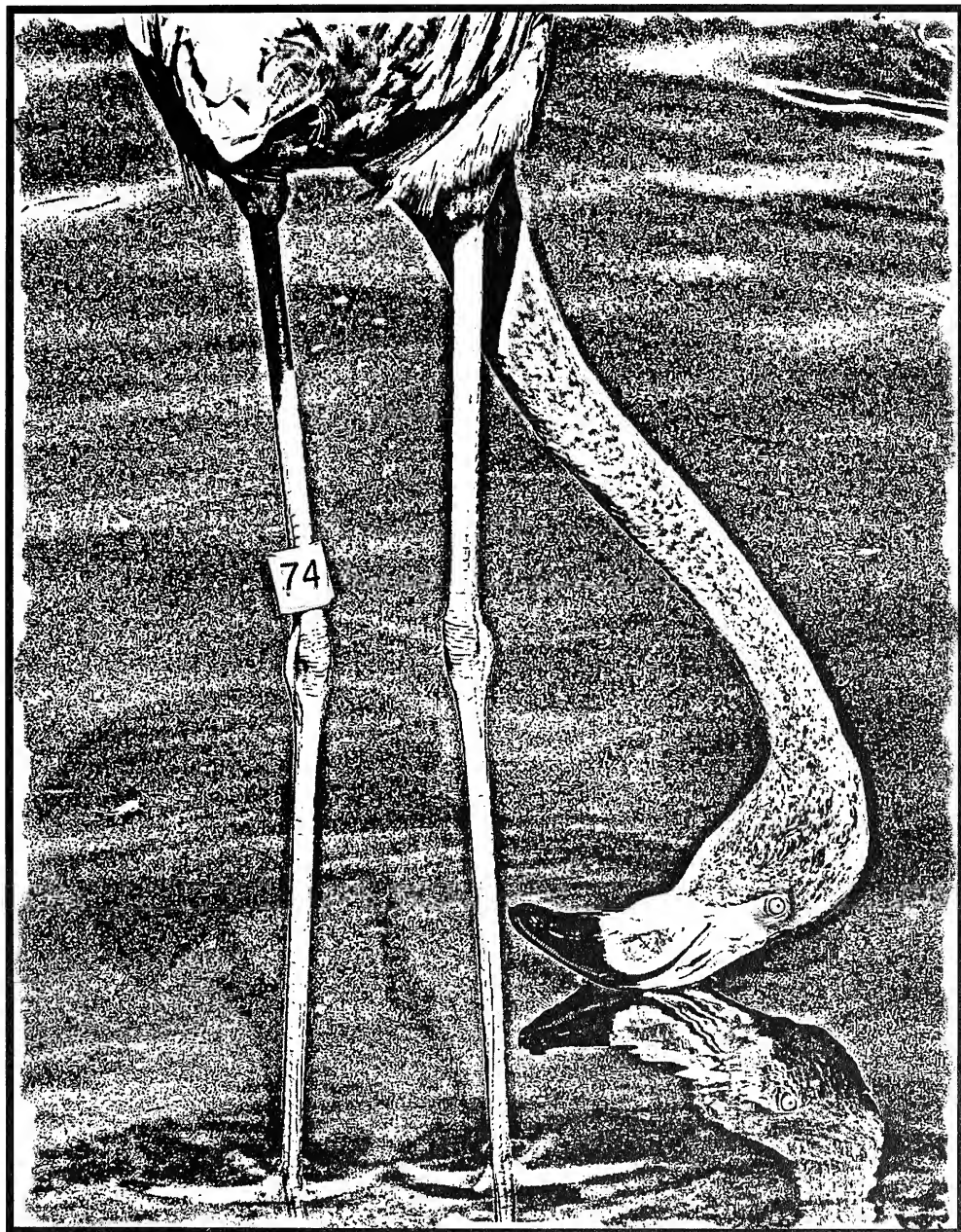


# ANIMAL KEEPERS' FORUM



**FEBRUARY 2011**

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

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also serves as AAZK Liaison to the American Zoo & Aquarium Association (AZA)

**AAZK Administrative Secretary:** Barbara Manspeaker, AAZK, Inc., Topeka, KS

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36th Anniversary - 1974 - 2010

## 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 the unique artwork of Camille Dorian, a caretaker at Monkey Matters in San Diego, CA. This cover was produced from one of her photographs that was taken into a graphics program on her computer where she generated the artwork. Featured is a Caribbean Flamingo (*Phoenicopterus ruber*) the only flamingo to naturally inhabit North America. They stand between 1.2 and 1.4 m (3.9 - 4.6 ft) in height, they have a wingspan of approximately 1.5 m (4.9 ft) and they weigh between 2.2 and 2.8 kgs (4.9 - 6.2 lbs). They are deep pink/red/orange in color and they have the brightest plumage of all flamingo species. As young birds they are grey in color but their plumage slowly turns pink as they mature. Their characteristic pink coloring is caused by the beta carotene in their diet. They have long, pink legs with their knees being a slightly darker pink. Caribbean Flamingos are found in the lagoons, mudflats and lakes of the Caribbean, the Yucatan Peninsula and the Galapagos Islands. They are highly social birds and they live in colonies that can contain thousands of individuals. Caribbean Flamingos feed upon insects, worms, vegetation and algae. They mainly feed during the day and they sweep their bill upside down through shallow water picking up food as they go. They are filter feeders and their tongue pumps up and down, 5 - 6 times per second, pushing the water out of their beak. This species breeds in large colonies and after courtship rituals of synchronized dancing, preening, neck stretching and honking they mate during April and May. They produce one chalky white egg that is laid on a mud mound in shallow water. The nest of each pair is situated approximately 1.5 m (4.9 ft) from neighboring nests so the chick remains safe from other breeding pairs. Both parents incubate the egg which takes 27 - 31 days to hatch. They will defend their nest during the breeding season, otherwise they are non-territorial. After the chick first hatches they are fed a substance called "crop milk" which comes from the parents' upper digestive tract. Either parent can feed the chick this way and other flamingos can act as foster feeders. When the chicks are old enough to walk they gather together in creches that are watched over by a few adult birds. By the time young flamingos reach 3 - 5 years of age they will have reached sexual maturity and gained their full adult plumage. The main predators of Caribbean Flamingos are jaguars, raccoons, birds of prey, margay and humans. They can live up to 40 years in captivity. The global population of Caribbean Flamingos is estimated to be between 850,000 and 880,000 individuals and are not considered a conservation species of concern. Thanks, Camille!*

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](mailto:akfeditor@zk.kscoxmail.com)< If you have questions about submission guidelines, please contact the Editor. Submission guidelines are also found in the Members Only section of the AAZK website.

**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*

## **Nomination Deadline Approaching!**

### *Candidates Sought for AAZK Board of Directors Election*



It's time to nominate your candidates for the upcoming AAZK Board of Directors Election. Nomination forms will be due at the AAZK Administrative Office **by February 28, 2011**. The nomination forms, as well as criteria for nominations, may be found in the Member's Only section of our website at **aazk.org**.

Completing their terms on the AAZK Board of Directors are Shane Good, Cleveland Metroparks Zoo; Bob Cisneros, San Diego Zoological Society; and Gisela Wiggins, North Carolina Zoo.

The 2011 election will be conducted electronically, so be aware that you will need to go to **aazk.org** to vote. Only Professional Members of the Association may vote in a Board of Directors election. Additionally, your Professional Membership status **must** be current and you must be registered on the Member's Only section of **aazk.org**. Registering is easy - just go to the AAZK website, click on the Member's Only icon and fill out a registration. This registration will be forwarded to Administrative Office to verify your current membership status. If you are current and a Professional member you will be allowed access to the Member's Only section of the website where the voting will take place. If you have already registered on the Member's Only section and have not allowed your Professional membership to lapse, you do not need to re-register.

Here are the key dates to remember:

- February 28, 2011 – Nomination forms are due at the Administrative Office
- April 1, 2011 – Viewing of candidate profiles opens in the Members' Only section
- April 15, 2011 – June 1, 2011 is the official voting period
- Results of the 2011 election will be announced after the verification of ballots, around June 10, 2011.

## **Deadline this Month for Chapter Recharter Packets**

All AAZK Chapters are reminded that the rechartering of all Chapters is currently in progress. Rechartering packet information was sent electronically the first week in January via email to the email address your Chapter provided to the Administrative Office on your 2010 recharter documents. Receipt of rechartering information from **every** AAZK Chapter is required as AAZK, Inc. needs to submit certain information to the Internal Revenue Service in order to protect and maintain the Association's 501(c)(3) nonprofit status.

**NOTE:** If your Chapter has changed its email contact address since you completed your 2010 recharter forms, you need to notify Barbara Manspeaker immediately (aazkoffice@zk.kscoxmail.com) so that your recharter materials are properly received. Recharter Packets for 2011 are due back at Administrative Offices **by 15 February 2011** (with a late fee penalty of \$250 after **1 March 2011**).

If you did not receive your recharter packet materials, you need to contact Barbara at the email address above or by calling 785-273-9149. If you have questions about filling out the required information, give Barbara a call and she will be glad to help you out. Your prompt attention to this matter is greatly appreciated.

## **AAZK Awards Committee Now Accepting Nominations**

The American Association of Zoo Keepers Awards Committee is accepting nominations for the Lifetime Achievement Award, the Jean M. Hromadka AAZK Excellence in Animal Care Award,

The Lutz Ruhe Meritorious Achievement - AAZK Professional of the Year Award, the Lee Houts Enrichment Excellence Award, the Certificate of Merit for Zoo Keeper Education, the Certificate of Excellence in Exhibit Renovation, the Certificate of Merit in Conservation, the Mazuri Animal Nutrition Award, and The AAZK Chapter of the Year Award that will be presented at the 2011 AAZK Conference in San Diego, CA. The deadline for nominations is **1 May 2011**. Information concerning the qualifications, nomination procedure, selection procedure and an explanation of the awards may be obtained at [www.aazk.org](http://www.aazk.org), under committees/awards.

### **Update on Tree for You and Me Chapter Challenge**

Here's an end of 2010 update for the "Trees for You and Me" AAZK Chapter Challenge 2010-11 that raises money to plant trees to reduce CO<sub>2</sub> and help polar bears. So far \$3008.60 has been raised: \$1468 Greater Cleveland Chapter of AAZK, \$547 Brookfield AAZK Chapter, \$265 Detroit AAZK Chapter, \$180 Columbus AAZK Chapter, \$173.60 Lincoln Park AAZK Chapter, \$100 Portland AAZK Chapter, \$90 Rocky Mountain AAZK Chapter, \$50 Roger Williams Park Zoo AAZK Chapter, \$50 Greater Baltimore Chapter of AAZK, \$50(\*) Phoenix Chapter of AAZK, \$30 San Diego AAZK Chapter, \$5 North Carolina Piedmont AAZK, and (\*) Lion Country Safari AAZK Chapter (PBI is looking into the two Chapters with \* because the amounts of the donations are unclear). Thanks for all the donations!



Remember for every \$1 donated this year three trees will be planted in the Polar Bear Forest by the Wisconsin Department of Natural

Resources in Wisconsin. Go to Polar Bears International or the AAZK website to learn more info about planting trees, reducing CO<sub>2</sub> and saving polar bears.

The competition runs 1 September 2010-1 March 2011. It will be less than a month to go when you receive this issue of *AKF*. You can find out more at either of the following two websites:

PBI website: <http://www.polarbearsinternational.org/programs/trees-you-and-me-model-nation>

AAZK's link to AAZK/PBI and reforestation - <http://aazk.org/aazk-and-polar-bears-international/>

Any questions or comments contact [christy.mazrimas-ott@aazk.org](mailto:christy.mazrimas-ott@aazk.org)

### **Conservation Committee Seeks Column Coordinator for Conservation Station**

The AAZK Conservation Committee is seeking a new member to serve as Column Coordinator for our bi-monthly Conservation Station column. Interested individuals should possess the following qualities:

- Be national AAZK members in good standing with the Association.
- Be able to attend electronic monthly Committee meetings and participate in Committee projects.
- Possess excellent skills in writing, proofreading, organization, and communication.
- Be able to meet strict deadlines.

Letters of interest, résumés and inquiries may be sent to Conservation Committee Chair Amanda Kamradt at [amanda.kamradt@aazk.org](mailto:amanda.kamradt@aazk.org). Samples of publications or other written materials may be submitted along with a letter of interest and résumé. **Deadline to apply for this position is 31 March 2011.**

### **AZA Ungulate TAG Midyear Meetings**

The 2011 AZA Ungulate TAG Midyear Meetings are being planned in conjunction with the AZA Midyear workshop in Chattanooga, TN in March 2011. The Ungulate TAGs will be meeting 23-24 March. This year the meetings will include midyear working meetings for the AZA Antelope and Giraffe TAG, the AZA Equid TAG, the AZA Cervid TAG, the AZA Caprid TAG, the AZA Wild Pig and Peccary TAG and the

AZA Cattle TAG, as well as the Annual Ungulate TAG Research Symposium. An agenda will be circulated on the TAG listservs soon. Information about registration, accommodations and travel can be found at <http://www.aza.org/midyearmeeting/>

### **Candidates Sought for AZA Studbook Vacancy**

The AZA Antelope and Giraffe TAG is seeking a NA Regional Studbook Keeper and Program Leader for its Greater Kudu program. Those interested in applying for this program leader vacancy should contact Martha Fischer, Antelope and Giraffe TAG Chair, at [fischer@stlzoo.org](mailto:fischer@stlzoo.org) by 31 March 2011.

### **Excited about ZIMS? Want to learn more?**

If you are planning to attend the Zoos and Aquariums Committing to Conservation ([www.zoo.org/zacc](http://www.zoo.org/zacc)) gathering next month, here is a unique opportunity you might be interested in checking out. As an early adopter of the ISIS Zoological Information Management System (ZIMS) application, Woodland Park Zoo would like to invite participants to see ZIMS in action. On March 7, Woodland Park Zoo and ISIS will host a full-day, hands-on session to give participants the opportunity to hear from those who are actually working with the system, and learn from their experiences. Participation in this event is limited (no more than two participants per institution, please). There is no additional cost for this session. Participants are required to bring a laptop computer. Date: Monday, March 7, 2011. 8:30 a.m.- 4:30 p.m. Location: Woodland Park Zoo (Please note you will need to arrange your own transportation to the zoo, however, transportation from the zoo back to the conference hotel will be provided). For more information: Contact Michele Peters ([mpeters@isis.org](mailto:mpeters@isis.org); 651-209-9259)

### **Announcing the Felid TAG Husbandry Course and Mid-Year Meeting May 2011 – Hosted by Omaha's Henry Doorly Zoo, Omaha, NE**

The Fifth Annual Felid Husbandry Course will be held May 1-4, 2011  
SSP® Meetings will be held May 3-4, 2011  
AZA FTAG Mid-year Meeting will be held May 5-7, 2011

Husbandry Course: Students completing the course will cover all aspects of felid husbandry, including safety, nutrition, behavior, reproduction, veterinary issues, and introductions. They will be provided a variety of resources (both electronic and paper) and personalized assistance with problem solving tasks, as well as the opportunity to discuss challenges and goals in their own institution's program.

The ideal student attending the husbandry course will:

- Have at least one [1] year of experience working with felids
- Currently work in a position at your facility where they are involved in the daily care of felids (keepers, leads, front-line supervisors, etc.)
- Have institutional support to attend the three-day workshop, including pre-work and follow-up after their return
- Be willing to actively participate in course discussions during class and offer feedback to instructors after the course.

Once again the Denver Zoo is generously offering a scholarship to aid a student in attending the Felid Husbandry Course. Scholarship applications may be found at the FTAG website or by contacting Bonnie Breitbeil [bonnieb@centralfloridazoo.org](mailto:bonnieb@centralfloridazoo.org) For more detailed information including hotel or contacts please visit the Felid TAG [website www.felidtag.org](http://www.felidtag.org)



July 17 - 23, 2011

**Starting Planning Now!**

# From the Vice President . . . .

## **It Began with a Simple Idea**

Forty-four years ago, in a house just a few blocks north from where I live, seven San Diego Zoo keepers formed the San Diego Zoo Keepers Association. Their initial goal was to encourage an exchange of information among zoo keepers and in doing so, foster a cohesive nature in the profession of zoo keeping. Emphasizing communication among keepers, education, and improved animal care, the newly formed professional organization was destined to become the American Association of Zoo Keepers. At a time when many of the keepers at San Diego were either retired or inactive military, the formation of a professional organization was well timed; the role of the zoo keeper was being transformed.

Today, the American Association of Zoo Keepers continues to build off of the foundation of the original seven keepers, expanding the possibilities of professional development for the zookeeping profession through its annual conferences, monthly publications, workshops, and web-based discussion boards. Although our mission has expanded to include helping worthy conservation projects, our primary aim is to provide an opportunity for zookeepers to improve their job skills while simultaneously improving animal care standards across the country. With a membership of over 1500 animal care personnel and associates, AAZK, Inc. has become the forging grounds for today's keeper, providing opportunities for keepers to learn, share information, grow professionally, and lead.

Let's return to 1967 for just a moment. What exactly were those seven keepers trying to accomplish? I recently spoke with Ken Willingham, one of the original seven a few months ago. When asked about the origins of AAZK, Ken replied:

“We simply wanted keepers on one side of the zoo communicating with keepers on the other side of the zoo. We held meetings, presented papers and tried to get everyone to share information. Back then, no one talked to each other; we had to reinvent the wheel every time we wanted to do something....it caught on and grew from there.”

One small idea, a concept of change, and a progression of an initiative became the foundation for what our Association is today.

It would be an understatement to say that our profession is not the same as it was back in 1967. In fact, it has changed dramatically in the last 18 years that I have been a keeper. Operant conditioning and enrichment have become principal tools of animal care professionals. Public interaction, interpretation, and participation in conservation have also become foremost in our profession. Needless to say, these new responsibilities have prompted a need for the development of new skill sets. AAZK annual conferences have been providing opportunities for professional development in order to meet these needs through paper presentations and workshops. Overall, this promotes attaining a level of expertise that can be achieved by zoo personnel regardless of where they are employed; AAZK is dedicated to promoting quality animal care on the keeper level.



Those of you who have attended an annual conference already know that most of AAZK's teaching opportunities exist within the structure of the annual conferences. Workshops offered through the Professional Development Committee cover a multitude of topics that help AAZK members hone their skills in zookeeping. Additionally, the digital materials passed on to workshop attendees are designed to have a take-home value, allowing the conference attendee the opportunity to return from the conference with materials that can benefit all keepers at the attendee's institution. We strive to meet the demands of the profession and empower keepers with opportunities to develop professionally.

From its conception in 1967, the American Association of Zoo Keepers has blossomed from a simple solution by a handful of keepers and become an institution dedicated to professional growth for animal care professionals. Forty-four years later, AAZK returns to San Diego carrying that original torch of improving animal care and empowering keepers.

In the spirit of professional development and improved animal care, we are excited to offer more services at AAZK conferences. Our emphasis will be to increase learning opportunities for keepers in both paper presentations and workshops. To do this, and continue with our effort to move toward standardized workshops with an emphasis on continuing education, the conference layout will be divided into two major components: morning paper presentations and afternoon workshops. Our goal is to maintain the valuable exchange of information through keeper presentations and increase opportunities for advanced learning through dynamic workshops.

The morning session will include the traditional paper presentations that you are familiar with, emphasizing innovation, information sharing, and the finest achievements in our profession.

The afternoon sessions will have two major components: Interactive Paper Sessions and Workshops.

The afternoon workshops will cover both basic and advance topics in animal care. Unlike past conferences, there will be plenty of workshops from which to choose. We have also established suggested tracks for those wishing to pursue a more specialized skill set. Our goal is to cover all aspects of keeper training and provide a long-lasting service of continuing education for animal care professionals.

We currently have over 20 workshops slated for the San Diego conference covering the following categories:

- Husbandry
- Training
- Enrichment
- Problem-solving
- Health care
- Conservation
- Professional Development and Leadership

In addition to the workshops, the afternoon program will include an interactive paper presentation in the presentation ballroom. These paper presentations will differ from the morning sessions in both format and focus. While the morning papers will remain 15 minutes in length with five minutes for questions, the afternoon interactive sessions will incorporate a teaching approach to the paper presentation. This instructive component will be a minimum of one hour in duration and will involve a discussion panel or moderator team to help facilitate a greater learning experience for all.

The Professional Development Committee will select these special papers from the list of conference presentations prior to the conference. The papers selected will be those that embody the most complex and innovative advances in animal care.

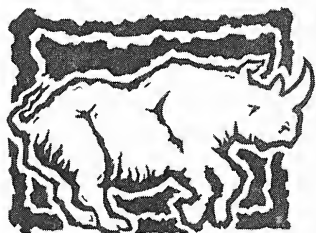
The Professional Development Committee will work with the presenter, helping to transform the paper into a workshop format. This layout will help develop deeper discussions about the general applications of the paper and will encourage participation from conference attendees. The final goal will be to create a greater learning experience from the conference's outstanding papers.

How will the membership benefit from these changes? Apart from the increase in skills learning opportunities, conferences will have a greater take-home value. This is incredibly valuable if you are looking for funds or support from your organization. On a personal level, keepers will have more opportunities to attend workshops that relate to their specialized field.

When looking at the complete package, the 2011 conference in San Diego is going to be stellar. Both the Professional Development Committee and San Diego AAZK Chapter have been working steadily to ensure that your conference experience in San Diego will be unforgettable! We are hoping that this progress will encourage your institution to further support your attendance. I am proud to be a part of an organization that has such a profound effect on our profession and ultimately, a profound effect on animal care.

Whether it's 1967 or 2011, exciting things happen in San Diego. Exciting things happen with the American Association of Zoo Keepers.

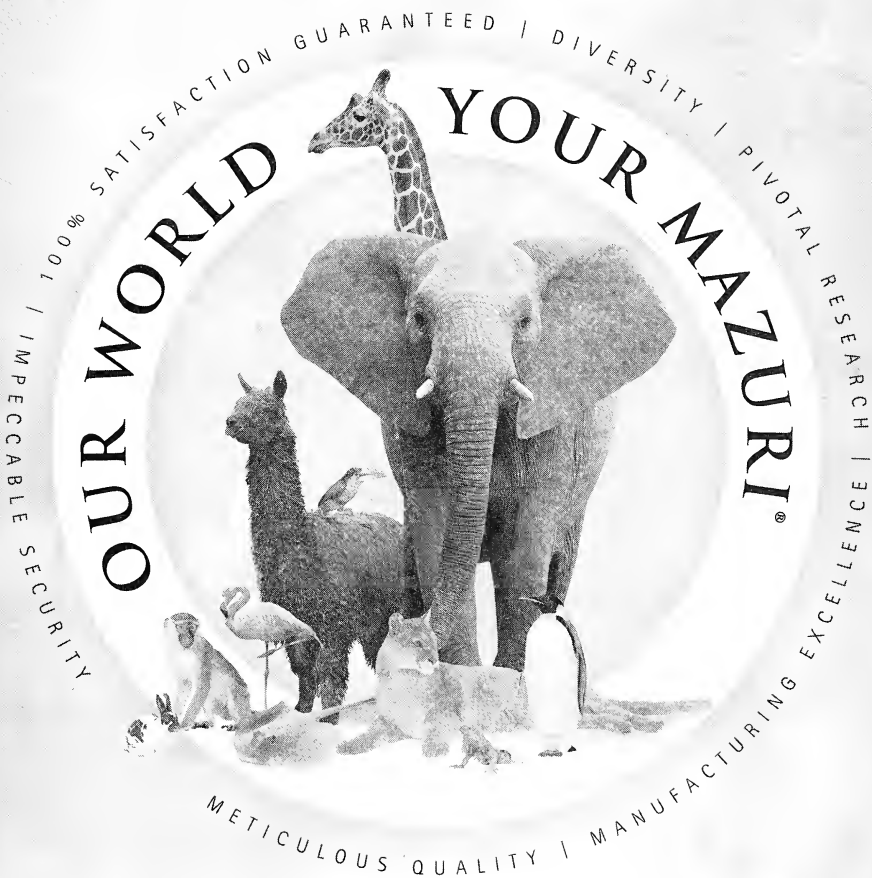
See you next August in San Diego,



AMERICAN  
ASSOCIATION  
of ZOO KEEPERS

Bob Cisneros

Bob Cisneros  
AAZK Vice President



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## AAZK Announces New Members New Professional Members

Linda Edge, **Bronx Zoo (NY)**; Mark Cowand, Windsor Cowart, Melissa Reynolds, Reness Poltorak and Alyson Goodwin, **Riverbanks Zoo & Garden (SC)**; Heather Whitley and Erin Elliott, **Nashville Zoo at Grassmere (TN)**; Kate Vallowe and Nancee Hutchinson, **Fort Wayne Children's Zoo (IN)**; Melissa Passman, **Zoo of Acadiana (LA)**; Andrew Zembal, **Wonder Valley Serpentarium (CA)**; and Jason Pootoolal, **African Lion Safari (Canada)**. *(We do not publish the names of new and/or renewing members who do not list their facility on their membership application/renewal. There were four in February.)*

### Renewing Contributing Members

Ann Outlaw  
Gays Mills, WI

Verla Atkins  
Atascosa, TX

### Renewing Institutional Members

Tiger World, Inc.  
Rockwell, NC  
Lea M. Jaunakais, Director

Disney's Animal Kingdom  
Animal Program Administration  
Lake Buena Vista, FL  
Kathryn Hall

Kentucky Reptile Zoo, Slade, KY

Little Rock Zoo  
Little Rock, AR  
Michael Blakley, Director

Tiger Creek Wildlife Refuge  
Tyler, TX  
Terri Werner, Director of Operations

Wild Wonders, Inc.  
Bonsall, CA  
Jackie Navarro, Executive Director

Woodland Park Zoo  
Seattle, WA  
Deborah B. Jensen, Director

## Teleseminar

### Zoo Story: Life in the Garden of Captives

On 26 October 2010, the New York State Bar Association Committee on Animals and the Law hosted a teleseminar with Tom French, author of *Zoo Story: Life in the Garden of Captives*. Professor French, a Pulitzer Prize winning journalist, Committee members and other colleagues engaged in a thoughtful discussion of the book and numerous Animal Law-related considerations. This teleseminar is available for listening or the entire teleseminar complimentary downloadable courtesy of the Committee and the NYSBA. Go to <https://www.box.net/shared/lyx66aomi0>

### Lions of Tower of London Recalled

The Tower of London was not only home to Tudor political prisoners. An elephant that drank a gallon of wine a day was among the menagerie at Britain's first zoo - and their story is to be told in a new exhibition.

Many centuries before animals were kept at London Zoo in Regent's Park, they were kept in the Tower of London. Lions, ostriches, tigers



and bears were kept at the venue. Dogs were used to bait them for sport. Now an exhibition there, featuring specially-commissioned animal sculptures, will tell their tale.

The first record of a lion in England was in 1240, referring to the upkeep of "the King's lion".

In 1623, King James I was given an elephant by the King of Spain. The creature's only drink was said to be "a gallon of wine a day".

In 1834, the tower's animals were transferred to London Zoo. The exhibition opens in April.

Source: BBCNews.com 1/2/11

## Coming Events

Post Your Coming Events Here  
email to: [akfeditor@zk.kscocmail.com](mailto:akfeditor@zk.kscocmail.com)

**February 16-19, 2011 - 19<sup>th</sup> Annual Conference International Association of Avian Trainers and Educators ~ "Pittsburgh 2011: Innovation and Inspiration"** Hosted by National Aviary in Pittsburgh, PA USA. Papers, posters, site visits, vendors and workshops. Topics will include avian behavior, training, husbandry, conservation, education, enrichment and show presentation/production. For more information about the conference visit [www.IAATE.org](http://www.IAATE.org)

**March 2-4, 2011 - Association of Professional Wildlife Educators.** To be held at the Frank Buck Zoo, Gainesville, Texas. Watch <http://www.apwe.org/> for details as they become available.

**March 8-11, 2011 - Zoos and Aquariums Committing to Conservation.** Hosted by the Woodland Park Zoo, at Sheraton Seattle Hotel, Seattle, WA, USA. Icebreaker planned for evening of March 7th. Registration now open at [www.zoo.org/zacc](http://www.zoo.org/zacc)

**March 19-24, 2011 - Save the Date! The 2011 AZA Ungulate TAG Midyear Meetings** are being planned in conjunction with the AZA Midyear workshop in Chattanooga, TN. The exact dates of the Ungulate TAG meetings will be determined soon. This year the meetings will include midyear working meetings for the following AZA TAGS: Antelope and Giraffe, Equid, Cervid, Caprid, Wild Pig and Peccary and the Cattle TAG, as well as the Annual Ungulate TAG Research Symposium. AZA has announced that the registration rates will remain the same as the rates in 2009 and the Conference Hotel will be the Chattanooga Marriott with conference rates of \$135/night. Contact Martha Fischer at [fischer@stlzoo.org](mailto:fischer@stlzoo.org) for more information.

**April 17-22, 2011 - 11th Annual Animal Behavior Management Alliance (ABMA).** In Denver, CO. The conference will kick off with our keynote speaker, Dr. Jill Mellen from Disney's Animal Kingdom, and will culminate with an Earth Day to remember at the Denver Zoo. See (<http://www.theabma.org/>) for further information.


**May 15-18, 2011 - 2011 Rhino Keeper Workshop.** To be held at Fossil Rim Wildlife Center, Glen Rose, Texas. For further info contact: [adam.felts@columbuszoo.org](mailto:adam.felts@columbuszoo.org)

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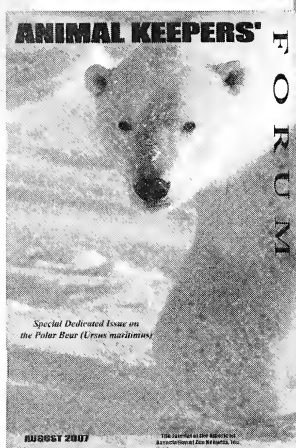
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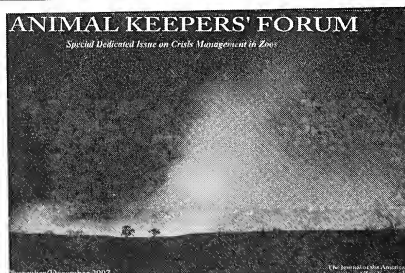
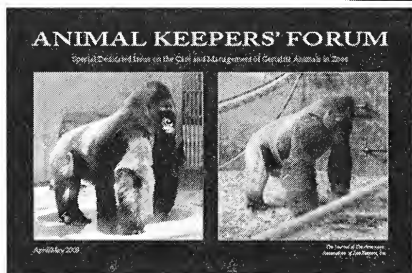


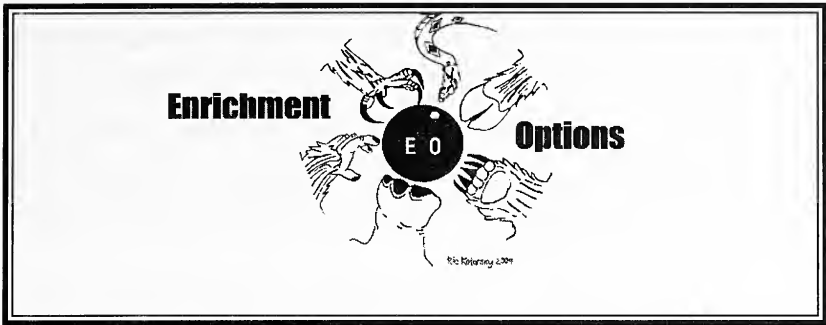
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## **Evaluating Interaction with Edible and Inedible Enrichment Items by an African Serval (*Leptailurus serval*)**

*By*

*Becky Kunkel, Conservation and Behavior Intern  
Fort Worth Zoo, Fort Worth, TX*

### **Introduction**

Environmental enrichment has been shown to reduce stereotypic behavior and increase activity and natural behaviors in captive felids (Skibieli et. al., 2007; Wooster, 1997). Small captive felids, such as African servals (*Leptailurus serval*), have been known to interact with hanging or moving objects, as well as different types of food items. Bones, hanging pieces of meat, and flying meatballs have all been shown to elicit natural behaviors such as leaping and reaching. Enrichment has also been shown to increase enclosure usage (Shepherdson et. al., 1993) and assist in identifying health problems (Mellen et. al., 1979). The veterinary staff at the Washington Park Zoo in Portland diagnosed a congenital diaphragmatic hernia in a male serval by recording his behavior with enrichment and monitoring his levels of activity. Data that deviated from the norm indicated potential medical concerns.

In zoos, enrichment is provided to stimulate the olfactory, auditory and tactile senses. Edible enrichment has been shown to increase overall activity, reduce sleeping, reduce pacing, and increase behavioral diversity in captive felids (Shepherdson et. al., 1993). Inedible enrichment items can elicit natural behaviors as well. Nature sounds, different substrates, perfumes, herbs, and animal urine have all been introduced into various felid habitats (Skibieli et. al., 2007; Wooster, 1997). However, little is known about comparisons of edible versus inedible item interaction in captive felids. The purpose of this study was to evaluate the level of interaction by an African serval among eight different enrichment items: four edible and four inedible. The serval's overall activity within the enclosure was also monitored and recorded.

### **Materials and Methods**

The subject for this experiment was a six-year-old male African serval housed at the Fort Worth Zoo's Animal Outreach and Conservation Center (ARCC) in Fort Worth, TX. He was housed solitary off exhibit from the public, and had daily training and interaction with his keepers. He had a history of ingesting enrichment items and because of this, any enrichment item introduced into his enclosure had to be closely evaluated for safety. This reduced the number of approved enrichment items he was allowed to have unsupervised. Once he was fully mature however, his keepers wanted to re-introduce items that might elicit more activity within his enclosure.

Data were collected from July 8 through August 4, 2010. An ethogram was created for the experiment and all behaviors were mutually exclusive (see Figure 1). Within the ethogram a sub-category (“Interactive Behaviors”) was created to differentiate which behaviors indicated interaction with the experimental enrichment, and which did not. Behavioral sampling (Martin and Bateson, 1993) was the method of data collection used, and data were collected continuously throughout a 30-minute session. Every instance of behavior was recorded. A five-second period of alternative behavior was required to separate two of the same behaviors recorded simultaneously. Observations were made over three days prior to introducing the experimental enrichments in order to establish a baseline activity budget for the serval.

**Fig. 1. Ethogram used to document serval behavior during a study of edible vs. inedible enrichment at the Fort Worth Zoo.**

**BEHAVIORS AND DEFINITIONS – Used during baseline and treatment.**

- Walk – moving forward using 3 or more strides
- Run – moving forward using 3 or more strides in a “fast” manner
- Jump – all four feet leaving the ground and body moving upward, feet land on a plane at different elevation than previously on, head may or may not be directed towards target object
- Pace – walking in a repetitive pattern; must be 3 repetitions of back and forth motion
- Rest – sitting with front legs extended and haunches on ground, or laying down with no weight on feet
- Out of View – inside containment area, or out of view of observer; includes taking enrichment item with him
- Vocalize – any audible sound coming from the mouth that is not a hiss
- Drink – drawing water into mouth using tongue
- Groom – licking any part of own body (tongue makes contact with body part)
- Hiss – emitting a “hissing sound”, may or may not accompany an arched back, bared teeth, and raised fur

**INTERACTIVE BEHAVIORS AND DEFINITIONS – Used during treatment only.**

- Pounce – all four feet leave the ground; target object is below head
- Rest on Item – in a resting position, but part of body is maintaining contact with the item for more than 5 seconds
- Paw – making contact with any of the four feet onto the item or location where item was rubbed/sprayed; head must be oriented towards item
- Bat – hitting an object with paws 2 or more times
- Lick – tongue makes contact with the item
- Bite – teeth make contact with item for <2 seconds
- Chew – teeth make contact with item for >2 seconds and jaws open and close while still maintaining contact
- Sniff – nose is within 1” of item, stays there for >2 seconds
- Mark – urinating or spraying onto an item

Eight enrichment items were chosen for the experiment. The items used were minnows in a 3x4 ft. (0.9x1.2 m.) tub of water, a frozen block of blood, crickets, stripped beef shank bone, a 3x3 ft. (0.9x0.9 m.) suspended hammock, sand in a 3x4 ft. (0.9x1.2 m.) tub, a suspended grapevine ball, and bubbles from a battery operated bubble machine. Each item was presented alone during three sessions of 30 minutes each, for a total of 90 minutes per item. The schedule for the presentation of items was chosen at random and introduced daily at approximately 1000hrs and 1500hrs. No item was presented twice in the same day, and each item was presented at least once in the morning and afternoon.

Additionally, the observation period was broken down into three-minute intervals, and data were recorded using the One-Zero method (Martin and Bateson, 1993). This gave a total of 10 intervals for each 30-minute period. If the serval interacted with the item for more than five seconds, a plus

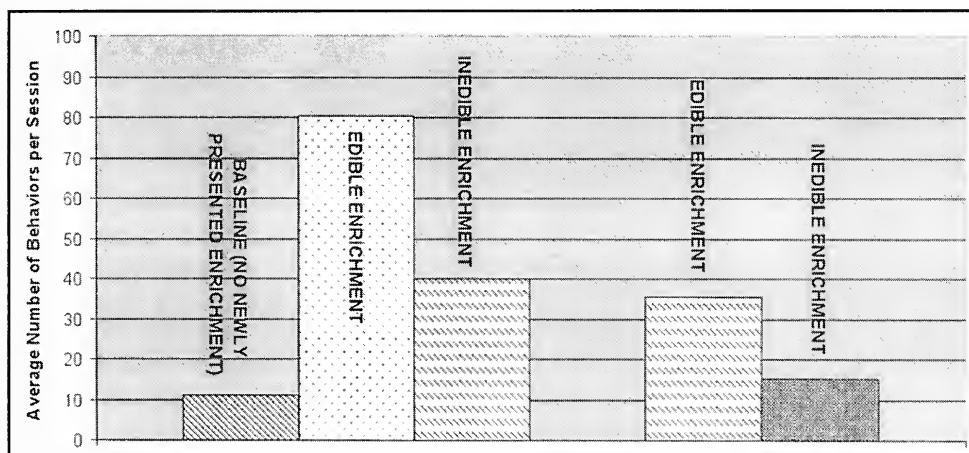


mark was recorded for that interval to show that he interacted with the item during that three-minute period. If he did not interact with the enrichment item, a minus sign was recorded.

## Results

When presented with new enrichment items, the serval increased his activity dramatically compared to his baseline activity (Figure 2). When the enrichment items were introduced, the serval's average activity level increased from 11 behaviors per session to 60 behaviors per session, resulting in an 81% increase in overall activity with the experimental enrichment present. The edible enrichment increased the serval's activity to an average of 80 behaviors per session, while inedible enrichment increased activity to 40 behaviors per session. There was more interaction exhibited with the edible items than inedible items (Figure 2). Although the edible enrichment increased activity by twice as much, both categories of items were effective in increasing overall activity within the enclosure. Every enrichment item introduced, regardless of whether it was edible or inedible, was interacted with at least once when it was presented. The average number of interactions per session with the edible enrichment was 35, while the average number of interactions with inedible items was 13. This resulted in a difference of 62% more interactions with edible items than inedible items.

**Fig. 2. Average number of behaviors exhibited by a serval during baseline and treatment sessions at the Fort Worth Zoo.**



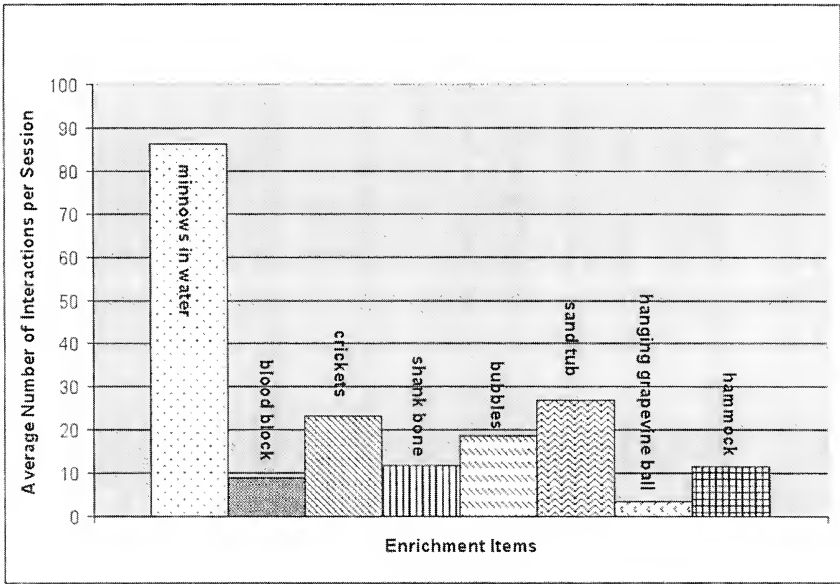
The enrichment that elicited the most interactive behaviors (average of 86 interactions per half hour session) was the minnows in water (Figure 3). The item that elicited the least amount of interactive behaviors (average of three interactions per half hour session) was the hanging grapevine ball.

Data also suggest that the minnows in water elicited the longest durational interaction throughout the half hour session (Figure 4). The serval interacted with the minnow enrichment at least once during every interval throughout the sessions. He interacted with the sand tub during 56% of the intervals, resulting in the sand tub as the second longest item with which he interacted. Grapevine balls elicited the least amount of durational interaction, with interaction occurring during 16% of the intervals.

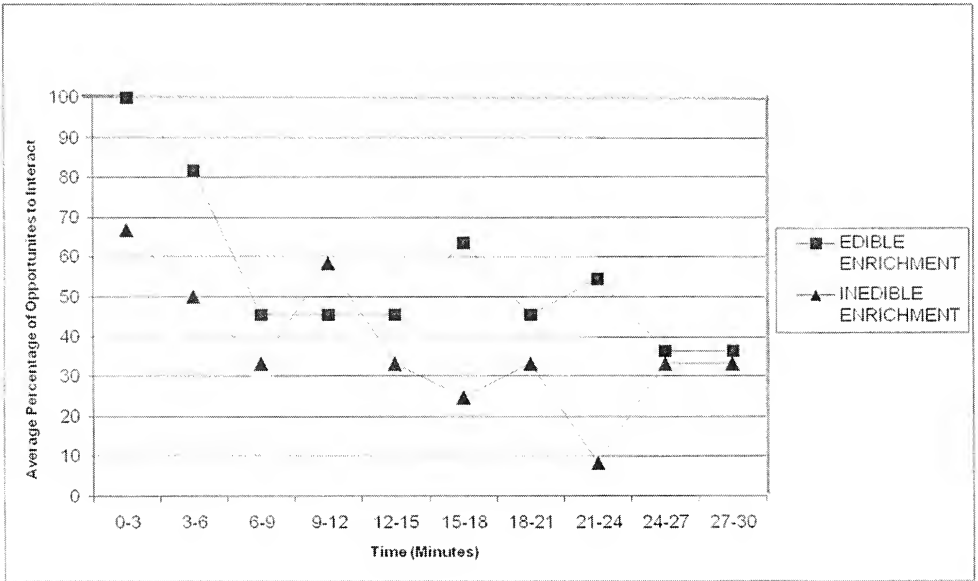


The serval pawing at the minnows in water tub at Fort Worth Zoo. (Photo: R. Ryan)

**Fig. 3. Average number of interactions with edible and inedible enrichment items by an African serval at the Fort Worth Zoo.**



**Fig. 4. Average number of interactions with edible and inedible enrichment by an African serval during each interval throughout a session.**



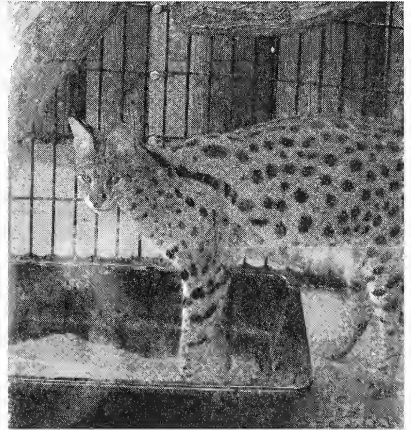
**Discussion**

Enrichment items that moved elicited more activity and interaction by the serval than stationary items. Given that minnows in water not only move but are also edible, previous studies have suggested that this enrichment would elicit more interaction than those that are non-moving or non-edible (Wooster, 1997). These data support this hypothesis. The fish also elicited more hunting behavior (sniffing, pawing, biting and eating) by the serval than the other items (Figure 3). However, under

this hypothesis, the serval should have interacted with the crickets and the bubbles more than the other items that did not move, but he did not. For the most part, he watched the bubbles and pawed at the crickets, but did not pounce or jump on them as predicted. This could be because these items were not naturally appropriate for serval ingestion.

Among the edible items, the shank bone was the second to last most interacted with. However, only two sessions were included because one bone was quite different from the other two bones. It was not completely stripped of meat as were the previous two bones that had been presented. To assure consistency with the other two sessions, this particular session was removed from the study, and the data adjusted accordingly.

Of the inedible enrichment items, the sand tub elicited the most interactive behaviors by the serval (Figure 3). This could be because this substrate was new to him. The enclosure that the serval inhabits has a concrete floor with large logs for climbing and resting. The tactile quality of the sand may have been softer on the serval's paws, so he may have been more inclined to interact with it by pawing and sniffing. There was only one instance recorded of him marking in the sand tub, and this was during the end of the last session. He did not interact with the sand tub again once he urinated in it



The serval interacting with the sand tub at Fort Worth Zoo. (Photo: B.Kunkel)

The hammock was the second to last inedible item with which the serval interacted, possibly because it was a large addition to the habitat that the serval had never seen before, and he avoided it altogether during the first presentation. During the first session with the hammock he did not interact with it at all, and then during the second session he interacted with it almost half the time by sniffing, pawing, and resting in it. He interacted with the hammock almost the entire time during the third and final session. Many animals need time to desensitize to large, novel items within their habitat, so his avoidance behavior during the first presentation was not uncommon (Mellen and Ellis, 1996; Ramirez, 1999).

## Conclusions

Although all of the enrichment items elicited some interactive behavior, the results of this study suggest that the African serval at the Fort Worth Zoo will interact more with edible enrichment items than inedible items. The study also suggests that he will interact for longer periods of time with edible items. Minnows in water elicited the most interactive and maintained behaviors for the longest periods of time. However, data from this study also show that the serval increased activity when presented with the inedible enrichments. This is important to note because some cats in zoos can be at risk for obesity and keepers may need alternatives to food for enrichment. Perhaps future studies can investigate enrichment preference by providing two items at the same time or by varying the way in which items are presented (e.g., scattered, hanging, buried, tossed, etc.) to determine number and duration of interactions by cats in zoos.

## Acknowledgements

The author would like to thank the Curator of Conservation and Behavior at the Fort Worth Zoo, Dr. Jennifer Elston, the ARCC Supervisor, Christine Bowie, and the entire ARCC staff for their cooperation and assistance with this project.

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# Kangaroos Undergo Innovative Dental Treatment In Israel

Israeli researchers have managed to clear up “lumpy jaw disease” in kangaroos by administering a variation of a topical human medication. The common periodontal condition is often fatal for the captive marsupials.

A three-year study was conducted among these mammals at Israel’s Gan Garoo-Australia Park and Tisch Family Biblical Zoo in Jerusalem and reported on recently in the *Journal of Zoo and Wildlife Medicine*.

Left untreated, lumpy jaw disease leads to periodontal diseases, severe gingivitis and abscesses. Four years ago, Gan Garoo lost about 40% of its kangaroos to this ailment that is thought to be caused by the diet in captivity as well as by environmental stress. Affected animals stop eating and starve to death in a short period of time.

Until now, the only way to treat periodontal diseases in kangaroos has been antibiotics fed or injected by force several times a day, followed by solitary confinement to prevent cross-infection of the rest of the herd. This method is not only physically difficult to accomplish, as kangaroos weigh between 154-176 lbs., but it also is counterproductive in that it introduces a new source of stress.

“The new treatment is easier to implement compared to the currently available treatment, because it doesn’t require continued force-feeding over time, and it doesn’t have the same side-effects as the current oral/systemic dosage form,” explains Professor Doron Steinberg of the Hebrew University (HU) Faculty of Dental Medicine. “The delayed release mechanism greatly reduces the rate of suffering of the animal, leads to quick recovery and enables rapid return to the group, a fact which is of crucial importance in wild animal and zoo medicine.”



Kangaroos at Jerusalem’s Biblical Zoo are now safe from the often-fatal lumpy jaw disease, after scientists created a new tooth varnish. (Photo courtesy of Jerusalem Biblical Zoo)

Developers of the innovative veterinary treatment (called Chlorhexidine Varnish) also included Professor Michael Friedman of the HU School of Pharmacy and Dr. Eran Lavy of the Koret School of Veterinary Medicine. Testing was carried out in collaboration with Gan Guru Australian Wildlife Park veterinarians Meytal Bakal-Weiss and Nili Avni-Magen. After application on the gums, the drug is released slowly from the varnish, which is made up of disinfectants embedded in a polymeric matrix. The disinfectant helps reduce the gum swelling.

The success of the new treatment is good news for pets, too. Most dogs over the age of four develop dental problems and even severe periodontal infections that can lead to systemic diseases. In a recent study among dozens of dogs, applying a sustained release dental varnish was effective in treating canine dental disorders.

“The new treatment can also be applied to other animals suffering from dental diseases and gingivitis, thereby reducing their suffering and long-term treatments,” says Lavy. The researchers are now examining ways to integrate food supplements into the medicine to make it tastier for dogs.

Veterinarians from zoos in other countries have shown keen interest in the dental varnish, which is patented by Yissum, the Hebrew University’s technology transfer company, and ready for commercialization. Partners are now being sought to develop the treatment for wild animals and pets. Source: *Israel 21c.org* 12/30/2010

# Connecting Avian Keepers with AZA Avian Program Leaders

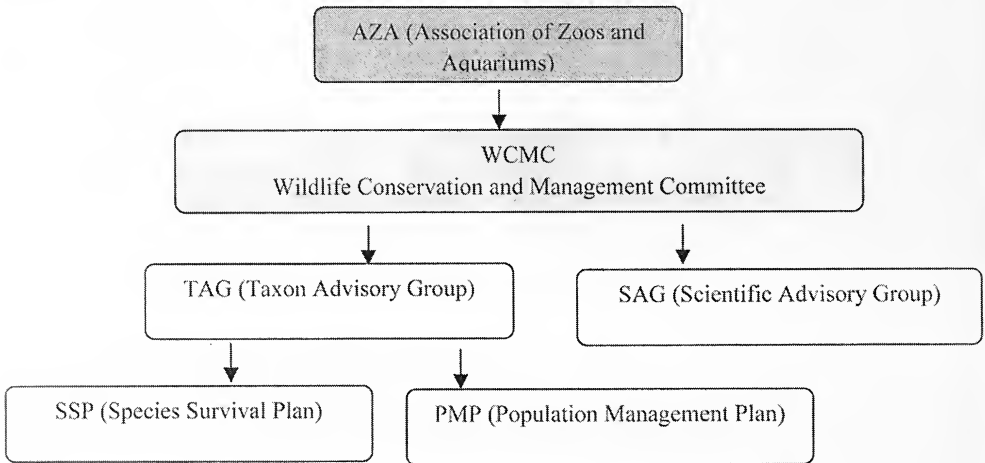
By

*Sara Hallager, Biologist, Chair AZA Avian Scientific Advisory Group  
Smithsonian's National Zoo, Washington DC*

## Introduction

Bird keepers are passionate about caring for birds and continually strive to learn more. Reading books, popular and scientific journals and searching the web are just a few ways that bird keepers learn more and keep updated on new husbandry methods, enrichment and training and management strategies for birds. AZA Taxon Advisory Group (TAG) Chairs and AZA Program Leaders are knowledgeable in the taxa they are responsible for overseeing and yet many are underutilized as a source of information. This paper will introduce avian keepers to the various avian TAG Chairs and Program Leaders in the AZA community and inform them as to what they can expect when they contact a TAG Chair or Program Leader. Also covered, will be an introduction to the Avian Scientific Advisory Group (ASAG) and how ASAG and avian TAG Chairs work closely in their shared goal of avian collection sustainability, management excellence, husbandry and communication.

AZA (Association of Zoos and Aquariums) is full of acronyms. WCMC (Wildlife Conservation and Management Committee), TAGs (Taxon Advisory Groups), SSPs (Species Survival Plans), PMPs (Population Management Plans), DERPs (Display, Education, Research Population), SAGs (Scientific Advisory Groups) and others acronyms make sorting out AZA animal management programs confusing even for people in the field for most of their career. Because most zoos in the United States are accredited by AZA, it is essential that keepers understand the AZA animal program management for species in their care. This allows for a clearer understanding of the role a species plays at their zoo and in zoos across the country.



For a keeper to be effective in his or her job, communication and continuous learning are of utmost importance for the well-being and safety of the animals. Just like any profession, zoo keeping is constantly changing as new information comes to light on husbandry, exhibitry, animal welfare, enrichment, training, nutrition and health. A good zoo keeper is constantly keeping up on these advances. It is important to share information with others and also to seek out the knowledge and advice of others in the field. While the husbandry for some birds is well known, for many it remains largely unknown and many species have never been kept in captivity. When confronted with caring

for a new species or even a tried and true species where new knowledge is sought, many avian keepers turn to traditional sources of information such as books, journals and the Internet. While these are all excellent sources of information, there is one source that is typically not frequently utilized and that is the expertise of AZA Avian Taxonomic Advisory Groups (TAGs) and the managed programs and program leaders within each TAG.

### **Utilizing Avian Program Leaders**

Why are AZA avian Program Leaders not utilized more frequently? There may be several reasons:

- 1 - Difficulty locating a contact number or email. A good starting point is the AZA directory or website. If the information is restricted to the AZA members only section, ask a supervisor to look it up for you.
- 2 - Not knowing who to call. A complete directory of avian TAG Chairs and the members of the Avian Scientific Advisory Group (ASAG) website are available at [www.aviansag.org](http://www.aviansag.org). Each TAG chair can also direct you to any avian Program Leader.
- 3 - Unease or concern that you might be bothering the person. TAG Chairs and Program Leaders are always more than happy to field an inquiry. They would rather have keepers ask than not ask because knowledge leads to increased sustainability of collections.
- 4 - Lack of encouragement and/or approval by managers for keepers to contact Program Leaders.
- 5 - Lack of mentoring time with curator to discover if the needed information already exists within the institution. Keepers working in smaller collections may have proportionately more contact time with managers/curators and may have a better idea how much knowledge of different bird species exists within the facility. In larger collections, keepers may not always have a lot of opportunities to talk regularly with managers/curators and therefore may not know if the knowledge they seek is already available within their collection.
- 6 - Time constraints. Balancing the daily priorities of the animals vs. extracurricular activities.
- 7 - Not aware of the AZA animal program structure (WCMC, TAG, SSP, PMP).

### **AZA Avian Taxon Advisory Groups**

An AZA Taxon Advisory Group (TAG) oversees the conservation needs of entire taxa and develops recommendations for population management and conservation based upon the needs of the species and those of AZA-accredited institutions. TAGs develop an action plan that identifies essential goals, scientific investigations, and conservation initiatives needed to best serve *ex situ* and *in situ* populations. The most important thing a TAG does is publish a Regional Collection Plan (RCP) every three years. RCPs specify the most appropriate management practices for *ex situ* populations. Published RCPs can be found on the AZA website and are an excellent source of information for TAG species recommended for management in AZA-accredited institutions. RCPs also specify the level at which each species should be managed and include detailed explanations for how those recommendations were developed. Most RCPs also include the conservation status of each species within the TAG.

There are 15 avian TAGs covering species from hummingbirds (*Trochilidae* sp) to ostrich (*Struthio camelus*) (see Table 1). Within each avian TAG, there are multiple managed programs. More programs are recommended but Program Leaders must be found to manage them. Each TAG and managed program is led by a qualified and knowledgeable species coordinator who is ready and willing to share information about the species they are passionate about. The avian TAGs have much to be proud of. All have approved Regional Collection Plans and comprehensive conservation programs. These conservation programs include restoration projects for some of the world's most endangered species to supporting field biologists with *in situ* work. Every group has commendable accomplishments.

Contacting a TAG Chair or Program Leader is an excellent first start when you need information about a particular species. Program Leaders have often worked first hand with the species or taxa they are championing and are recognized as leaders in their field. Among many things, they can also

**Table 1. AZA Avian TAG Chairs**

| TAG   | Chair         | Institution                                  | Email                        | Phone              |
|---|---------------|--|------------------------------|--------------------|
| Anseriformes  | Keith Lovett  | Palm Beach Zoo at Dreher Park                | klovett@palmbeachzoo.org     | 561-833-7130 x213  |
| Charadriiformes   | Cindy Pinger  | Birmingham Zoo                               | cpinger@birminghamzoo.com    | 205-879-0409 x233  |
| Ciconiiformes/<br>Phoenicopteriformes   | Chris Brown   | Dallas Zoo                                   | chris.brown@dallaszoo.com    | 214-670-6839       |
| Columbiformes   | Chelle Plasse | Disney's Animal Kingdom                      | chelle.plasse@disney.com     | 407-939-7339       |
| Coraciiformes   | Lee Schoen    | Audubon Zoo                                  | lschoen@AudubonInstitute.org | 504-861-5124       |
| Galliformes   | Chris Holmes  | Houston Zoo, Inc.                            | cholmes@houstonzoo.org       | 713-533-6564       |
| Gruiformes  | Fred Beall    | Zoo New England                              | fbeall@zoonewengland.com     | 617-989-2052       |
| PAACT (Passeriformes, Apodiformes, Coliiformes, Caprimulgiformes & Trogoniformes) | Martin Vince  | Riverbanks Zoo & Garden                      | mvince@riverbanks.org        | 803-978-1059       |
| Parrot  | Joe Barkowski | Sedgwick County Zoo                          | jbbski@aol.com               | 316-266-8235       |
| Pelecaniformes  | Diane Olsen   | Aquarium & Rainforest at Moody Gardens, Inc. | dolson@moodygardens.com      | 409-683-4102       |
| Penguin   | Tom Schneider | Detroit Zoological Park                      | tschneider@detroitzoo.org    | 248-398-0903 x3128 |
| Piciformes  | Mike Macek    | Saint Louis Zoo                              | macek@stlzoo.org             | 314-646-4825       |
| Raptor  | Scott Tidmus  | Disney's Animal Kingdom                      | scott.tidmus@disney.com      | 407-938-2105       |
| Ratite/Tinamiformes   | Sara Hallager | Smithsonian's National Zoo                   | hallagers@si.edu             | 202-633-3088       |
| Turaco/Cuckoo   | Joe Barkowski | Sedgwick County Zoo                          | jbbski@aol.com               | 316-266-8235       |

direct you to appropriate sources of information (e.g. husbandry manuals), tell you which advisors, species champions or liaisons to the TAG might be of additional help, provide husbandry tips and advice on exhibit design or mixed species exhibits, and put you in contact with other keepers who have pertinent information to share. TAG Chairs can advise on whether the Regional Collection Plan (RCP) even recommends working with a particular species. They can tell you of any conservation programs that are going on with a species and help you get involved. If you are interested in starting a studbook, the TAG Chair is the first person you should talk with.

### Avian Scientific Advisory Group (ASAG)

Working closely with the bird TAGs is the AZA Avian Scientific Advisory Group (ASAG). ASAG started as an informal group of bird curators, keepers and other interested animal managers that gathered at AZA conferences to discuss avian issues. In 1988, the group put together two avian workshops at the AZA Central Regional conference. The goal of the workshops was to encourage dialogue between bird curators and field researchers on captive management practices. Workshops have been part of an AZA regional conference annually since 1988. The group was formally designated as the Avian Interest Group (AIG) in 1992 to emphasize that the activities of the group were open to all and then granted scientific advisory group status in 1999. At that time the name of the group was changed to the Avian Scientific Advisory Group.



Avian Scientific Advisory Group



The mission of the Avian Scientific Advisory Group (ASAG) is "To support Zoo and Aquarium avian programs, conservation of bird species and to serve as a resource on ornithological issues". ASAG is comprised of a steering committee of elected members drawn from the ASAG Institutional Representatives at each facility. One of ASAG's primary goals is to promote sustainability of avian collections. To this end, it maintains a website ([www.aviansag.org](http://www.aviansag.org)), hosts a listserv ([aig@lists.aza.org](mailto:aig@lists.aza.org)) open to anyone interested in avian husbandry, conducts annual workshops, facilitates communication within the avian community, encourages and promotes avian programs in zoos and aquariums and promotes keeper education. It is the AZA recognized "go to" organization for any avian issue.

ASAG workshops typically cover advances in avian husbandry, emerging scientific issues and sustainability of avian collections. ASAG works in conjunction with avian TAGs and SSPs to provide a united front to the zoo and aquarium community regarding bird-related issues. The annual workshops provide a centralized location for all avian meetings thereby reducing annual travel cost to institutions. All audiences interested in birds are encouraged to attend and previous workshop attendees range from keepers to directors. In the past several years, ASAG has also been sponsoring moderated sessions at the AZA Annual Conference on topics that are of interest to a broader audience. ASAG works to assist avian managers with disseminating information and to promote avian programs to the entire zoo and aquarium community. ASAG has a keeper grant program to provide financial assistance to keepers who are presenting papers at the workshops. This program not only provides keepers with a forum to present their work, it also provides managers with a way to encourage up-and-coming staff to get more involved in AZA. These individuals are the future of the profession and ASAG hopes to provide encouragement for future managers. ASAG members also teach the new Avian Management course at Wheeling, WV.

### **Getting Involved**

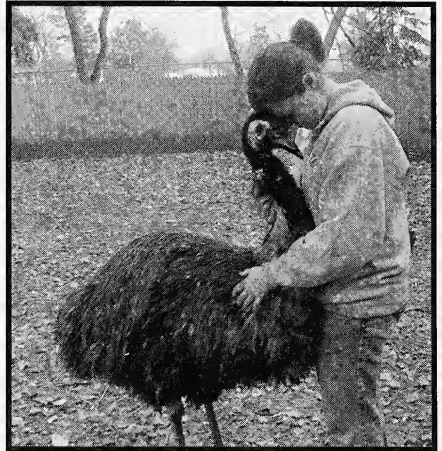
In these times of tight budgets, it can be challenging to get involved in TAGs. However, there are many ways to get involved in TAGs and SSPs that don't cost any money at all.

1 - Become an Institutional Representative (IR) for a TAG or SSP. This is one of the easiest ways to get involved in TAGs or SSPs and a good way to find out about how TAGs and SSPs operate. The job generally entails communicating with the TAG or SSP steering committee and disseminating information from the TAG to the employee's institution.

2 - Become a Steering Committee member. For more in depth involvement with a TAG, get on a Steering Committee. All TAGs and SSPs have steering committees comprised of up to 15 members that work together for TAG or SSP operation. Steering committee members assist with the development of the Regional Collection Plan, oversight of program management and other administrative duties as needed. Steering committee members are required to have access to electronic communication, and are encouraged to attend at least one meeting of the TAG each year.

3 - Animal Care Manuals (ACMs). ACMs are a compilation of knowledge provided by recognized animal experts based on the current science, practice, and technology of animal management. Volunteering to help work on an ACM is an excellent way to get involved in a TAG. There are over 164 ACMs identified by TAGs and most need help compiling material.

4 - Become a Species Champion. Take your passion for a particular animal that is not a SSP animal and become a Species Champion. Most TAGs have animals that are referred to as “DERP” animals (Display, Education, Research Population). These are populations of animals that are important to zoos for various reasons but do not need the oversight of a Program Leader. However, volunteers are still needed to monitor their status in zoos and promote their importance in collections.



5 - Field Work. Although this can involve costs to your institution, many TAGs have field projects that occur in the United States where travel expenses are often less than projects outside the US.

6 - Become a Keeper Representative to a TAG or SSP. Several TAGs and SSPs have keeper representatives. Responsibilities vary but some include production of annual newsletters, website design, and moderating listserves. If a TAG or SSP doesn't have a Keeper Rep, approach the Chair and volunteer to help out. Chances are the Chair will be delighted to have you on board!

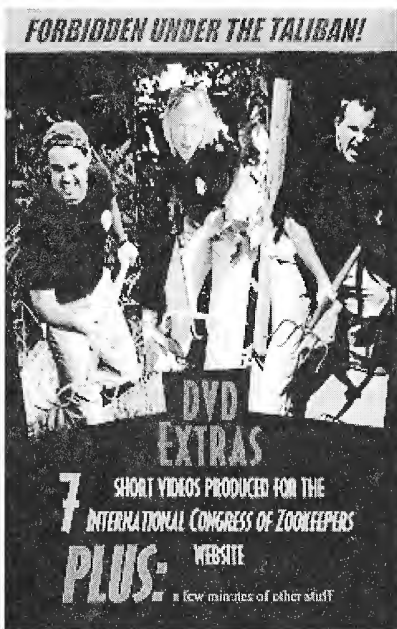
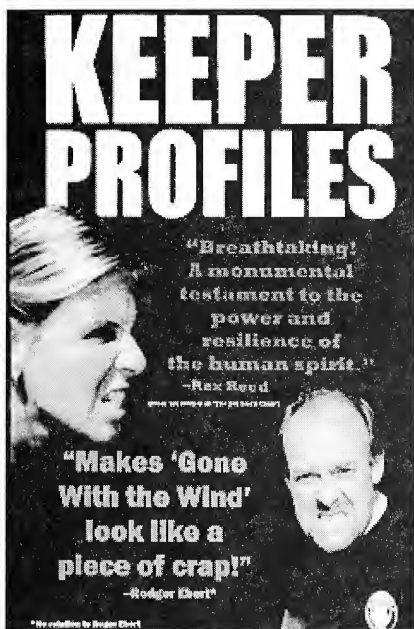
### **The Future is Yours**

Why do avian TAG Chairs, avian Program Leaders and ASAG consider themselves important resources and why is it important keepers work closely with them? Bird collections are facing a crisis in terms of availability of animals and future viability. Today's avian keepers are the managers of tomorrow's avian collections. While enrichment and training are important aspects of avian care, we can no longer afford to ignore the basics of avian husbandry if we want diversified collections in our zoos for future generations. The responsibility for sustainable collections rests on every avian keeper, every manager, every director and every avian Program Leader. Challenge yourself to constantly strive to learn more about the birds in your care, be passionate about a species and become its advocate, learn the AZA structure and know the TAG, SSP and PMP recommendations of the species in your care, become a studbook keeper, attend AZA schools and ASAG workshops, read scientific journals, get connected with a TAG or SSP, visit other zoos, research the husbandry needs of a species, be creative in your problem solving and most importantly, communicate and share what you have learned. The future starts with you and the keepers you work with. It starts at your zoo and in your collection.

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# The AAZK Behavioral Husbandry Committee Presents

## Training Tales...



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*Training Tales Editors – Jay Pratte, Omaha’s Henry Doorly Zoo;  
Kim Kezer, Zoo New England; and Angela Binney, Disney’s Animal Kingdom*

### Getting Ernie to Take His Medicine

*Through positive-reinforcement training, an ostrich is successfully conditioned to take a daily dose of medicine*

*By Anna Hergt, Animal Management Intern  
Zoo New England, Boston, MA*

#### Background

In June 2010, I began a 10-week internship in the Hooves and Horns area at Zoo New England’s Franklin Park Zoo located in Boston, Massachusetts. After learning the various animal husbandry tasks of the area, and getting used to the schedule, I was given the opportunity to take on a project as part of my internship.

Ernie is the only male blue-necked ostrich (*Struthio camelus molybdophanes*) housed at the Zoo. He had been diagnosed with right leg lameness and was prescribed Cosequin®, a powdered joint supplement. The medicine could not be mixed in with his diet because he shared the yard with two female ostriches, and there was no guarantee that it would be delivered to him completely. Instead, a plan needed to be developed to train Ernie to approach the keepers consistently for his daily dose of medication.

Though certain novel items sparked his interest enough to come within reach of zookeepers to be hand-fed, there was no reliable method in place to get him to consume the required daily amount. He would often exhibit behaviors such as refusing to come off exhibit, refusing to stand up from sitting, refusing to take medicine hidden in a variety of different food items, or walking right by the keeper and ignoring them altogether. This resulted in an average consumption of ~30% of his medication during the period of 1 March 2010 to when my training began on 15 June 2010.



Fig. 1: Ernie the Blue-Necked Ostrich



Fig. 2: Cosequin® Medication

Originally, a plan needed to be developed that was realistic for the allotted three-week time period I had remaining as an intern. I began with the notion of discovering what food item was motivational, and conditioning him to a bell as soon as he became more reliable in taking that item from me. I created a behavioral log to track his progress, and began working with Ernie an average of two sessions per day.

#### Training

My initial approaches began with attempting to lure him over using reward items such as small pieces of carrot chosen for their bright color, small apple chunks, lettuce, kale, mealworms, applesauce mixtures, regular diet grain,

and wet grain. Realizing that this was not progressing in the direction I needed, I switched my approach to luring him over using enriching non-food items such as a variety of shiny silver bowls, a red grain scoop, a cow bell and a red bandana. All of these proved not be motivating enough for Ernie. He was responsive, however, to neon pink tape stuck around the edges of a silver bowl. He came over quickly to investigate the novel item, but spent very little time interacting with me and consumed very little grain.

At this point, I reevaluated my methods and came up with a training plan based on what I had discovered about Ernie. Through experimenting I was able to build a relationship with him and understand his individual behavioral traits, instead of assuming characteristics based upon research and natural history of the species. Since he wasn't seemingly food-motivated, I spoke with other keepers about their efforts and observations when attempting to deliver his medicine. After observing many training sessions with other animals, I discovered that the training itself could be a reward. For example, one morning our male lion did not eat, but he easily took his same diet food as reward treats during a training session later in the day. I decided to figure out a way to make Ernie think that eating his medicine was fun, and be motivated to eat his medicine-laced treats by that fact alone.

I also wanted to look at qualitative data in order to find trends that would lead me to the development of a more stable training plan. I looked into his medical records and daily husbandry logs through Franklin Park Zoo's database system. I first began by looking specifically at what diet items he most often consumed. I looked back three months to 1 March, and found that if his medicine was given with grain he had an average consumption rate of ~49%. If given by other methods, this number was reduced to only ~15%. This is all relative to the total average consumption of ~30% during that time period, as previously mentioned. From this data, I decided to use his regular diet grain for training and delivering medicine.

Looking next at his average consumption rates at different times of the day, I found that he accepted medicine at a very similar rate in the morning and near the end of the day. Instead of choosing one or the other, I decided to perform one training session before he went out on exhibit in the morning, and another when he came in off exhibit in the evening.

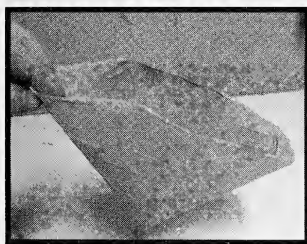


Fig. 3: Pink neon training bowl

Using the pink neon duct tape that seemed to intrigue him, I covered a training bowl made from the corner of a cardboard box. This made treat (or medicine) delivery simple because the bowl fit through the fence easily, was secure for grasping, and was shaped to reduce spilling during pecking. I also acquired a brightly colored key ring baby toy to use



Fig. 4: Colored key ring used as training target

as a target. Using the toy seemed to make training into a game and got him interested in working with me.

Luckily, Ernie was immediately fascinated by the toy target. He quickly became interested in pecking at it, and when he did I would offer him the reward of dry grain in the pink training bowl. After many sessions I learned his likes, dislikes, and tendencies. This allowed me to formulate a standard session that I could follow every time. To avoid confusion and keep consistency, I created a procedure sheet that would allow me and the other keepers to continue his sessions in this same way.

The procedure began with slightly wetting his diet grain so that one scoop of his medicine could be mixed in. This was placed on top of dry grain in the pink training bowl, and extra grain for training was taken in another silver bowl. Making sure to hold the materials firmly, we then jingled the keys and approached the fence to call Ernie over using the word, "target!" When he approached, the cue was repeated as the keys were held up. One peck to the target was allowed and an immediate "good" affirmed this correct behavior. He would be presented with food, and then asked to "target" the keys again. As sessions progressed, it began to appear that targeting the keys was used as a reward for



Fig. 5: Training Ernie  
(Photo: Melissa Durham)

eating the grain. This helped immensely at times when he would lose interest in eating, because with patience he would begin to eat again simply because it was part of the flow of the “game.”

One of the challenges I encountered was with Bertha and Bud, Franklin Park Zoo’s female ostriches. When they were in the yard with Ernie they became interested in his new “game,” and came over to interrupt sessions. It became necessary to station train them away from me when I was working with Ernie. This training was not well received by Bertha. When she continued to interrupt, I began turning my back on her and Ernie the second she came over. After only a few times, Ernie would hiss at her for the disruption and she would walk away so I could resume the session.



Fig. 6: Bud interrupting Ernie

Bud on the other hand, took target training to a whole new level. Her station was a second set of keys similar to Ernie’s that was attached to the fence. When she successfully went to the station and pecked this target, I rewarded her with grain in a red scoop. After she clearly recognized the concept of stationing for a reward, I left her the red scoop while I went to go work with Ernie. After only a few sessions, I looked over to see that Bud was targeting at the station before each bite of grain she took from the red scoop. Without me even being there, she was working hard and rewarding herself for it. She did this back and forth, over and over (a

very funny sight!), until I was done working with Ernie.

### Conclusion

By the end of my internship, Ernie was consistently interacting with me 100 percent of the time, and I was always the one ending our sessions. His response time was also much quicker. In the morning, I found that he would already be waiting by the fence. Even if he was further away and sitting down however, he would get up to come over and train when he saw a keeper with his pink bowl. During the last week of my internship, I was successful in using this to help get him to come off exhibit at the end of the day. Considering his condition, getting up and travelling the length of the exhibit to come “play” was a great feat for both him and for me, especially since he had been so unpredictable about coming in beforehand.

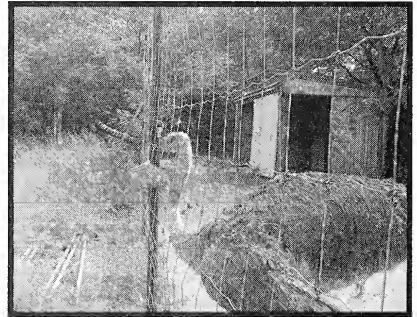


Fig. 6: Bud stationing at red scoop

The procedure sheet I had written became a standard to allow other keepers to successfully administer medicine to Ernie as well. Because of this, a drastic rise in his daily medicine consumption occurred, and was recorded to be 92.5% by the end of my time at the Zoo. In the future, I hope his target training can also be used for visual exams and to help ease further veterinary procedures so he can continue to be an interactive, healthy bird.

### Acknowledgements

This entire project could not have been possible without the wonderful staff at Franklin Park Zoo, namely, Pearl Yusuf, Kim Kezer, Amanda Giardina, Andrea Lewicki, Nicole Beaupre, Melissa Durham, Amanda Kamradt, Nate Davis, Mariah Harrington, Kim Jacobs, Jillian Cornoni, John Perakis, Erin O’Brien, Gini Cherol, Anne Knapp, Eric Bourgeois, Caitlin Sullivan, and Taylor Keddie. Thanks for an incredible summer.

**BHC Editorial Comments by Kim Kezer and Angela Binney:**

This is a great example of how a short-term internship project can have big impact. Interns are great for thinking out of the box. We love the way Anna did not depend only on natural history of the animal but also looked at zoo databases to gather information about the individual, past keeper attempts and observations, as well as doing some qualitative analysis to look at behavior trends. Adapting her plan when the road block of interference presented itself is something we often have to do as trainers. Anna handled this well with not reinforcing the female's at Ernie's station. Then adding more stations away from Ernie's was a great idea. The fact that Bud would station without a trainer by her was an unforeseen bonus further reinforced by Ernie's displacement of her from his station.

**Have You Sent AO Your Email Address Yet?**

In order to better communicate with our members, and also to save the Association the rising costs of mailing/postage, we are continuing to work on establishing an AAZK member email database. With such a database we would be able to send out electronic membership renewal notices, information about upcoming conferences, and other Association news. In order to make this work, we need your help.

Please send an email to Barbara Manspeaker at [aazkoffice@zk.kscoxmail.com](mailto:aazkoffice@zk.kscoxmail.com) with the words "AAZK Email Database" in the subject line. Please be assured that your email address will not be shared with any other group or individual without your express permission. We are simply looking for ways to stay in touch with you as a member and to also help cut the costs of mailings and postage for the organization. Also, please note if you have previously sent in your email address but have had a change to that address, we need to hear from you in order to update your listing. Thanks in advance for helping us achieve this cost-cutting goal.

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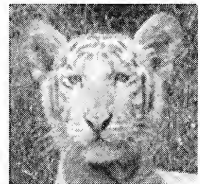
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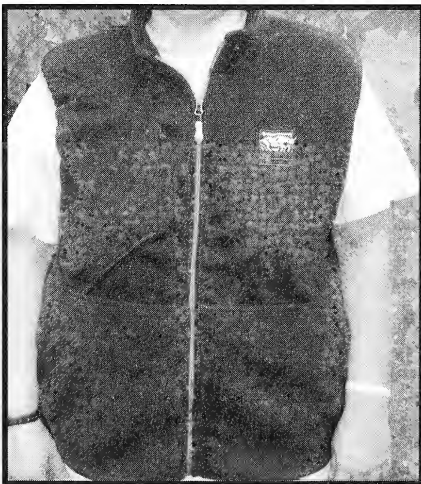
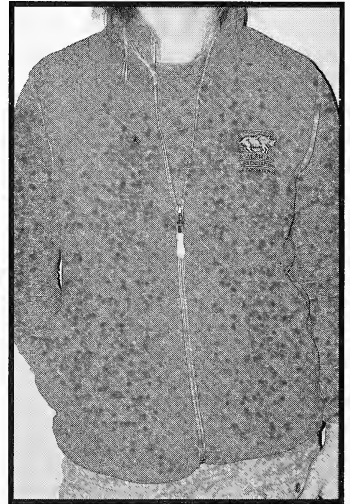
# New AAZK Logo Fleece Vests Available

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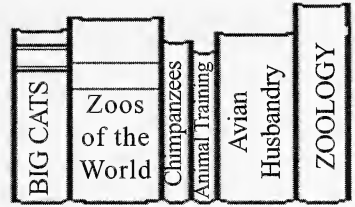
Available in women's sizes XS-XL in red, cream, lime green, and black. Available in men's sizes XS-XXL in black, navy, and red. Full color AAZK logo on black and navy colors, grey scale logo on other colors. Very limited number of sizes, so place your order today!

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Photos (clockwise): Women's Red Vest, Women's Cream Vest, and Men's Black Vest.







## **Fur, Fortune, and Empire: The Epic History of the Fur Trade in America**

By Eric Jay Dolin © 2010

W. W. Norton & Company Inc., 500 Fifth Avenue, New York, NY 10110

ISBN 978-0-393-06710-1

Hardback, 442 pgs. \$29.95

*Review by Brett Banner*

*The Farmyard at Stone Mountain Park  
Stone Mountain, Georgia*

Perhaps the most surprising moment in *Fur, Fortune, and Empire* comes on page 278 when author Eric Jay Dolin writes “Nevertheless, despite its great scope the fur trade was not a major American industry—in 1833, for example, the roughly eight hundred thousand dollars’ worth of furs shipped overseas represented less than 2% of the country’s exports.” Up until this point in the book, you would be forgiven for thinking that furs were the primary engine driving American capitalism from the colonial period through the nineteenth century. This is largely due to Dolin’s knack for weaving early American history in such a manner that every event seems an inevitable outcome of turning animals into pelts to satisfy the fashion preferences of Europeans.

*Fur, Fortune, and Empire* tells the history of a significant economic relationship between humans and wild animals. It should be noted, however, that the main characters in the book are definitely two-legged, not four-legged. To use an analogy from Shakespeare, the people Dolin writes about are like Hamlet—they provide the action—while the beavers, bison, and sea otters are more like the ghost of Hamlet’s father—their influence sets the story in motion. This is not a criticism - how else could a human being write a volume on zoological economics without the humans taking center stage? It’s simply that in writing a review for a periodical aimed at zookeepers I’m obliged to point out that Dolin’s work is more of a cultural history than a natural history.

And what a history the fur trade was. Well known are the efforts of the British, French, Spanish, and Dutch to control land and resources in colonial America. But one would have to be a serious student of the seventeenth century New World to be aware that Sweden also briefly had a presence. Dolin chronicles how New Sweden was established near the mouth of the Delaware River, not far from modern day Philadelphia, in 1638. In those days, control of major rivers was the key to a successful fur trading operation, as the big waterways were the only effective conduit to the interior to reach trapping lands. More significantly, the rivers also were aquatic highways to the fur carrying Indians, canoeing downstream to trade with the Western men. But an extended presence by Sweden was not to be, because as Dolin writes, “New Sweden had a population of barely two hundred souls and was only lightly defended.” In 1655 the Dutch chased the Swedes out—but alas, the Dutch themselves were not long for this hemisphere. Less than a decade after New Sweden was swept away, English warships gathered at the mouth of the Hudson—another of those major rivers so critical to the fur trade—and the Dutch surrendered, leaving New Amsterdam to the English, who renamed it New York.

Those today contemplating the fur trade may first conjure a mental image of the nineteenth century mountain men of the few decades following the Lewis and Clark expedition—Jim Bridger, John Colter, Jedidiah Smith, and others whose trapping excursions were also voyages of discovery. Bridger, for instance is usually credited as the first white man to see the Great Salt Lake. Dolin deftly

covers the dangers these trapper/ explorers faced; Smith, for example, was killed by Comanche. But animals figure in the story here not only as quarry of the mountain men, but also as potential menaces. And no animal danger was as great as that posed by the grizzly bear. Dolin relates the remarkable story of Hugh Glass who in 1823 was attacked and severely mauled by a grizzly bear and left for dead by his associates—but he recovered from his wounds and trudged alone 350 miles to a trading post seeking help! This anecdote, by the way, is a reminder why when reading scholarly books like this it is sometimes necessary to consult the endnotes to get the full picture. Dolin’s account in the main text sounds as though there is no question that the bear attack occurred exactly as he describes. Only by flipping to the back pages of the volume are you aware of his modest disclaimer: “Although some believe that the story of Hugh Glass and the bear is apocryphal, or at least largely made up, many more believe—as I do—that the basic story is true.” Not every historian is on board, in other words.

A strong supplemental feature of *Fur* is its two sections of plates. The one section of color illustrations is a particular delight; included are reproductions of nineteenth century western landscapes appropriate to the trapping theme, such as George Caleb Bingham’s *Fur Traders Descending the Missouri* and Albert Bierstadt’s *The Last of the Buffalo*. Alas, I’ve learned that in the paperback edition, these plates will appear in black and white. If your economy directs you to buy the paperbound edition, you might want to visit a library with a hardbound copy just to appreciate the illustrations in full color.

Dolin makes a wise decision to conclude his survey with events at the end of the nineteenth century. In a short nod to the present in the epilogue, he notes that even today there are about 150,000 fur trappers (mostly part-time) in the United States; I would never have guessed there were that many. But otherwise Dolin leaves the twentieth and twenty-first centuries untouched, which saves him from having to digress into ethical issues of our time.

What is left unwritten by an author may still be pondered by a reader, however, and there are points in the book where one cannot help reflecting on the carnage of the past fur trade. A notable example is in the chapter entitled “Fall of the Beaver.” In the early nineteenth century, both the United States and Great Britain claimed the Oregon Territory, which contains present day Oregon and Washington State. Shortly after the War of 1812, Great Britain and the United States met to negotiate the boundary between the U.S. and Canada, west of the Mississippi River. The Americans wanted the boundary to be the forty-ninth parallel—the line between the nations that exists today. The British had no objection to that division, except that when latitude 49 north hit the Columbia River, they wanted the boundary to follow that waterway to the sea—again, the all-important control of navigable rivers to transport. Had Britain prevailed, western Washington state would today be part of Canada.

Since the two countries couldn’t come to agreement, they continued for several years a sort of “sharing agreement” of the Oregon Territory. The Hudson’s Bay Company, hoping for an eventual land division favorable to Canada, took advantage of the arrangement by ignoring the trapping quotas they had imposed on themselves elsewhere and following a “scorched earth” policy where they trapped all the beavers they could south and east of the Columbia. The Company figured that the fewer beavers still alive to trap in what are now Oregon and eastern Washington, the less chance that Americans would colonize those lands and have a strong claim to make them US territory. In other words, the beavers were victimized by a political struggle.

*Fur, Fortune, and Empire* is a powerful and memorable reminder that the view of wild animals as mere products to be exploited was not seriously challenged until quite recent times. Reading details of the largely unregulated harvest of beavers, bison, and sea otters before the beginning of the conservation era, one is amazed that we still have any of these remarkable animals around today.

# Twins Polar Bear Cubs Born at Hyogo Zoo

A polar bear (*Ursus maritimus*) at a city-run zoo in Japan has given birth to twins, the zoo has announced. According to Himeji City Zoo, 11-year-old Yuki delivered her first babies -- a 570-gram female and a 780-gram male -- at a breeding house between 1010-1150hrs on 5 December 2010. Yuki had been paired with Hokuto, a 10-year-old, for breeding since 2002 and was confirmed pregnant this past fall.



Yuki, an 11-year-old polar bear at Hyogo Prefecture's Himeji City Zoo, licks one of her twin cubs. (Photo courtesy of Himeji City Zoo)

The zoo initially considered artificially raising the twins, but has decided to let Yuki look after them in an isolated room. Yuki is reportedly gathering fallen leaves in the room to warm the cubs. The twins are scheduled to be unveiled to the public around March.

Since 1999 only a total of seven polar bears were born at three zoos in Japan, according to Himeji City Zoo officials. Yuki and Hokuto became famous this summer when their fur turned green after being stained with algae that grew in their swimming pool. *Source: THE MAINICHI NEWS.com*

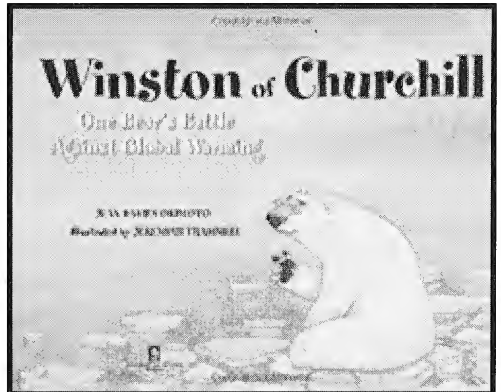
## Global Warming Resources for Children



Who says global warming isn't real?



*The Polar Bears Home: A Story about Global Warming* by Lara Bergen



*Winston of Churchill: One Bear's Battle Against Global Warming* by Jean Davis Okomoto

Source for Photos: <http://peapod-peasinapod.blogspot.com/2010/12/free-polar-bear-unit-study.html> This is a Home Education site from the United Kingdom

# Cooperative Breeding Behavior in Captive Southern Ground Hornbills (*Bucorvus leadbeateri*)

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## Summary

During the 2009 breeding season, the southern ground hornbills (*Bucorvus leadbeateri*) at the Tracy Aviary were housed as a family group consisting of the dominant breeding pair and two juvenile females. Since the breeding pair had successfully raised nine chicks with varying levels of assistance, and they were not a high priority to breed, we decided to allow them to try to breed completely without assistance. We provided daily dietary enrichment of mice, chicks, rabbits, nuts, fruits, vegetables, and bugs in a manner that encouraged foraging behavior. Soon the male was displaying with food and leaves to the female and they were frequently heard calling back and forth to each other.

Sadly the female abandoned the first clutch half way through incubation. The eggs were candled and no signs of fertility were seen. The second clutch was developing normally when the eggs were candled half way through incubation, but one egg had a small hole. Since hornbills only raise one chick even if both eggs hatch, this egg was pulled and artificially incubated. The second chick hatched without assistance. The feedings were increased to three times per day to give the hornbills access to fresh food to feed the chick at all times. The male diligently provided the female with food as soon as the food pan was placed in the exhibit. Surprisingly, after a few days the juveniles began presenting the female with food. The male allowed this but watched very closely. Perhaps even more surprisingly, the male began to feed the female less and allow the juveniles to provide the majority of the food to the female.

As the chick grew, the female would start spending more and more time off the nest. On several occasions, the oldest juvenile was seen brooding the chick while the female was off the nest. The juveniles continued to care for the chick even after it had fledged. According to their natural history, hornbills stay with their family group for five to six years and assist in chick rearing and territorial defense. Based on my observations and their natural history, I believe much of their breeding behavior is learned. Experience watching and participating in breeding like our juveniles did, will likely make them more successful breeders. I believe that if zoos are to have a sustainable breeding population of southern ground hornbills more effort should be made to keep the juveniles with their parents for as long as possible and allow them to observe and participate on future breeding attempts.

## Introduction

Southern ground hornbills are the second largest hornbill and can be found in the savannahs and woodlands of Kenya, Burundi, Namibia, Botswana and South Africa. They are found in family groups of two to 11 birds comprised of a dominant breeding pair and several juvenile and non-dominant male helpers. These groups hunt together feeding mainly on arthropods, but they have also been seen taking larger prey such as snakes, hares and tortoises. The group is sedentary and becomes very territorial during breeding season going so far as to swoop on and kill a Verreaux's eagle (*Aquila verreauxii*) when it ventured too close to the nest cavity (del Hoyo, 2001).

Ground hornbills are unique among hornbills because they nest in open cavities in trees or on rock cliffs instead of sealing themselves into a tree cavity. Only the dominant pair will breed. The dominant female will lay two eggs three to five days apart. The eggs are incubated for 37-43 days. If both eggs hatch, the younger sibling will almost always die of parental neglect. During incubation and chick rearing, the dominant female is provided with food by all members of the group. The chick will

fledge after 86 days but will stay with the family group for five to six years until it reaches sexual maturity and males may stay much longer (del Hoyo, 2001).

Although the species has been classified as a species of least concern on the 2009 IUCN red list, many conservationists are concerned about the stability of the population due to the political instability of the countries within their range. They fear that a civil war could not only kill many individuals, but also destroy their habitat making it very difficult for their population to recover. The only country in which they occur that is politically stable is South Africa, and the South African population is declining. They have lost 50% of their original habitat to human encroachment and are often the victims of close association with humans through loss of large dead trees used as nest sites, incidental trapping, shooting and poisoning. For this reason, the Mabula Ground Hornbill Conservation Project has been working to establish hornbill troops in the Mabula reserve in South Africa which was historically within their range. This effort entails pulling the second chick from wild nests and hand-rearing it.

The first attempt to introduce a group of hand-reared chicks was met with many obstacles. The youngsters were so naïve that they had to be provided with supplemental food and a shepherd was hired to follow the troop around. He made sure they didn't get eaten by predators and found a proper roost for the night. This care continued until the project received an adult male from rehab whose troop had been poisoned. The male was introduced to the juveniles and he accepted them and took over care. With the adult male helping the youngsters find food and look out for predators, the troop was soon self-sufficient. Happily, the Mabula Ground Hornbill Conservation Project reported their first successful fledging from a reintroduced group. The parents were a hand-reared female and a rehabilitated male. This illustrates the importance of parental care for this species (Turner, 2007).

At the Tracy Aviary, we believe that the group interactions are important for proper development of the chicks, so our southern ground hornbills are housed as a family group. Our breeding pair is comprised of a wild-caught female and a hand-reared male. When this pair was first introduced, they had many problems breeding. The male had to be separated from the female and the nest log because he was breaking eggs and pulling the female from the nest log. He was housed in an adjacent enclosure separated by chain link so he had visual contact with the female. During this time the eggs were pulled from the nest due to problems with the female breaking them, and were artificially incubated. The female was given wooden eggs to incubate, and her eggs were returned to the nest log just before hatching. The chicks were pulled from the nest daily and fed by hand to supplement the female's feeding. In 2003, the pair had produced several young and were a low priority for breeding. The family was left together and the female was allowed to incubate her eggs. This experiment went very well. The male defended the nest and fed his mate. The female fed the chicks without supplemental feedings. The only assistance provided was that food was placed on the edge of the nest log by keepers in case the male did not provide the female with enough food. After five years, our naïve pair was successfully rearing chicks on their own.

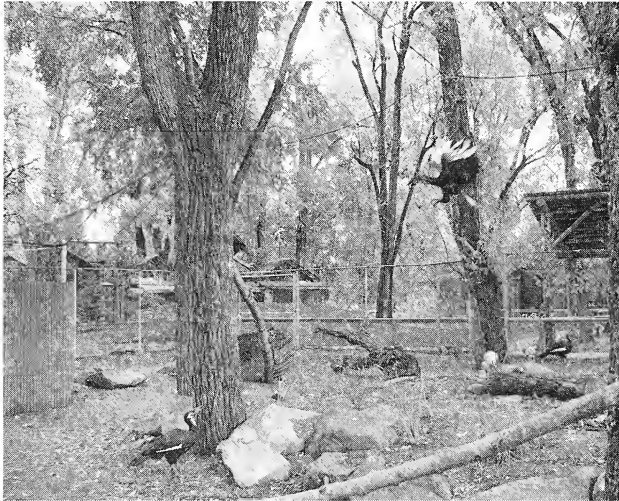
### **Breeding Management**

At the beginning of the 2009 breeding season, the southern ground hornbills at the Tracy Aviary were housed as a family group comprised of our dominant breeding pair and two juvenile females. Since our pair had reared nine chicks successfully and was not a high priority to breed we decided to leave the group be and allow them to breed without assistance. The family group received 500g dry dog food<sup>1</sup> soaked, 20-1" x 2" bars of meat eating bird diet<sup>2</sup>, and 10 mice or chicks twice daily once the nest log was added to the enclosure to encourage breeding. The group also received a rotation of nuts, mice, chicks, fruits/veggies, bugs and rabbits as dietary enrichment daily. This food was presented in a manner to encourage foraging behaviors. The pair was soon observed calling back and forth to each other for significant amounts of time each day. The male would bring dried leaves to the nest log and clear out any unacceptable matter. The female began spending all of her time sitting low in the nest

logs on 31 March 09 and there were two eggs confirmed in the nest on 2 April 09. The female did all of the incubating, rarely leaving the nest. The first egg of the clutch was found with a small hole in it and was pulled to be repaired and artificially incubated. The second egg hatched on 5 May 09. Once the chick hatched, the mice and chicks in the diet were replaced with 10 pinkies sprinkled with calcium powder<sup>3</sup> and the group was fed three times daily. When the chick was a week old, the food was increased to 15 pinkies at each feeding. Once the chick reached two weeks of age, the pinkies were replaced with 10 fuzzies per feeding. The fuzzies were increased to 15 at each feeding once the chick was three weeks old. Once the chick reached one month old he began receiving mice. We started with skinned mice and added fur gradually until he was eating the adult diet at two months of age. The chick fledged on 22 Aug 09.

### Observations

After three days of watching the male feed the female in the nest log, the juveniles began to gain interest in the nest. The juveniles began watching the male present food to the female in the nest and copied his behavior. If the juveniles tried to eat any of the pinkies before the chick was fed, the male would forcefully push them back from the food. After about a week of this behavior, the male stopped presenting the female with food. He would grab a pinkie and stand on the nest log or walk the perimeter of the yard with it while the juveniles would present the female with food. Once the chick was two weeks old, the female would start spending more time out in the yard. While she was off the nest, the oldest juvenile was seen sitting in the nest log



Ground hornbill juveniles playing in their exhibit at the Tracy Aviary. (Photo: Alyce Linder)

on several occasions. It was unclear whether she was brooding the chick or whether she was just investigating, but she spent significant time sitting low in the nest each time.

On one occasion, I entered holding while this bird was sitting in the nest. She was spooked and jumped up to sit on the edge of the nest log. I thought I would be able to take a peek at the chick since the other birds were locked out. The juvenile ran from the nest. I grabbed the chick to get a quick weight on it and returned it to the nest. The male was watching through the chain link, and when all the birds were allowed access to the nest area the male chased the juvenile that abandoned the chick away from the nest forcefully, and did not allow her near the nest during feeding times for at least a week. She was slowly allowed to participate in feedings again. After the chick was one month old, we had to move the chick and the nest outside to allow for building maintenance. When the nest log was moved outside, the male came over and looked inside it and then wandered off. The adult female was still nervous from being restrained and would not approach the nest. The oldest juvenile approached the nest and looked in. She walked over to the food pan, got a piece of food, returned to the nest to feed the chick. Since the older juvenile had fed the chick, we felt comfortable that it would not be abandoned and left the chick overnight. The next morning the adult female was brooding the chick and feedings had returned to normal. As the chick grew, the juveniles continued to help feed and would be seen occasionally in or around the nest when the adult female was not brooding. Even after the chick fledged, the juveniles would bring choice pieces of the diet over to present to the chick.

## Discussion

While it is difficult to draw conclusions with limited observations, I believe this brings up questions that are worth investigating. As was shown by the reintroductions of hornbills to the Mabula reserve, many of the most basic behaviors such as hunting and predator avoidance are learned behaviors. It would be a reasonable inference that breeding behaviors are also learned. The PMP recommends that young be kept with their parents until they are 5-6 years of age, but only two institutions maintain their hornbills in family groups. At the same time, only three chicks were parent-reared this season and two of them were from proven breeding pairs. Will our juvenile hornbills become more successful breeders because of their experience assisting with chick rearing? While I have no evidence to support my conclusion, I believe they will.



The adult male Ground Hornbill in the family-group exhibit at the Tracy Aviary. (Photo: Allyce Linder)

On multiple occasions, I have observed the juveniles watching the adult male opening a puzzle feeder used for enrichment, and after watching they are able to complete the task on their own with very little trial and error. If this learning behavior is similar to learning the proper chick rearing and breeding techniques, then it would follow that the more times the juveniles watched and/or participated in breeding, the less trial and error that would be involved when they attempt to breed on their own. I believe that there is little risk involved in allowing juvenile participation during breeding.

As shown by the male's reaction to the juvenile that left the nest and allowed me access to the chick, the adults are very strict about the juvenile participation. After fledging, the chick was able to learn to play and explore by following the juveniles. I never saw either of the juveniles playing roughly with or injuring the chick in any way. On the contrary, they attempted to come to its assistance when it was removed from the nest log for vaccination. Based on my observations during this breeding season, I believe more of an effort should be made to keep southern ground hornbills in extended family groups, especially during breeding. The risks are very minimal, and the rewards could be enormous if it increases the number of successful breeding pairs in the zoo population.

## Products Mentioned in the Text

<sup>1</sup>- Dog Food: Red Flannel™ Prime Formula- PMI Nutrition® , 9200 East 90th Avenue, Henderson, CO 80640; [www.pminutrition.com](http://www.pminutrition.com)

<sup>2</sup>- M.E.B.: Meat Eating Bird-Dick Van Patten's Natural Balance Pet Foods, Inc., 12924 Pierce Street, Pacoima, CA 91331; [www.naturalbalanceinc.com](http://www.naturalbalanceinc.com)

<sup>3</sup>- Calcium Powder: Rep-Cal Calcium Powder with Vit-D3 Phosphorus-Free Ultra Fine Powder, Rep-Cal® Research Labs, P.O. Box 727, Los Gatos, CA 95031; [www.repcal.com](http://www.repcal.com)

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# Conservation/Legislative Update

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

*This month's column was put together by  
column co-coordinator Greg McKinney*



**53 Animal Parks Ordered to Stop Abuse** - The State Forestry Administration (SFA) in Beijing, China has ordered 53 wildlife parks and zoos that stage animal shows to improve their management after inspections found animals' welfare had not been well protected. The administration also nullified the certifications of seven other parks and zoos that violated laws. The measures came after a nationwide inspection revealed commercial performances have led to animals' frequent abuse and exploitation. The central government has sent six teams to monitor and evaluate 500 wildlife parks and zoos nationwide since October.

The inspections found poor management and illegal activities in some zoos and wildlife parks were increasingly causing rare species' deaths. There were also incidents in which animals injured visitors, SFA department of wildlife conservation and nature reserve management director Zhang Xiwu was quoted by Xinhua News Agency as saying "Some zoos were found unable to provide animals' basic care because of their insufficient profits and others were found to be engaged in illegal wildlife product sales," Zhang told a meeting in Guangzhou.

"Both the security of endangered species and the safety of the public are threatened by improper management," SFA deputy head Yin Hong told Xinhua. An estimated 700 public zoos, wildlife parks and circuses organize animal performances, which attract about 150 million visitors a year. International Fund for Animal Welfare Beijing office campaign manager Hua Ning told *China Daily* she viewed the restrictions on animal performances as a positive step toward animal rights protection.

"I believe many Chinese would be unhappy if they knew the baby tigers they hold in their arms for photos (in some zoos) have had their canine teeth pulled out. The government needs to help zoos and aquariums cancel some performances that entertain visitors but harm animals. In the long run, the government should guide zoos back to the purpose of educating people about nature's beauty and informing the public about how to better protect Earth's magnificent creatures," Hua said.

Administration official Zhang Xiwu said the crackdown on illegal wildlife performances will continue over the long term, although it remained difficult to monitor circuses and individual trainers. *Source: Asia News Network, 29 December 2010*

**Pakistan Floods, Fighting Destroy Wildlife** - Disaster struck out of nowhere. The flash floods were so sudden that wardens at one of Pakistan's most famed parks could do nothing to save their animals. Leopards, deer and bears all drowned as the murky waters quickly engulfed them. Kund Park, a tourist spot located where the Kabul and Indus rivers meet 100 kilometres (60 miles) northwest of Islamabad, lost all its wildlife including 100 endangered species in this year's flood crisis. It was the worst single natural destruction of wildlife in Pakistan, where experts say the floods, military offensives against the Taliban and spreading militancy threaten natural habitats and species, some of them already endangered.

"Floods destroyed everything. It killed all the animals and species in this park. It was a great loss to wildlife," said Mumtaz Malik, formerly the top wildlife official in northwest Pakistan.

Among the dead were two leopards, 70 deer and 24 bears, said Ayan-ud-din, one of the caretakers at Kund. Peacocks, ducks and pheasants were also lost. All the animals drowned while locked in cages and enclosures. The bears had been rescued from human cruelty, only to die in Pakistan's worst natural disaster after monsoon rains swept north to south in July and August. *Source: AFP, Sajjad Tarakzai, 31 December 2010*



**Obama Interior Dept. Rules Polar Bears Not Endangered** - Much to the frustration of environmentalists but the delight of the oil industry, the Obama administration has stuck by its assessment of the polar bear (*Ursus maritimus*) being a threatened—but not endangered—species. Choosing the latter classification, which environmental groups have sought, would have had significant ramifications for the oil industry in Alaska. In a federal court filing, the U.S. Fish and Wildlife Service (FWS) declined to increase the protection level on the bears in its court filings for a lawsuit filed by environmentalists. The civil case seeks to force the government to list polar bears as “endangered” under the Endangered Species Act.

If the Obama administration were to choose the “endangered” designation, they would have to confront the cause of the threat. The bears “face a serious threat, the loss of sea ice habitat,” wrote the FWS in its court papers, “but they currently are not rare, on the brink of extinction or critically imperiled.” The agency added, however, the bears are “likely to become an endangered species in the foreseeable future.”

Earlier this month, the FWS downsized the amount of Alaska wilderness it said should be considered critical habitat for polar bears—a move that followed complaints from the oil industry over the agency’s original habitat proposal that called for setting aside more territory. *Source: AllGov, Noel Brinkerhoff, 27 December 2010*

**New Lemur Species Found in the Forests of Madagascar** - The discovery of a new species of fork-marked lemur was announced by Conservation International and BBC’s Natural History Unit. The lemur was found in the forests of Madagascar, and Russ Mittermeier, primate expert and President of Conservation International, called the new species “yet another remarkable discovery



Newly discovered lemur species  
*(Photo: Conservation International)*

from the island of Madagascar, the world’s highest priority biodiversity hotspot and one of the most extraordinary places in our planet. It is particularly remarkable that we continue to find new species of lemurs and many other plants and animals in this heavily impacted country, which has already lost 90% or more of its original vegetation.”

“Protection of Madagascar’s remaining natural forests should be considered one of the world’s highest conservation priorities,” Mittermeier said. Lemurs are only found in Madagascar’s forest, and many of these forests have been destroyed. This new species, although it has not yet even formally described, will likely be considered endangered. *Source: thedailygreen.com, 14 December 2010*

*robustus*) as depleted, based on population levels of the species after decimation by the whaling industry, instead of historical population levels. The California Gray Whale Coalition had argued in its petition for review that the species is depleted by historical standards, and the declining number requires the agency to prepare a conservation plan to restore the stock to its optimum sustainable population. Gray whales were recognized as endangered even before the Endangered Species Act was passed, and were formally added to the List of Endangered and Threatened Wildlife and Plants in 1973. In 1984 the agency determined that gray whales were no longer endangered, but the species remained on the list until 1994 when the agency determined that the population of the species was within 60 to 90% of the maximum population that its ecosystem could support.

**Pacific Gray Whale Won’t Get a Conservation Plan** - The National Marine Fisheries Service has rejected a petition to list the eastern north Pacific gray whales (*Eschrichtius*

The carrying capacity of the habitat for a particular species, given the needs of the rest of the ecosystem, is called “k” and the figure is at the center of the Coalition’s petition. The petitioners say that the agency should have used the historical k—the capacity of the ecosystem to support a given population of whales when the species was at its maximum level of abundance before decimation



Pacific Gray Whale  
(Photo: NOAA Fisheries)

by the whaling industry--as it has done in some status review and listing decisions, rather than on current estimates of  $k$  which are based on the way ecosystems are today. While the agency has relied on historic levels of abundance to determine  $k$  for a few species, it has determined that in most cases it is impossible to determine the  $k$  prior to human exploitation and that its goal for conservation of a species is 'equilibrium,' thus, listing decisions must not be based on what ecosystems may have been able to support in the past. The result, the Coalition argues, is that the gray whale cannot reach its true optimum sustainable population because human activity will always reduce the  $k$  of an ecosystem through degradation and that ever smaller populations of the species will be accepted as the most that can be sustained.

The petition sites estimates placing the prewhaling population of gray whales at between 70,000 and 120,000 individuals and the agency estimates the current population to be about 20,000. Mature gray whales can live to be 60 years old, reach 52 feet in length, and weigh up to 36 tons. Once found in both the Atlantic and Pacific Oceans, they are now known only as the relatively stable eastern north Pacific population and the endangered western, or

Asian, Pacific population. Source: *Courthouse News Service, Travis Sanford, 28 December, 2010*

**Group Threatens Lawsuit to Protect Mt. Graham Red Squirrel** - Three environmental groups have threatened to sue the U.S. Forest Service unless the agency seeks a new federal Endangered Species Act evaluation on the impact on endangered squirrels of the Mt. Graham International Observatory. The Center for Biological Diversity, Maricopa Audubon Society and the Mount Graham Coalition put the Forest Service on notice Dec. 22 2010, saying unless a new ESA evaluation of the telescope project is sought from the U.S. Fish and Wildlife Service by Feb. 22, 2011, a lawsuit will be filed. Coronado National Forest officials, including District Ranger Kent Ellett and Forest Supervisor Jim Upchurch, were said to be on leave and unavailable for comment.

The Endangered Species Act requires all federal agencies consult with the U.S. Fish and Wildlife Service if their actions jeopardize an endangered species. The U.S. Forest Service manages the land occupied by the University of Arizona's telescopes on Mount Graham, a news release from the Center of Biological Diversity states. The university has been in the process of renewing its 20-year permit for the telescope project, but the process has been delayed by several hurdles, including the threatened lawsuit. "The effects of this (telescope) project have gone far beyond what they were supposed to be," said Dr. Robin Silver, the center's founder. "We are not going to let the Mount Graham red squirrel be pushed over the brink of extinction."

According to the Center for Biological Diversity, approximately 200 Mount Graham red squirrels (*Tamiasciurus hudsonicus grahamensis*) live on the mountain: These small mammals are "severely imperiled" because of the destruction of their habitat. In its notice of intent to sue, the center, Maricopa Audubon and the coalition listed a summary of alleged violations associated with the MGIO. A summary of those allegations follows:



Mt. Graham Red Squirrel  
(Photo: Albert Bekkar/CalAcadSci)

- The telescope project has exceeded its allocated 8.6 acres by more than 40%.
- Because the project exceeded 8.6 acres, a new consultation with the U.S. Fish and Wildlife Service is required.
- Loss of spruce-fir habitat has further jeopardized the Mount Graham red squirrel.
- The amount of "incidental take" of red squirrels has been exceeded. This refers to the killing of squirrels.

The three environmental groups are not alone in their concerns about MGIO. The White Mountain Apache Tribe and the San Carlos Apache Tribe are opposed to renewal of the long-term use permit that allows the University of Arizona to operate the MGIO. The tribes contend the observatory site, known as Dzil Nchaa Si An, should be managed for the “protection of the physical integrity of those sacred sites and for the restoration of pre-1870 resource conditions and ecosystem processes.” *Source: Eastern Arizona Courier, Diane Saunders, 29 December, 2010*

### **Sierra Nevada Among Top 10 Places Whose Species are Threatened by Climate Change**

- In a new report, the Endangered Species Coalition has named the Sierra Nevada mountain range in California as one of the top 10 places to save for wildlife on the brink of extinction. It's Getting Hot Out There: Top 10 Places to Save for Endangered Species in a Warming World highlights the importance of saving key ecosystems for endangered species and examines how the changing climate is increasing the risk of extinction for imperiled animals such as the American pika (*Ochotona princeps*), yellow-legged frog (*Rana sierrae*) and bighorn sheep (*Ovis canadensis*) in the Sierra Nevada.

“Climate change is no longer a distant threat on the horizon,” said Leda Huta, executive director of the Endangered Species Coalition. “It has arrived and is threatening ecosystems that we all depend upon, and our endangered species are particularly vulnerable. If we are serious about saving endangered species from global warming, then these are the places to start.”

“The wildlife of the Sierra Nevada are experiencing the effects of global warming firsthand, as rising temperatures push species such as the American pika further and further upslope until they will have nowhere left to go,” said Shaye Wolf, climate science director at the Center for Biological Diversity. “We must drastically reduce our greenhouse gas pollution in order to protect these species from extinction.”



American Pika  
(Photo: sevenstar/Wikipedia)

The report highlights 10 ecosystems that are hotspots for threatened and endangered species, many of which are highly vulnerable to climate change now. Coalition members nominated the ecosystems for inclusion in the report, and the submissions were then reviewed and judged by a panel of scientists. For each ecosystem, the report identifies resident endangered species and necessary conservation measures to help them survive.

“Endangered species don’t have the luxury of waiting for political leaders to act to slow the pace of climate change,” said Huta. “We certainly need to reduce global warming pollution, but we also need to act now to protect some of the most important ecosystems for imperiled wildlife for whom climate change may mean extinction. Each ecosystem for the report was chosen because we have an opportunity to increase its resiliency — or the resiliency of the species that live there — to climate change if we immediately implement conservation measures.”

According to the Intergovernmental Panel on Climate Change, 20-30% of the world’s species will be at an increased risk of extinction if global temperature increases exceed 3 to 5°F (1.5 to 2.5°C) above preindustrial levels. The climate threats to species include increased disease, diminished reproduction, lost habitat and reduced food supply.

It’s Getting Hot Out There calls for the Obama administration and Congress to provide the tools and resources necessary to protect these key ecosystems from global climate change. The Coalition would also like to see climate change factored into all future endangered species-related decisions in order to help prevent species from disappearing forever.

This is the list of top 10 ecosystems to save for endangered species that are featured in the report:

1. The Arctic Sea Ice, home to the polar bear (*Ursus maritimus*), Pacific walrus (*Odobenus rosmarus divergens*) and at least six species of seal.
2. Shallow Water Coral Reefs, home to the critically endangered elkhorn (*Acropora palmata*) and staghorn (*Acropora cervicornis*) coral.
3. The Hawaiian Islands, home to more than a dozen imperiled birds and 319 threatened and endangered plants.
4. Southwest Deserts, home to numerous imperiled plants, fish and mammals.
5. The San Francisco Bay-Delta, home to the imperiled Pacific salmon (*Oncorhynchus spp.*), Swainson's hawk (*Buteo swainsoni*), tiger salamander (*Ambystoma tigrinum*) and Delta smelt (*Hypomesus transpacificus*).
6. California Sierra Mountains, home to 30 native species of amphibian, including the yellow-legged frog (*Rana muscosa*).
7. The Snake River Basin, home to four imperiled runs of salmon and steelhead.
8. Greater Yellowstone Ecosystem, home to the imperiled whitebark pine (*Pinus albicaulis*) — an important food source for animals, including the threatened grizzly bear (*Ursus arctos horribilis*).
9. The Gulf Coast's flatlands and wetlands, home to piping (*Charadrius melodus*) and snowy (*C. alexandrinus nivosus*) plovers, Mississippi sandhill cranes (*Grus canadensis pulla*) and numerous species of sea turtles.
10. The Greater Everglades, home to 67 threatened and endangered species, including the manatee (*Trichechus manatus latirostris*) and the red cockaded woodpecker (*Picoides borealis*).

Seven additional ecosystems were nominated but not selected for the Top 10. They nonetheless contain important habitat for imperiled species and include: Glacier National Park, the Jemez Mountains, Sagebrush steppe, the U.S. West Coast, the Maine Woods, the Grasslands of the Great Plains and the southern Rocky Mountains. The full report, which includes information on each ecosystem, as well as recommended conservation measures, is available online at [www.itsgettinghotoutthere.org](http://www.itsgettinghotoutthere.org) or [www.StopExtinction.org](http://www.StopExtinction.org). Source: Center for Biological Diversity, 5 January 2011

**Ringed and Bearded Seals to be Listed as Threatened** - The National Oceanic and Atmospheric Administration has proposed listing bearded and ringed seals as threatened under the Endangered Species Act. NOAA highlights the disappearance of arctic sea ice and reduced snow cover as the major threats to the species. The bearded seal (*Erignathus barbatus*), also called the square flipper seal, is a species of earless seal that gets its name from its beard-like abundance of whiskers. They can weigh up to 750lbs, feed on a variety of prey items found on the ocean floor, and are unique in their subfamily for having two pairs of nipples. The ringed seal (*Phoca hispida*) is the smallest and most common species of seal in the arctic, weighing from 110 - 150lbs. It is solitary, has silver rings encircling its dark back and sides, and is the primary source of food for polar bears. Both species have circum-polar distributions. They also both require permanent areas of sea ice and snow in order to reproduce. But with the last bit of summer ice scheduled to disappear by 2050 if greenhouse gas emissions continue to escalate, there may soon be nowhere left for the seals to raise their pups.



Bearded Seal  
(Photo: NOAA)

“Listing these animals as threatened underscores what we have been saying: the entire Arctic sea ice ecosystem is under threat – not just these animals, but whole food webs are threatened by the shrinkage of summer sea ice,” said Geoff York, WWF Arctic species expert. “The only effective action we can take to stop this destruction of the Arctic marine ecosystem is to reduce the emission of gases causing global warming. We hope that governments meeting for climate negotiations (earlier this month) in Cancun are paying attention.” Source: [Mongabay.com](http://Mongabay.com), Morgan Erickson-Davis, 29 December 2010

**Seven Brazilian Bird Species Granted Endangered Status** - The US Fish and Wildlife Service (USFWS) voted recently to designate several rare bird species as endangered under the U.S. Endangered Species Act. The designation became effective on 27 January 2011 and will protect against the trade of, increase conservation funding to, and promote habitat safeguards of seven of the most imperiled species in Brazil. The selected species live in or near the Atlantic forest biome, a region of tropical and subtropical moist forest, tropical dry forest, tropical savannas, and mangroves along the Atlantic coast of Brazil. The Atlantic forest, or Mata Atlântica has been designated a World Biosphere Reserve because of its high level of biodiversity and endangered inhabitants which include marmosets, lion tamarins (*Leontopithecus spp.*), and woolly spider monkeys (*Brachyteles arachnoides*). It's also massively threatened by the encroachment of civilization. For hundreds of years, the forest has been cleared for urban settlement and the production of sugar cane, with the result being that less than 10% of native, fractured, forest remains.

The species were chosen by the USFWS because they all inhabit the same region and share a high level of threat posed by destruction of their environment due to human activity. One of the species being listed is the black-headed antwren (*Formicivora erythronotos*), a small member of the antbird family which lives in pairs or family groups and eats insects, spiders, and small frogs. Currently, the entire species consists of only one population of 1,000 - 2,500 individuals restricted to just 19 miles of coastline near Rio de Janeiro.

Another is the cherry-throated tanager (*Nemosia rourei*). This small white, black, and red bird was presumed extinct until 1998. Estimates put its current population at just 50 - 250 individuals, probably inhabiting one small tract of protected forest. The designation also includes the Brazilian merganser (*Mergus octosetaceus*), the fringe-backed fire-eye (*Pyriglena atra*), the Kaempfer's tody-tyrant (*Hemitriccus kaempferi*), the Margaretta's hermit (*Phaethornis malaris margaretae*), and the southeastern rufous-vented ground cuckoo (*Neomorphus geoffroyi dulcis*).

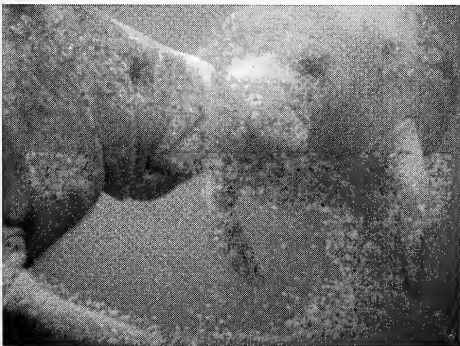
The USFWS decision follows decades of petitions and lawsuits by the Center for Biological Diversity, a conservation nonprofit, over the preclusion of many imperiled species from the Endangered Species Act. In total, 25 international bird species have gained Endangered status in the past three years out of the 45 that were petitioned.

"Protecting these species under the Endangered Species Act will give them a better chance of survival, and it will help attract worldwide attention to the urgent plight of these animals," said Justin Augustine, staff attorney at the Center for Biological Diversity. "We hope the Obama administration continues to undo the significant backlog of foreign species that deserve protection but have yet to receive it." *Source: Mongabay.com, Morgan Erickson-Davis, 29 December 2010*

**Spike in Manatee Deaths Blamed in Part on Record-Setting Cold** - A significant increase in manatee (*Trichechus manatus latirostris*) deaths around Florida last year is being blamed in part on a double dose of extremely cold weather during 2010. According to the Florida Fish and Wildlife Conservation Commission's Fish and Wildlife Research Institute, there were 767 manatees found dead in state waters in 2010. Biologists determined that 279 of the deaths were related to cold

weather stress, which is up nearly five times from similar deaths in 2009. The researchers also said that the majority of the cold-related deaths -- 244 of them -- were recorded during the record-setting cold during the first part of 2010 while another 35 were reported during the record-setting cold of December. The research institute also noted increases in other causes of manatee deaths as well, including natural causes.

"The unusually high number of manatee deaths in 2010, including those caused by the two periods of cold weather, are of concern to the FWC," said research institute Director Gil McRae. The reasons for the increase in mortality rates are not clearly understood but are a concern to researchers.



Manatees are also known as "Sea Cows"  
(Photo: Wikipedia)

“Over the next few years, the FWC will be relying heavily on monitoring programs to better understand any long-term implications for the manatee population,” McRae said. “In the meantime, we will continue to work with our partners to enhance the availability of natural warm-water sites and to rescue manatees in distress.” *Source: Ocala.com, Karen Voyles, 5 January 2011*

**Happy 50th, Arctic Refuge** - As a graduate student in 1956, World Conservation Society’s [WCS] George Schaller was one of the first scientists to survey what is now the Arctic National Wildlife Refuge in northeastern Alaska. Upon his return, Schaller—now a conservation icon—pushed the U.S. government to keep the lands he had seen on the WCS-supported Arctic expedition rich with wildlife. The government listened. This week the refuge celebrates its 50th anniversary—a half century of protection for caribou (*Rangifer tarandus*), polar bears (*Ursus maritimus*), wolverines (*Gulo gulo*), lemmings, and Arctic foxes (*Alopex lagopus*) in a pristine northern landscape that the indigenous Gwich’in people call “the place where life begins.” Gyrfalcons (*Falco rusticolus*), ptarmigans, and birds from all over the world also fly above and breed within 19-million-acre refuge.

Yet oil and gas development jeopardizes one stretch of the Arctic Refuge, its coastal plain. When Congress enlarged the refuge in 1980, they placed protections from energy development on most of it. Unfortunately, the 1.5-million-acre coastal plain was left out. WCS now calls for permanent protection of this critical coastal area. Having been instrumental in the refuge’s creation in 1960, WCS went on to conduct numerous ecological studies in the Alaskan Arctic. Containing some of the most important habitat for wildlife in the refuge, the coastal plain provides essential calving habitat for around 100,000 caribou. These enormous herds migrate across the Brooks Range from nearby Canada. As many as 300,000 snow geese (*Chen caerulescens*) fuel up for their seasonal trips here, too. The birds forage on the plain’s rich cotton grass before they head south.



Caribou herds roam the Arctic National Wildlife Refuge. (Photo USFWS)

“We were delighted by the fact that our work had led to the creation of the Arctic National Wildlife Range, and we were naïve enough to believe that protection would be forever,” said Schaller. “Instead, the American public has fought for decades to preserve our natural heritage by keeping oil companies from drilling inside the refuge. President Obama would be achieving one of the great acts of social responsibility and patriotism of our time by permanently protecting the refuge’s coastal plain and America’s greatest wild place.”

The concentration of wildlife within the plain’s narrow footprint (40 miles at its widest), leaves little room for development. These lands, coldly dubbed “Area 1002,” hold the highest density of denning polar bears in Arctic Alaska. The bears, already dealing with sea ice reductions from climate change, need these sites to raise their young.

“While WCS is not opposed to extraction efforts in the Arctic, direct extraction can and should be directed away from areas of high wildlife value,” said WCS-North America Director Jodi Hilty. “The coastal plain provides critical habitat, breeding grounds, migration passage, and more to rare and iconic wildlife.” *Source: Wildlife Conservation Society, 6 December 2010*

**Restaurant Sneers at Monterey Aquarium’s ‘Don’t Eat’ List** - A Boston-based restaurant chain is planning a dinner featuring seafood it says environmental groups have “brainwashed” consumers to avoid. Legal Sea Foods owner Roger Berkowitz tells the *Gloucester Daily Times* that guides such as “Seafood Watch,” published by the Monterey Bay Aquarium in California, have “no scientific basis,” but intimidate buyers. The guide, for instance, tells consumers not to eat trawl-caught Atlantic cod (*Gadus morhua*), because it says the gear damages sea floors. The Jan. 24<sup>th</sup> dinner in Boston featured tiger shrimp (*Caridina cantonensis*), cod cheeks and hake -- items Seafood Watch recommends people avoid. Aquarium spokesman Ken Peterson said the recommendations are “grounded in good science” and aim to inform consumers and keep fish and fishing communities healthy. He said Seafood Watch would be happy to speak to Berkowitz. *Source: Associated Press, 6 January 2011*

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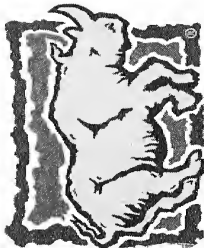
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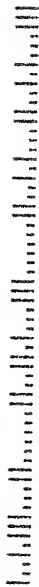
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