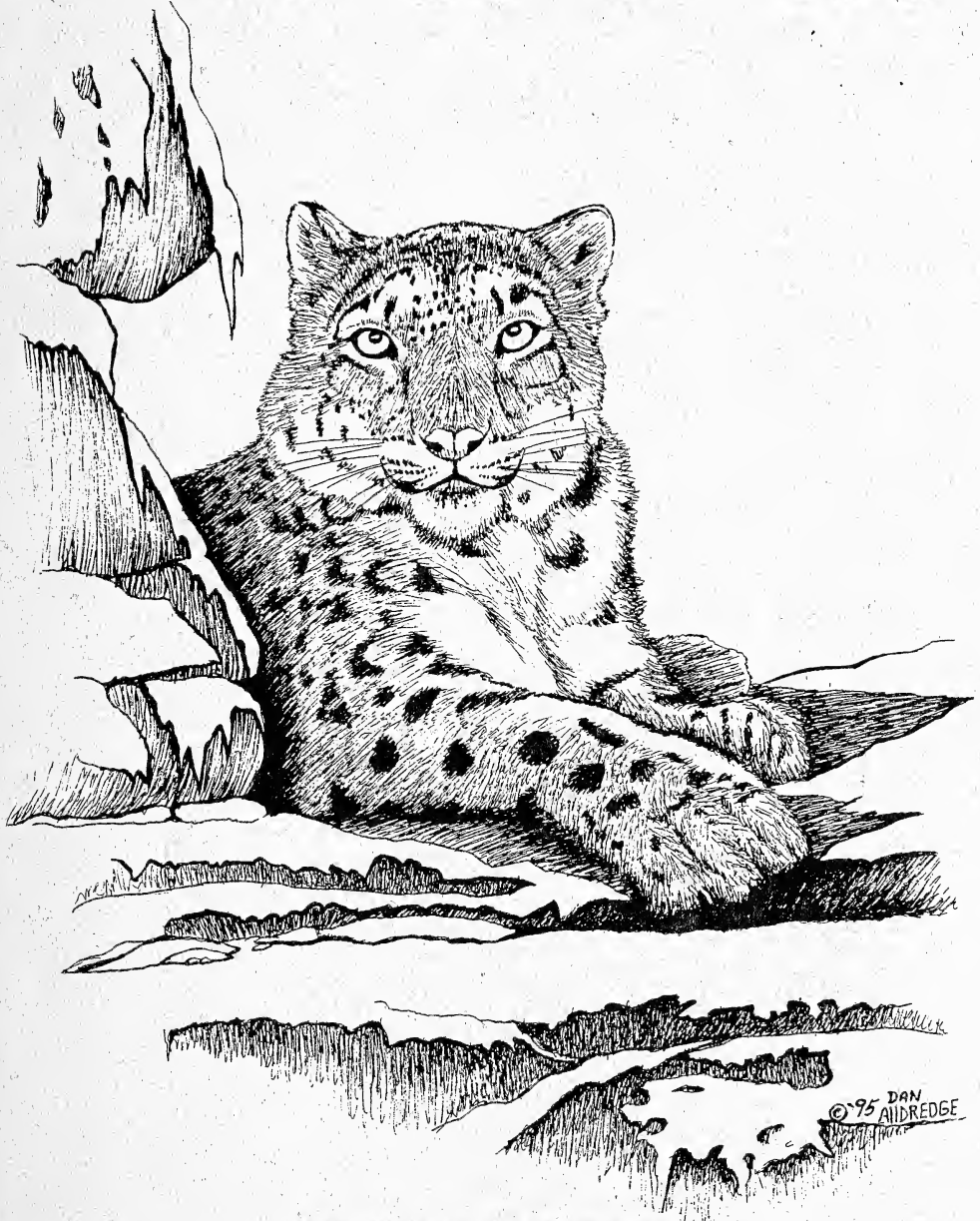


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NIMAL KEEPERS' FORUM



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

JANUARY 1997

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Incubation Notebook Project - Scott Tidmus, Sedgewick County Zoo, Wichita, KS



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About the Cover....

*This month's cover features Hau-Hau, a 0.1 Snow Leopard (*Panthera unica*) who was born in July of 1987 and resides with her mate Navarre at the Mesker Park Zoo in Evansville, IN. Snow leopards are native to China, Tibet, the Himalayas and India where they may live at altitudes up to 19,000 ft. With less than 1,000 animals believed to exist in the wild, they are considered endangered and are an SSP species. These crepuscular cats can leap 15 meters in search of their prey which include ibex, wild sheep, yak, boar, mormmets and occasionally domestic stock. Their heavy, grey to smoky-grey coats and large hair-cushioned paws serve them well in the cold climates where they live. Their long, thick tails are sometimes used to protect their nose and face when they sleep. Hua-Hua has produced four cubs, two survive. The cover artist is Dan Alldredge who is a keeper at Mesker Park. Thanks, Dan!*

Information for Contributors

Animal Keepers' Forum publishes original papers and news items of interest to the animal keeping profession. Non-members are welcome to submit articles for consideration. Articles should be typed or hand-printed and double-spaced. Articles may be submitted on disk by arrangement with the Editor. All illustrations, graphs, charts and tables should be clearly marked, in final form and should fit in a page size **no greater than 5.5" x 8.5"** (14cm x 22cm). Literature used should be cited in the text (Brown, 1986) and alphabetically in the final bibliography. Avoid footnotes. Include scientific name (as per ISIS) the first time an animal name is used. Thereafter use common name. Use metric system for weights and measurements (standard equivalents may be noted in parenthesis). Use the continental dating system (day-month-year). Times should be listed as per the 24-hour clock (0800, 1630 hrs. etc.). Glossy finish black and white photos **only are accepted**. Color slides should be converted to black and white prints (minimum size 3" x 5" [8cm x 14cm]) before submission. Clearly marked captions should accompany photos. Please list photo credit on back of photo.

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 and FAX contributions of late-breaking news or last-minute insertions are accepted as space allows. However, long articles must be sent by U.S. mail. Phone 1-800-242-4519 (US); 1-800-468-1966 (Canada); FAX (913) 273-1980.

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.

Items in this publication may be reprinted providing credit to this publication is given and a copy of the reprinted material is forwarded to the editor. Reprints of material appearing in this journal may be ordered from the editor. Back issues are available for \$3.00 each.

Message From the Executive Director

Hope you all had safe and happy holidays.

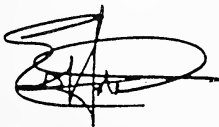
It is the hope of your Board of Directors and staff to make 1997 a year of controlled growth with financial recovery. We continue to work on the visionary statement of the Association and will soon be asking the membership for ideas and comments.

The National Conference in Detroit was successful both educationally and financially, and our congratulations goes out to our hosts, the staff members of the Detroit Zoological Institute and Belle Isle Zoo & Aquarium for their hard work. In addition, we cannot forget the institutions that hosted both pre- and post-conference trips.

Chapters will be receiving Recharter Packets very soon. Please fill them out completely and return them promptly. This helps out the staff and benefits the well being of the Association in many ways as tax time approaches.

It is also time to gear up for the 1997 Bowling for Rhinos. You now support three Sanctuaries and National Parks with your hard work and funds generated from this event. Starting with this year's event, there will be a \$25.00 registration fee for each Chapter or institution hosting a BFR fundraiser. This fee will pay for all materials such as sponsor sheets, postage, and additional expenses associated with the management of the BFR which exceed our event operating budget.

Your comments on the Association are always appreciated.



Ed Hansen
Executive Director AAZK



Animal Behavior Concerns & Solutions

A Question and Answer Forum for the Zoo Professional

By Diana Guerrero

Independent Behavior Consultant, Ark Animals of California, San Diego, CA

Emergency Behavior Strategies: Part 1 of 2 Zoological & Privately Owned Facilities, Multiple Species: Handling Attacks or Aggression

QUESTION

Anyone who has been in the wild animal/zoo industry long enough seems to have known someone who has been injured by an animal attack or even killed. Can you address the topic of handling accidents or attacks involving captive wildlife?

NOTE: There are various risks associated with working with exotic/wild animals. These include not only accidents with keeper staff or the public but a variety of others. Some of the others will include conspecific aggression or aggression directed toward veterinary staff. This is another very complex topic! Due to space constraints I will outline a few thoughts which can be amplified on the website. If you have specific tips to add or other questions please direct them to AAZK or e-mail ARK direct at arkabc@ix.netcom.com.

BACKGROUND

Recent discussions with the staff of several private facilities and public zoos have included questions on handling emergency situations. Some were about the differences in working with the large felids in training situations, while others concerned elephant incidents, a public member in a bear exhibit, and the child who fell into the gorilla yard.

Questions concerned comparisons between attacks and strategies of handling them. Each facility varies regarding their emergency/contingency/escape plans and each species has their own peculiarities. In addition, the exhibit design or institution is unique in their own way and must be treated individually.

PROBLEM

Any time you work with wild animals you are at risk. The nature of the contact and the degree of proximity determines a good deal of how much risk. A trainer for the movie industry has more risk than the handler on a stage but each has a higher risk than a keeper who is not in the enclosure with the exhibit animals at any time.

Skills of co-workers or the handling skills of the trainer or back-up vary widely

and can contribute to this risk. Mood swings, estrous and other variables within the animal group can also contribute to this challenge. Illness or other emotional variables can also affect reactions.

Then there is the keeper who is the victim of an accident caused by lack of communication, momentary distraction, archaic design/design error, or breach of protocol. Many of us have known one or more colleagues who have been injured or died from any one of these reasons.

The odd event of having a public member injured by an animal happens in every type of animal facility, public or private. It doesn't matter if you are a large facility with state of the art exhibitry or a small private collection; the risk is the same.

PROBLEM BREAKDOWN

All the incidents I have ever witnessed were attributed to human error. In comparing this observation with other behavior and training specialists, they confirm this to hold true for them as well.

ACTION TIME PERIODS

There are only two times where action can really be taken. The time to take action is ideally before you have an incident; if you have an episode, then the only alternative is to take action during it! Anything after the incident is dealing with the repercussions. Here are some general notes.

BEFORE

This means taking general precautions such as: noting where your co-workers are before moving animals; double checking locks and gates and location of the animals; paying attention to the "feel" or the general atmosphere in the night quarters or the "mood" of the animals and adjusting to it accordingly; checking the exhibit yard and perimeter for erosion, or for fallen debris, which could form escape routes to the outside, and other related concerns.

On a general note, be familiar with escape routes in an exhibit/facility and the emergency plan for accidents or animal escapes. Knowing whom to contact and what actions will be taken can save time and lessen the degree of risk or potential injury.

For shows or public appearances with animals, make sure your backups know how you will react or want them to. Make sure they know how to do crowd control and can alert you to potential hazards that you may encounter or that may startle an animal. Wind conditions, strange looking hats or sunglasses, stray items, people or animals are all things that could pose risk.

Practice drills or discussions of actions can be done in preparation to deal with teaching how to react to problems. Often the trainer's or handler's relationship with the animal can be used to prevent an incident and most times distraction can usually be used in this phase of any incident to prevent it or redirect the energy.

DURING

Once an incident is taking place there is only time for action. Safety of personnel, the public, and the animal are all concerns. The wrong interference can escalate an event. Depending on the nature of the animal(s), the location, and the staff on hand will determine what actions you can take and may make response difficult. Whether a person is conscious/unconscious or rational can also complicate matters. The specific types of strategies to implement are listed below.

APPROACHES

PROACTIVE PLANNING

This is done by having a facility and department action plan. Practice drills or at least in depth discussions regarding the subject and probable actions and reactions are also necessary.

Knowledge of the species (flight or fight), individuals (aggressive, curious, fearful, etc.,) is also helpful to define. Be sure to consider the different areas and times incidents could occur. Make sure everyone knows where the resources are (both human and otherwise) in the event of an emergency.

PREPAREDNESS

Practice drills, discussions, and knowledge of whom to contact are some topics to cover. Having knowledge of what type of actions or devices can be used to assist in the event an emergency does occur is critical. So is knowing how to take action or use the devices correctly! Don't forget to alert new staff to these procedures and update equipment and other procedural notes regularly. Be sure to keep them simple, a huge manual doesn't do it during an emergency, have a reference sheet for the area posted near phones and in a designated area.

RESOURCES

Physical and human resources are equally critical. Have the physical resources either on you, within close proximity of an exhibit, or in consistent areas throughout the facility. Also be sure to have radio and phone emergency numbers adjacent to the phone or on your person (i.e., hand-held radio or laminate pocket card).

Next Month:

Emergency Behavior Strategies: Part 2 of 2; Specific Strategies & Examples

NOTE: The Ark Animals's Website has completed the change to Electronic Magazine Format. The Zine will feature articles related to captive animal behavior, enrichment, conservation, and similar topics. The publisher welcomes electronically submitted articles (previously published or new work) and event announcements. Deadline is the 10th of the month previous to publishing. Interested parties may contact the publisher at arkabc@ix.netcom.com Site address is <http://www.ni.net/brookhouse.com/DGHome.html>

Coming Events

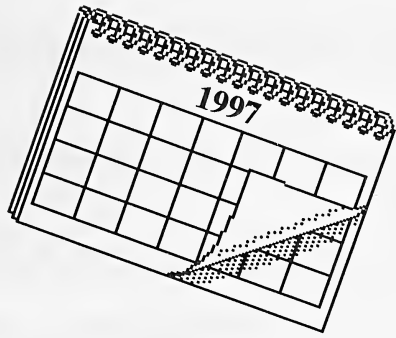
17th Annual Elephant Managers Workshop - January 24-27, 1997 in Jacksonville, FL. Hosted by Jacksonville Zoological Gardens. For further information, contact: Steven M. Wing, Curator of Mammals, Jacksonville Zoological Gardens, 8605 Zoo Parkway, Jacksonville, FL 32218 (904) 757-4463 or (904) 757-4315 [fax].

AZA Schools for Zoo and Aquarium Personnel - February 3-8, 1997 - (Professional Management Development for Zoo and Aquarium Personnel; Applied Zoo and Aquarium Biology; Principles of Elephant Management, Studbook I, Population Management; Science of Zoo & Aquarium Animal Management; and Conservation Education Training Program) will be held at Oglebay Park. For further information, contact AZA Office of Membership Services, Oglebay Park, Wheeling, WV 26003.

The 5th Annual Conference of the International Association of Avian Trainers and Educators - February 7-10, 1997 in Concord, CA. Hosted by Marine World Africa-USA. For information contact: Polly Gusa, Land Animal Coordinator, Marine World Africa-USA, Marine World Parkway, Vallejo, CA 94589, (707) 644-4000 Ext. 212 or FAX (707) 644-0241.

The First International Congress of Butterfly Exhibitors and Breeders - March 12-19, 1997 in San Jose, Costa Rica. For further information, contact Frank Elia, Callaway Gardens, Pine Mountain, GA 31822, (706) 663-5020 or e-mail at 5503.2345@compuserve.com.

1997 Enrichment Conference - October 13-17, 1997 in Orlando, FL. Hosted by Sea World of Florida. For more information, contact: Thad Lacinak, 7007 Sea World Drive, Orlando, FL 32821-8097 USA. Call (407) 363-2651.




AZA Conference Schedule

AZA Eastern Regional Conference, March 19-22, 1997 - Memphis, TN. For further information, contact Carol Cratin, Memphis Zoo, 2000 Galloway Ave., Memphis, TN 38112 (901) 725-3450.

AZA Western Regional Conference, April 9-12, 1997 - Phoenix, AZ. For further information, contact Bruce Bohmke, The Phoenix Zoo, 455 North Calvin Parkway, Phoenix, AZ 85008 (602) 273-1341.

AZA Central Regional Conference, May 15-18, 1997 - Cleveland, OH. For further information contact Jim English, Cleveland Metroparks Zoo, 3900 Brookside Park Dr., Cleveland, OH 44109 (219) 661-6500.

AZA Annual Conference, September 14-18, 1997 - Albuquerque, NM. For further information contact Terry Axline, Albuquerque Biological Park, 903 Tenth St., S.W., Albuquerque, NM 87102 (505) 764-6200.



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AZA Announces Awards

The American Zoo and Aquarium Association has announced the following awards:

Conservation Award

Lincoln Park Zoological Gardens

Lincoln Park Zoo Scott Neotropic Fund

Significant Achievement:

The Lube Foundation
Bronx Zoo/Wildlife Conservation Park

Old World Fruit Bat Conservation
Reintroduction of Black Howler
Monkeys into the Cockscomb
Basin Wildlife Sanctuary, Belize

National Aquarium in Baltimore

Project ReefAction

Edward H. Bean Award

The Baltimore Zoo

**The African Penguin Long-term
Propagation Program**

Vancouver Aquarium

**Lingcod (*Ophiodon elongatus*)
Breeding Program**

Significant Achievement Awards:

St. Louis Zool. Park, Fossil Rim
Wildlife Center & The Living Desert
National Zool. Park Conservation &
Research Center

A Coperative Management
Program for Addax
Research and Conservation of the
Burmese Brow-antlered Deer

Bermuda Aquarium, Natural History
Museum and Zoo

Long-term Captive Management
& Propagation of the Caribbean
Flamingo

Houston Zoological Gardens
Sea World of Texas, California,
Florida, and Ohio

Corvid Management Program
Elasmobranch Breeding Program

Cincinnati Zoo & Botanical Garden

Long-term Propagation of the
Sunburst Diving Beetle

John G. Shedd Aquarium

Mantella Frog Breeding Program



AMERICAN ZOO AND AQUARIUM ASSOCIATION



We're Putting Together the World's Most Amazing Zoological Collection.

As an Animal Keeper at Disney's Animal Kingdom, you have the ability to join an elite group of conservation minded professionals who are dedicated to building the world's finest zoological park. We are currently looking to hire more than 80 Animal Keepers to join Bruce Read and Rick Barongi as they create a whole new species of theme park opening in Spring of 1998.

You'll work under the direction of the Zoological Manager or Curator, and will be responsible for the care, management, welfare and enrichment of all the animals in the animal collection. The pay is competitive, the benefits are great and you'll have the opportunity to be in on the ground floor of the next generation in animal care and conservation.

You should have a high school degree or equivalent with work experience. A college degree in biology or related field is strongly preferred. All candidates should send a formatted résumé on white paper by January 31 to: Salaried Casting, XADSAK157, P.O. Box 10090, Lake Buena Vista, FL 32830 or fax to 407-828-1571.

Disney's Animal Kingdom will be conducting interviews with Animal Keepers during these Regional Conferences*:

March 19 - 22, 1997 Memphis Zoo, Memphis, TN; April 9 - 12, 1997 Phoenix Zoo, Phoenix, AZ;
May 15 - 18, 1997 Cleveland Metroparks Zoo, Cleveland, OH

*** Interviews will be conducted only with candidates who have submitted résumés
and have been scheduled in advance of event.**



1996 Conference Proceedings Order Information

If you are interested in obtaining a copy of the Proceedings containing the papers presented at the 23rd National AAZK Conference held in Detroit, MI, you will need to fill out and return the form on the next page no later than **31 January 1997**. All orders **must** be prepaid in U.S. Funds ONLY. Allow 4-6 weeks following deadline for receipt of publication. Prices are as follows:

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Note: Individuals who presented papers at the conference **and** submitted a manuscript in time for inclusion in these Proceedings will receive a gratis copy. If a manuscript was **not** submitted, a gratis copy will not be sent, and those individuals will need to order a copy if they want one.

Cost of the Proceedings was **NOT** part of the Conference Registration Fee and delegates wishing a copy will need to order one.

The following papers are among those included in the Proceedings:

Strategies and Action for Field Conservation: Coalition for Reefs and Rainforests ~ The Fund Raising Success Story of Bowling for Rhinos ~ Assisting Field Conservation on a Shoestring Budget: The Metamorphosis of FRAWG ~ Detection and Treatment of a Possible New Disease Syndrome in a Captive Black Rhino ~ A Successful Reintroduction of an Initially Rejected *Pan troglodytes* Newborn to Its Natural Mother ~ The Care and Procedure Involved in Mending a Broken Leg of a Two and a Half-Year-Old Giraffe - a Keeper's Perspective ~ Hippopotamus Training: Implications for Veterinary Care ~ Mustached Tamarins on the Loose ~ Hippopotamus Underwater Behavior and Communication ~ Contraception (workshop) ~ Carnivore Enrichment ~ Inhlovudawana or "Little Elephant": Managing Warthogs Through Operant Conditioning ~ From Rags to "EN" Riches: Turning an Idle Exhibit Into an Enrichment/Browse Garden ~ The Pet Primate Problem: Recognizing the Role of Zoos in the Problem and Its Solution ~ The Making of a Primate Project in the Peruvian Amazon ~ Captive Propagation for Macaw Conservation in Costa Rica ~ Creation of an Age-Diversified Gorilla Group Through Alternative Means ~ Safety First and Always...At the Jackson Zoo ~ Water Conservation: What Zoo Keepers Can Do ~ Exhibit Design for Breeding Fennec Fox (poster) ~ "Coed" Colobus Monkeys at Cheshaw Wild Animal Park (poster) ~ Changes in Slow Loris Husbandry Due to the Birth of an Infant (poster).

These are the papers which had been submitted as of this month's press time. We also plan to include any other papers, workshop summaries and poster session abstracts that become available to us by our publication deadline.

Feel free to photocopy the form on the next page to place your order. Phone orders may be placed at 1-800-242-4519 (U. S.) or 1-800-468-1966 (Canada) when using either a Mastercard or VISA credit card.

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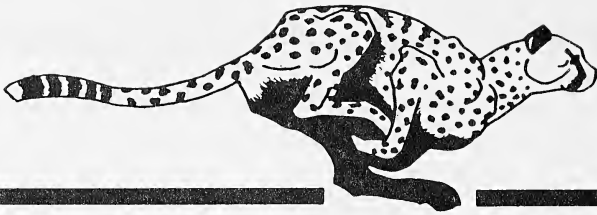
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Orders Must Be Received by 31 January 1997

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REACTIONS

A Question and Answer Forum for the Zoo Professional on Crisis Management

By William K. Baker, Jr.
Zoologist, Lufkin, TX

QUESTION: What is a crisis management situation and what are the differences between zoological, natural disaster, and manmade crisis management situations?

THE CRISIS MANAGEMENT SITUATION

A situation or event that occurs in or near a zoological institution or facility that results in the disruption of normal operations and poses a threat to the safety of the public, staff, or animal collection may be called a crisis management situation. These emergency situations can be further classified into one of three categories: zoological disaster, natural disaster, and manmade disaster.

ZOOLOGICAL DISASTER: A crisis management situation in which a zoological specimen poses a threat or potential threat to human life.

1. **Dangerous Animal Escapes** - Situations in which dangerous animals are out of their normal shift, holdover, or exhibit area. This would include medium to large size carnivores, large primates, venomous reptiles, large reptiles, and large hoofstock. Examples of this would be: leopards, tigers, bears, orangutans, gorillas, cobras, mambas, alligators, sable antelope, rhinoceros and elephants.

2. **Human-Animal Interaction** - Situations in which either staff members or members of the public have come into direct contact with a hazardous or dangerous zoological specimen. Examples of this would be: shift procedure failure, accidental keeper contact, and public contact with animals on display.

3. **Outbreak** - situations in which either staff members or members of the public have come into contact with zoological specimens that have a communicable disease or the possibility of a contagion exists. This crisis would also include situations in which cross-contamination of different species is possible. Examples of this would be: salmonella, *e. coli*, EMC, or a BL-4 virus, such as Ebola.

NATURAL DISASTER

A crisis management situation in which an act of nature has resulted in failure of critical services and/or damage to a facility; and, as a result, places members of the public, staff, and animal collection at risk. This type of situation has a high probability of animal mortality and primary containment failure. Examples of this would be: severe weather, wind damage, lightning strike, forest fire, flooding, tornado, avalanche, earthquake, landslide, volcanic activity, and hurricanes.

MANMADE DISASTER

A crisis management situation in which events have occurred due to human interaction or failure of a manmade structure or service that has resulted in placing members of the public, staff, and the animal collection at risk. Examples of this would be: containment failure, structural failure of a building, electrical fire, arson, power outage, water outage, natural gas leak, hazardous materials spill, riots, bomb threat, and acts of war or terrorism.

COMMENTS

Due to the often complex nature of zoological crisis management situations, it is likely that one aspect of the crisis can result in complications or a further crisis. For example, if a hurricane hits your facility (natural disaster), it is possible to lose animal containment (manmade disaster), and have dangerous animals escape (zoological disaster). It is also possible to have extreme flooding (natural disaster) that traps animals in their exhibits to drown, which results in animal staff having to somehow dart the animal and move it to temporary containment on higher ground, thereby placing the animal and staff members at risk (zoological disaster). We live in a complex and ever-changing environment that often challenges us and our abilities and the best we can do as professionals is to be aware of the potential problems, prepare, train, and react.

(About the author: Since 1985 Bill has been active in the fields of science, zoology and wildlife management. His education and experience include a B.S. in wildlife management and post-graduate studies in zoology, Lab and Museum Assistant, Shoot Team leader, ERT Member, Senior Keeper and Large Mammal Keeper at various AZA facilities. His area of research is crisis management in zoological institutions, which draws upon practical experience and training as a Rescue Diver, Hunter Safety Instructor, NRA Firearms Instructor, and Red Cross CPR/First Aid Instructor.)

Bowling for Rhinos Update

New Project For Bowling for Rhinos 1997 Sumatran Rhino Conservation

*submitted by Patty Pearthree, National BFR
Coordinator, Indianapolis, IN*

A proposal was presented and approved at the National AAZK Conference to begin funding a project to help save Sumatran rhinos and their ecosystem. The first \$100,000 raised each year through "Bowling for Rhinos" (BFR) will continue to support Lewa Wildlife Conservancy (LWC). Additional funds will be split between Ujung Kulon in Java, Indonesia and Bukit Barisan Selatan National Park (BBSNP) in Sumatra. The International Rhino Foundation (IRF) will be the administrator of these funds to ensure the money is used for projects which are given top priority by the Asian Rhino Specialist Group (ASRSG) and the International Union for the Conservation of Nature (IUCN) to save the Sumatran rhino.

Bukit Barisan Selatan National Park (BBSNP) is a 3,5658 square km protected area on the southwest side of the island of Sumatra. Asian elephant, tiger, clouded leopard, Malayan sun bear, Indian wild dog and a substantial number of the estimated 250 Sumatran rhinos live within the park. A budget of \$25,000 a year is needed at BBSNP to provide additional patrol stations, patrol equipment and training of park guards in anti-poaching skills. Information will be included about this park in the 1997 BFR information packet.

If you need this information packet and/or sponsor sheets for your 1997 event, please call (317) 322-8723 (9am-8pm) or write: Patty Pearthree c/o Bowling for Rhinos, Box 199026, Indianapolis, IN 46219-9026.

The following is a portion of a fax received from Dr. Tim O'Brien of the Wildlife Conservation Society stationed at Bukit Barisan:

"The Sumatran rhino is believed to be the most endangered of all rhinos according to the Asian Rhino Specialist Group (Newsletter January 1995). Currently, the Sumatran rhino strongholds on Sumatra are Gunung Leuser National Park (with a seven-year US\$43,000,000 grant from the European Union; \$1.2 million dedicated to rhino conservation), and Bukit Barisan National Park (no outside funding for management). The Global Environmental Fund (World Bank) Rhino Project has plans to establish a rhino protection unit in Bukit Barisan at some point and we think they may have already done some preliminary surveys. The Sumatran Rhino Sanctuary at Way Kambas is a captive breeding/ecotourism project (supported by a US\$2,000,000 G.E. F. grant, a US\$50,000 International Rhino Foundation grant and a pending European Union grant). Fortunately, recent camera trapping efforts by Ron Tilson at Way Kambas has demonstrated that the Sumatran rhino is present there. Kerinci Seblat National Park formerly

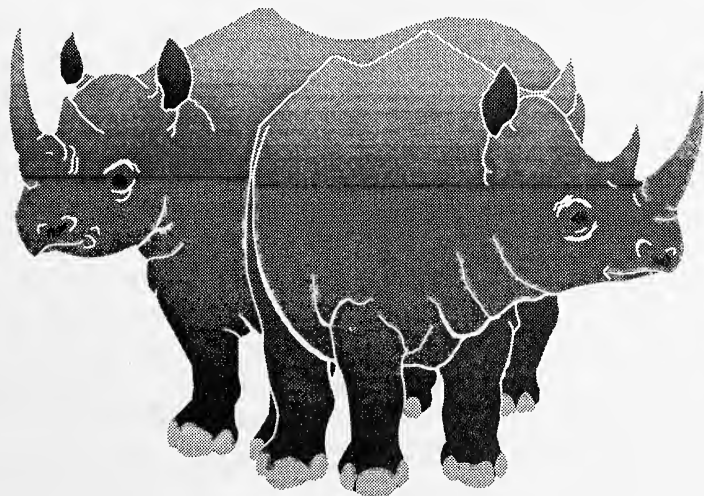
was thought to have the second largest population of Sumatran rhinos, but recent surveys found little evidence of rhino and a lot of poaching activity. As far as I know, above areas are the priority sites for Sumatran Rhino conservation on Sumatra and the funding sources that support them.

What is clear from this summary is that Bukit Barisan is a priority rhino conservation site and that it is receiving little attention from the conservation community. WCS's commitment to Bukit Barisan is to help develop funding sources that can be applied to active park management by PHPA, to train park personnel, university students and interested NGO's, and, when possible, to support management activities.

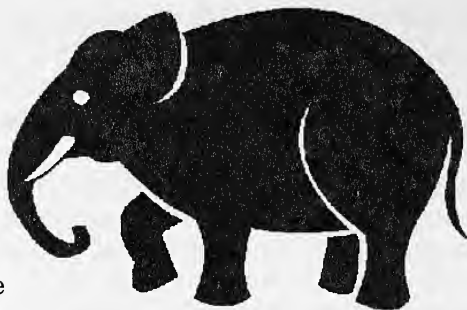
Current needs of Bukit Barisan include funds for establishing guard patrol stations in the park (guards are more likely to patrol if they have a path and shelter), camping equipment and hiking shoes, some office equipment (currently the park has one computer and a printer for an office staff of 50+ and 40+ park guards—WCS is buying a computer soon), and funds to support forest patrols (guards do not patrol much because the park budget does not include sufficient funds) and funds to support training of guards at Way Kambas and elsewhere.”

Estimated Budget:

Patrol Stations (4)	@US\$1,500/station	US\$ 6,000.00
Camping Equipment:		
Tents (10)	@US\$200/tent	US\$ 2000.00
Sleeping Bags (20)	@US\$40/bag	US\$ 800.00
Backpacks (20)	@US\$75/pack	US\$ 1500.00
Rain gear (40)	@US\$20/coat	US\$ 800.00
Cost of Training		US\$ 4000.00
Cost of Patrols		US\$ 10,000.00
Contingency		US\$ 700.00
	TOTAL	US\$ 25,000.00



Chapter News Notes



Burnet Park Zoo Chapter

Hello from wintery New York! We've had a productive year. Our Bowling for Rhinos was a success. We had a good turnout, including the local media. We began a Speaker's Bureau to handle the community's need for speakers and we've been swamped.

We were able to help fund a guest speaker to the area for a local school and our zoo. Charlene Jendry's talk was very informative and well received by all. Charlene is the Conservation Coordinator at the Columbus Zoo, Powell, OH.

We sponsored a keeper's attendance at a Wolf Conference in Albany, NY, and helped our volunteers attend their annual conference as well. Currently we are just hoping to get through the holiday fundraisers in one piece.

Our current officers are:

President.....Margaret Louer
Vice President.....Chandra Lindsay
Treasurer.....Jeff Hewitt
Secretary.....Kathleen Hannon

Our elections are coming up soon and we hope to start this new year as good as last!

--*Kathleen Hannon, Secretary*

Greater Baltimore Chapter

In July we held our Bowling for Rhinos. This was our second year to participate and we raised twice the amount from the first effort. What's going to happen this year!

We had a very special lecture in September when Anna Merz was able to come to Baltimore and speak about her life working with rhinos. We were very happy to be able to raise some money to donate to the Rhino Trust.

--*Rick Jones, Outgoing Chapter Liaison*

ATTENTION CHAPTERS

Recharter packets were mailed to all Chapter Presidents the first week in January. Completed Recharter Packets are due at Administrative Office by 1 March 1997. Chapters rechartering after this deadline will be assessed a late fee of \$75.00.

Be sure to completely fill out the annual activity and financial reports as this information is needed by AAZK, Inc. for tax reporting to the Internal Revenue Service



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Nectar Feeding As An Enrichment Technique With Island Flying Foxes

By

Dana LeBlanc, Animal Supervisor
Lubee Foundation, Inc.

1309 NW 192nd Ave., Gainesville, Fl. 32609

Introduction

Old World fruit bats (Family: Pteropodidae) have evolved with flowering plants, and play a special role as plant pollinators and seed dispersers (Fleming, 1993; Marshall, 1983; Heithaus, 1982; Sussman and Raven, 1978). These bats (Megachiroptera) feed principally upon fruit, floral resources (nectar, pollen, bracts, and petals), and leaves (Marshall, 1985). Bats of the genus *Pteropus* have been documented to use flowers of 26 genera, fruit of 62 genera, and leaves of 16 genera (Marshall, 1983; Kunz and Diaz, 1995). The genus *Pteropus* currently consists of 59 recognized species which vary in size from the Malayan flying fox (*Pteropus vampyrus*) to the dwarf flying fox (*Pteropus woodfordi*). These species range in weight from 1.6 kg and a forearm length of 180-220 mm to 170 grams and a forearm length of 89-93 mm (Mickleburgh et al. 1992; Nowak, 1994; Flannery, 1995; Corbet and Hill, 1992).

Eight species of flying foxes (*Pteropus spp.*) are successfully maintained in captivity in North America (ISIS, 1994; Fascione and Hutchins, 1991). The AZA bat taxon advisory group, identifies enrichment as an important tool in the captive management of these flying mammals (Fascione and Wing, 1995). Enrichment techniques with fruit bats have centered on offering a wide variety of whole fruits and vegetables, browse, olfactory stimulation, and a variety of cage furniture such as ropes, natural branches, and mirrors (Lling, 1993; Atkinson, 1993; LeBlanc et. al. 1993, Stevens et. al. 1995; Riger, P. pers. comm.). Because nectar feeding is a natural behavior for these bats, a nectar feeding strategy may be an option for environmental enrichment. The objective of this study was to evaluate 1) a low cost nectar feeder and 2) an artificial kapok (*Ceiba pentandra*) nectar with island flying foxes (*Pteropus hypomelanus*) as a test case for other megachiroptera.

Methods and Materials

Subjects

The bats were housed in identical but separate octagonal free-flight enclosures that had an area of 102 square meters (Seyjagat, 1994). Fifty-eight Island flying foxes (sex ratio 22.36) were utilized for the study (Pen 3: 19 females, Pen 5: 22 males, and Pen 12: 17 females). The bats received their diet at 16:00 to 17:00 hrs as per the normal routine.

Nectar Composition

Floral nectar consists of sugars (glucose, fructose, sucrose, etc.), proteins, amino acids, lipids, anti-oxidant organic acids, alkaloids, and phenolics (Baker, 1978). Specific plant species have specific nectars, and these may be high in certain types of sugars depending on the insect or vertebrate pollinator (Baker, 1983). Nectar also varies in concentration depending on environmental factors such as heat, wind, humidity, and time of day.

The artificial nectar used in this study was based on the sugar composition of the nectar of the kapok tree (*Ceiba pentandra*) (59% glucose, 25% fructose, and 16% sucrose) which is utilized by the genus *Pteropus* throughout Southeast Asia (Elmqvist et. al. 1991; Fujita and Tuttle, 1991; Marshall, 1985; Sussman and Tattersall, 1977). This tree species has a pantropical distribution and is considered a bat-pollinated plant in both the Old and New World (Toledo, 1977; Elmqvist et. al. 1991). The mean sugar concentration of the nectar of the kapok tree is 15-18% (Baker, 1983).

Law (1993) found that sugar concentration of nectar did affect the attractiveness of the nectar to the Queensland Blossum bat (*Syconycteris australis*), with the bat preferring a sugar concentration of 40% when given in a preference test with 10%, 20%, and 30% nectar solutions. For this study, an arbitrary sugar concentration of 10% was selected based in part by a desire to limit the amount of calories that the bats would gain by consuming the nectar as well as on the positive response by study subjects to this nectar concentration.

In addition to the sugars (glucose, fructose, sucrose), amino acids were added to the artificial nectar, since kapok nectar does contain a variety of amino acids which may affect it's taste. Amino acids were added to the nectar in the form of Twinlab® LLP regular predigested collagen protein. The amount of amino acids added to the nectar was based on Gottsberger et. al. (1984) and Baker (1978) who found that the mean amino acid concentration of New World bat nectars was 60 micrograms per ml.

Preparation of the Nectar Feeder

Figure 1. shows an island flying fox at a nectar feeder. The nectar feeder is a 12.5 cm long sweet gum (*Liquidambar styraciflua*) branch section (16 cm in diameter) with twelve 18 mm holes distributed over the surface of the log. The twelve holes were lined with 12 cm long graduated 16 ml plastic centrifuge tubes. The tubes were fitted into the log so they were flush with the log surface to discourage chewing. The tubes held a total of 192 ml of fluid when filled to the top. The nectar feeder was hung 30 cm from the ceiling using an eye screw, plastic chain, and S hooks.

Preparation of the Nectar

From the kapok nectar-sugar composition (Sussman and Tattersall, 1977) (59%

glucose, 25% fructose, and 16% sucrose), an artificial nectar was produced. Thirty grams of Staleydex® 333 dextrose (dextrorotatory glucose) was mixed with 12 grams of Krystar® crystalline fructose and 8 grams of pure cane sugar (sucrose). The mixed sugars were added to 450 ml of tap water to make a ten percent solution. One ml of Twinlab® LLP regular predigested collagen protein was added to the mixture to achieve 60 micrograms of amino acids per ml of artificial nectar. Fresh batches of nectar were prepared in 0.5 liter quantities for each experiment to avoid fermentation.

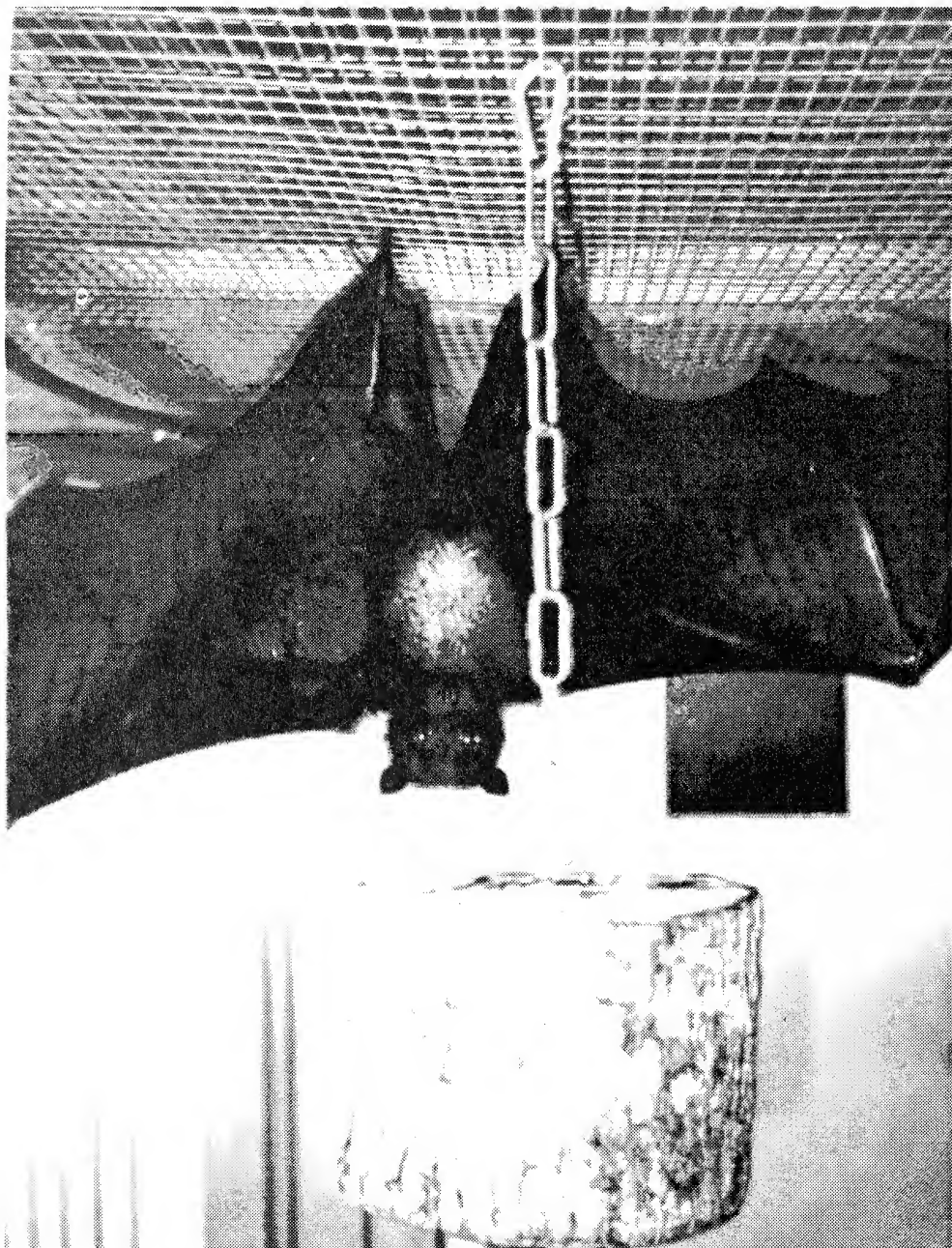


FIGURE 1 shows an Island Flying Fox at a nectar feeder.

Experimental Design

A total of 58 island flying foxes (three enclosures) were evaluated with five different experimental treatments: 1) a nectar feeder with a 10% solution of artificial kapok nectar, 2) an empty nectar feeder (control), 3) a nectar feeder with tap water, 4) a nectar feeder with a 10% solution of apple cider vinegar, and 5) 80 ml of artificial kapok nectar (10% solution) in a small food bowl. Each condition was repeated six times in a random fashion with each test group, making a total of 30 trials per enclosure, and a grand total of 90 trials. Eleven of the twelve centrifuge tubes were filled completely, and the twelfth tube was used as a control for evaporation.

Video Observations -

All enclosures were video-taped in the free-flight enclosure outside the nighthouse via a time lapse black and white recording system (One minute of real time was equal to 7 seconds of play back time) for six hours from 17:00 to 23:00 hours.

Recording Data -

Behavioral observations based on video analysis were taken on all trials using scan sampling each minute of real time. Frequency of bat contact with the device and fighting at the feeding site were recorded. Further behavioral observations were limited due to the circular design of the bat enclosures, the limited viewing area of the camera monitor, and the time lapse recording format (one minute of real time was equal to seven seconds of play back time).

Results and Discussion

Figures 2 through 4 show the average time in minutes each Island flying fox enclosure was in contact with the enrichment device. Table 1 summarizes the number of contacts versus the average time in contact with the feeder per treatment in each enclosure. The highest number of contacts on average (recording one contact per animal per minute) for all treatments with island flying foxes was 195 contacts for nectar in a feeder. In all three pens, nectar and diluted vinegar in the feeder created the most interest and contact time with the device, and both conditions were significantly different ($P < .05$) than the other three conditions tested. No significant difference between nectar and diluted vinegar in the feeder was noted, except in pen 12 where the bats showed a significantly higher amount of contact time with the nectar. All three pens responded to tap water in the feeder, the empty feeder, and nectar in a bowl in a consistent pattern. In this pattern, water showed the highest amount of activity, then the empty feeder, and lastly nectar in a bowl.

The longest amount of time spent with a condition on average was 2.5 hours with nectar in a feeder. The bats also spent 2.1 hours on average with diluted apple cider vinegar in the device. The Island flying foxes spent the least amount of time with 80 ml of nectar in a small bowl (23.5 minutes on average for all three pens) due to being able to finish the nectar in a short time period.

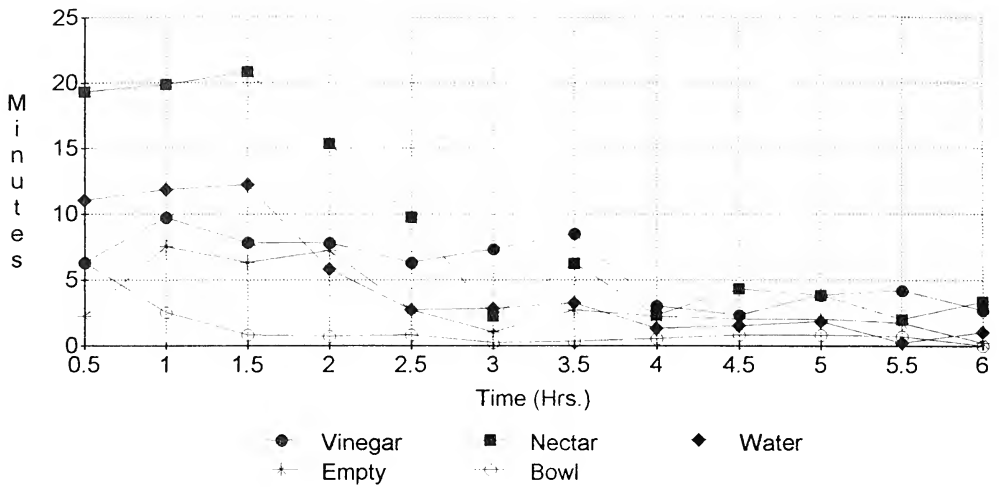


Figure 2. Average contact time with enrichment device in pen 3 for 19 female Island Flying Foxes.

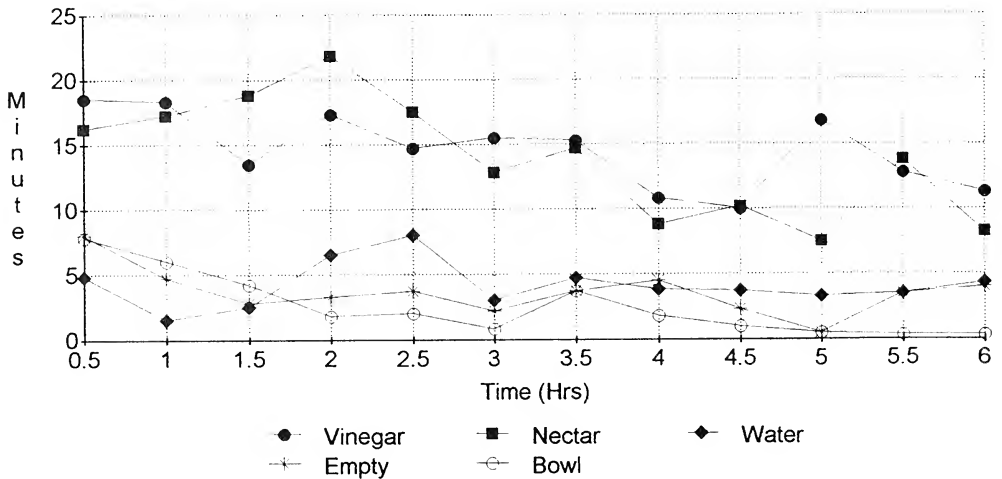


Figure 3. Average contact time with enrichment device in pen 5 for 22 Island Flying Foxes.

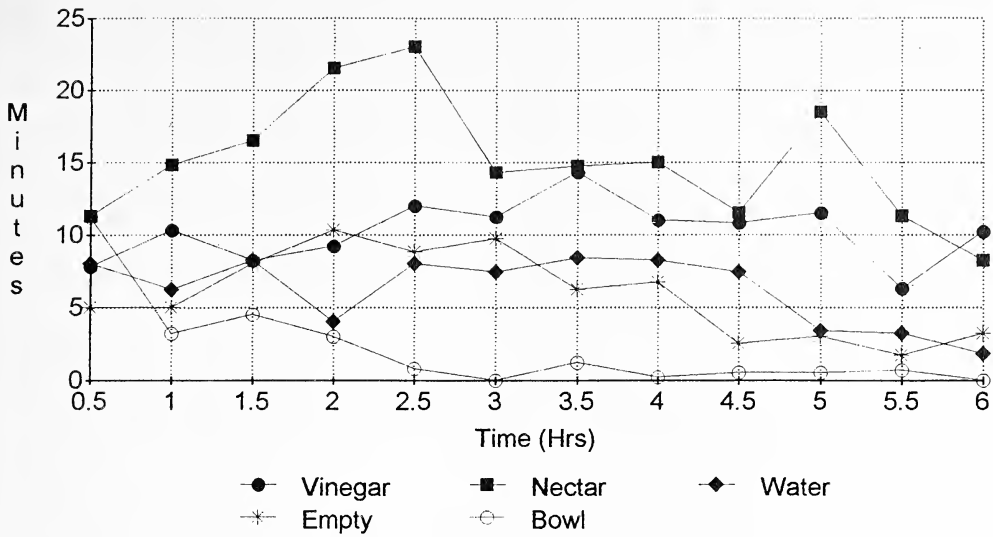
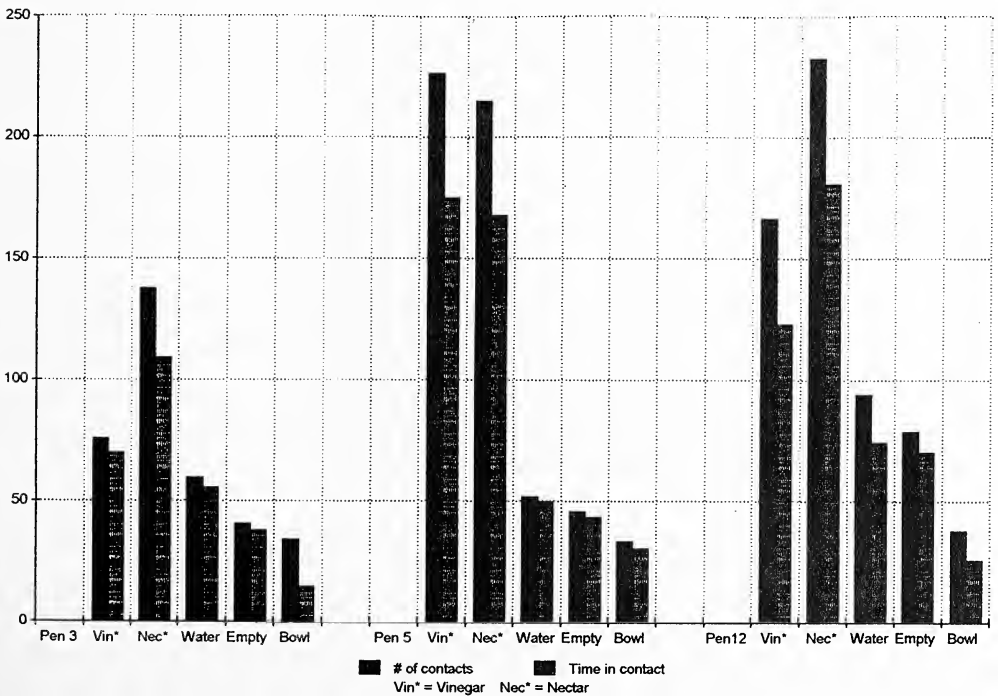


Figure 4. Average contact time with enrichment device in pen 12 for 17 female Island Flying Foxes.

Table 1. Average number of contacts versus the average time in contact per treatment for Island Flying Foxes.



The average time spent fighting for all trials over a six-hour period from pen 3 and 5 was 16.2 minutes. No information on fighting was taken in pen 12. There was no significant difference in fighting in all trials except: Pen 5: where nectar in a feeder had a significantly higher amount of fighting versus an empty feeder and nectar in a food bowl and Pen 3: where tap water in a feeder had a significantly higher amount of fighting versus an empty feeder. Fighting and aggression which could disrupt social groups could be limited by offering several nectar feeders at a time that are widely spaced out. During prime activity times, as many as three island flying foxes were observed to be in contact with the feeder without noticeable aggression.

Nectar in the feeder was consumed on average to the maximum depth of 5.11 cm. In pens 3 and 12 there was no significant difference between the amount of nectar, dilute vinegar solution, and tap water taken. In pen 5, there was a significant difference in the amount of dilute vinegar ($P = 0.01$) and nectar ($P = .002$) consumed versus the amount of tap water taken. Although in this same pen, there was no significant difference in the amount of dilute vinegar taken over the nectar. In all trials, the Island flying foxes did consume 100% of the nectar offered in a food bowl. Evaporation of fluids in the feeder was less than .25 ml of fluid. No adjustments were made to eliminate the error for evaporation.

In summary, as an enrichment device, the nectar feeder with a desired food item was shown to have a longer contact (activity) time over the same food item in a small food bowl. A 10% solution of artificial kapok nectar and diluted apple cider vinegar (10% solution) did create the most interest in the nectar feeder over the control of tap water and an empty nectar feeder. Of special notice during this project was that the bats were willing to work for tap water which was available to them at all times. This may underline the fact that it was more important to have novel items offered on a regular basis in a random fashion, so the animals did not lose interest in any one condition.

Another important consideration in nectar feeding with captive animals, is the amount of carbohydrates offered which could lead to diet related problems. The aim of this enrichment project was to find something the bats were willing to work for over a long period, and to limit problems such as obesity. One way to achieve this is to start offering a nectar solution that is high in carbohydrates, and slowly work down towards a weak solution that the animal is willing to devote time and energy in trying to obtain. The feeder could also be filled with tap water and dilute vinegar solutions given randomly with nectar solutions to provide a changing enrichment scheme. The nectar feeder can be placed at varying heights to promote flying in these mammals.

Acknowledgments

I would like to express my sincere appreciation to John Seyjagat and Dr. Tim Gross for helping me to initiate and conduct this project. Thanks to the following people who have help collect behavioral information: *Keepers*: Elizabeth Stevens, Mark Chag, Angela Millwood, Caroline Cooke, Marc Kirkpatrick. *Part-time keepers*: Nonie Kirkpatrick, Elizabeth Stuart, Diedra Swaine. *Volunteers*: Michelle Canapary, Lisa Croteau, Jason Brickler, Michelle Bidwell, and Taylor White. This project would not have been possible without the charitable donation of Staleydex 333 dextrose and Krystar crystalline fructose by the A.E. Staley Manufacturing Company (Sweetener Group 2200 East Eldorado St. Decatur, Illinois 62525). Thanks also to Sharon LeBlanc, Dr. Thomas Kunz, Martin Ramirez, John Bradley, and Pearl Dyer for reviewing the final draft of the paper.

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HAWK BEATS PESTICIDE: An agreement between environmentalists and the agrochemical giant Ciba-Geigy, Ltd. will pull a pesticide known to be killing Swainson's hawks from the market in Argentina. The New York Times reports the agreement commits Ciba-Geigy to remove the pesticide monocrotophos from an agricultural area near Buenos Aires that is the primary wintering ground for the Swainson's hawk. The agreement calls for Ciba-Geigy to buy back all its monocrotophos used in the area and to encourage other manufactures of the pesticide to follow suit. Gerald Wingrad of the American Bird Conservancy, which acted on behalf of 56 environmental and ornithological organizations said the goal of the group was to convince Ciba-Geigy to take the pesticide off the market worldwide. —*GreenLines Issue #233*

BALLOT REPORT: 15 initiatives affecting wildlife and habitat in 14 states were approved by the voters in November, says a report from Defenders of Wildlife entitled "Biodiversity, Citizens, and the States." Initiatives on private lands conservation in FL, ME, and OR failed, but voters in AR, ME, MO, NM, and RI approved measures for habitat acquisition. George says "keep an eye on AZ and FL" in 1997 and 1998 as initiatives are already planned to restrict logging and designate wild rivers in AZ and compensate property owners through "takings" in FL. Email a request to rrodriguez@defenders.org to receive a copy of the report. --*GreenLines #266*

AAZK Announces New Professional/Contributing Members

Mike Nurmikko, **York's Wild Kingdom (ME)**; Emily M. Davidson, **Lake George Zoological Park (NY)**; Shari Payne, **Mill Mountain Zoo (VA)**; Donna Evernham, **Jacksonville Zoo (FL)**; Dennis R. Helmling and Aurelio Padron, **Liberty Farms Animal Park (GA)**; Aleandra Robbins and Daniel Bailey, **Zoo World (FL)**; Lonnie McCaskill, **White Oak Conservation Center (FL)**; Charles J. Sheridan, **Lion Country Safari (FL)**; Heather Germanton, **Carribbean Gardens (FL)**; Angela Quilt, **The New Montgomery Zoo (AL)**; Jill Oswald, **Lake Superior Zoo (MN)**; Debra Ann Christensen, **Lincoln Park Zoo (IL)**; Bridgette K. Daley, **Wild Canid Survival & Research Center (MO)**; Chuck Tourtillott, **Denver**

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Lane Theriac, Director, Washington Park Zoo,
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Gordon Henley, Director,
Ellen Trout Zoo, Lufkin, TX
Gerald W. Murie, San Diego, CA

1997 Elephant Research Symposium

The Pittsburgh Zoo is pleased to announce that we will be hosting The Second Annual Elephant Research Symposium in mid-1997. We encourage participation from all facets of elephant care. We hope to have keepers, curators, directors, veterinarians, researchers, circus members, docents, and students attending. This broad mix is necessary to learn the valuable information making captive breeding a reality for elephants. Projected topics are Exhibit Design, Veterinary Care, Reproductive Research and Assessment, and *in-situ* and *ex-situ* research. For further information contact: Lee Nesler or Joan Warren-Jackson at Phone: (412) 665-3651; Fax (412) 665-3925.

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Legislative Update

*Compiled by Georgann Johnston
Legislative Advisor
Sacramento, CA
1-800-338-7348*



Three New Refuges Added to National Wildlife System

The U.S. Fish & Wildlife Service has announced the addition of three new national wildlife refuges, bringing the total number of refuges to 511. The new refuges are the San Diego National Wildlife Refuge (formerly Rancho San Diego), Mandalay National Wildlife Refuge in Louisiana, and Rappahannock River Valley National Wildlife Refuge in Virginia. Together, the three areas encompass more than 7,000 acres of habitat.

In San Diego, the refuge lands were acquired as a result of a partnership between the USFWS, the Resolution Trust Corporation, The County of San Diego, the California Department of Transportation, and the Otay Water District. The land provides coastal sage scrub and riparian habitat for California gnatcatchers, least Bell's vireos, and a variety of other bird species.

In Louisiana, the land involved is primarily freshwater marsh and wetlands which provide habitat for 75,000 wintering ducks and many other neotropical migratory songbirds. The refuge is the result of a donation from The Louisiana Nature Conservancy in a partnership with the Louisiana Department of Wildlife and Fisheries, the U.S. Army Corps of Engineers, USFWS and a number of other state and federal agencies and private organizations.

The Virginia sanctuary was created from a donation from The Nature Conservancy and The Trust for Public Lands in conjunction with the USFWS. The area is located along an important waterfowl migration and feeding path and during the winter, shorebirds, raptors, wading birds and song birds all use the habitat. Also, the largest winter bald eagle roost in Virginia is located within and adjacent to the refuge boundaries.

For more information about these three new refuges and the other 508 national wildlife refuges call (800) 344-WILD or contact Gary Stolz, USFWS, (202) 219-3861.

Source: U.S. Fish & Wildlife Service Press Release, 29 October 1996

Pet Theft & Pound Seizure

Congress is currently considering legislation regarding pet theft and pound seizure. HR 3393, the "Family Pet Protection Act of 1996", would amend the

Federal Animal Welfare Act to prohibit class B animal dealers from selling dogs and cats for research.

The Animal Welfare Act was passed by Congress in 1966 and gave the U.S. Department of Agriculture responsibility for licensing and inspecting dealers who supply research labs with animals for experimentation. It also established two classes of dealers: Class A - those who breed animals on their premises specifically for use by labs; and Class B - those who obtain animals from "random sources". All that is required to obtain a Class B permit is to pay the \$50 license fee to the USDA.

The purpose of HR 3393 is to keep the less than scrupulous Class B dealers from illegally obtaining dogs and cats — often family pets — and then selling them to research labs. Additionally, the bill will place new restrictions on shelters that participate in pound seizure; the taking of animals from shelters and pounds to serve in biomedical research. Under HR 3393, all animals turned over to research labs must be held for at least 10 days and stray animals may not be provided for research purposes.

A potential by-product of the legislation regarding Class B dealers will be to more stringently regulate people who obtain non-domestic animals for resale to research sources. For example, many unaccredited "roadside" zoos and businesses such as "petting zoos" need to dispose of more exotic species once they become too old or too unmanageable for use in the trade. HR 3393, as it is now written, would also provide some additional peripheral regulation regarding the disposal of these species to research facilities.

Source: National Humane Education Society Bulletin November 1996.

Zimbabwe's "CAMPFIRE" Program Under Attack by U.S. Animal Rights Organizations

This column previously reported to you about CAMPFIRE (Communal Areas Management Programme for Indigenous Resources, a rural development program that shifts authority for wildlife management to local districts and communities. The program was first implemented in 1989 in Zimbabwe as a means of providing villagers with means of generating revenue through various wildlife-related industries. In 1995, 90% of the revenue generated by CAMPFIRE districts were derived from leasing sport hunting concessions to commercial safari operators.

Because of this, the Humane Society of the United States and other animal rights organizations have issued a report claiming that U.S. funding for CAMPFIRE should be discontinued. Between 1989 and 1994, USAID contributed \$7.6 million to the CAMPFIRE program and is scheduled to contribute another \$20.5 million through 1999.

A spokesperson for the African Resources Trust, John Hutton, called the HSUS

campaign against CAMPFIRE “entirely predictable from an organization that places the value of an animal above that of our impoverished rural people. The Humane Society’s new attack, like their previous ones, is full of errors and inaccuracies to such a degree that one has to assume their intention is to mislead. Let’s not forget the Humane Society is interested neither in conservation nor people.”

The debate about continued CAMPFIRE funding comes at a time when Zimbabwe is also seeking permission from the CITES Secretariat to sell 33 tons of stockpiled ivory. The country says it needs the income from ivory sales to fund wildlife conservation in the country and “to compensate people in poor rural communities who are sometimes attacked by elephants and whose crops are regularly damaged by the huge beasts.” Representatives of Zimbabwe’s Department of National Parks and Wildlife Management claim that the ivory they wish to sell is from culled or rogue elephants and not from poached elephants.

Source: African Wildlife Update, published by the African Wildlife News Service, October 1996

Score: Justice System 3 - Smugglers 0

Over the past few months three significant judicial cases involving endangered species have been in the news. All involve efforts on the part of the U.S. Fish & Wildlife Service and related agencies to crack-down on exotic species smuggling.

Tony Silva Sentenced: The first of these involves the November 1996 sentencing of Tony Silva, internationally recognized expert on exotic birds, to 7 years in prison for leading an international parrot smuggling conspiracy and a related income tax violation. Silva pled guilty in January 1996 to conspiracy to smuggle endangered wild birds into this country. The value of the smuggled birds was in excess of \$1.3 million and included the rare hyacinth macaw. He also pled guilty to filing false income tax returns in connection with the sale of those birds. In addition to the prison sentence, Silva was fined \$100,000 and ordered to perform 200 hours of community service following his release from prison. Silva’s prosecution was the result of a three year investigation carried out by the U.S. Fish & Wildlife Service’s Division of Law Enforcement’s Branch of Special Operations. Also sentenced at the same time was Silva’s mother, Gila Daoud, who was given a 27 month prison term and 200 hours of community service.

Madagascar Reptiles Confiscated in Florida: Smugglers attempting to bring in rare and endangered snakes and tortoises from Madagascar have been indicted by a federal grand jury in Florida. The indictment alleges that the individuals smuggled 170 protected reptiles for sale to wildlife dealers and collectors. The animals included the Madagascar tree boa, spider tortoise, and radiated tortoise. Each of these species are protected under CITES.

The USFWS took custody of the reptiles and are maintaining them in federal quarantine facilities. Once the trial is concluded authorities will decide whether

to return the animals to Madagascar or place them in zoological breeding facilities in the United States.

Eagles Being Killed for Profit: Special agents from the USFWS have recently executed search and arrest warrants in New Mexico, Arizona, and Colorado ending a two year undercover investigation into the killing and selling of eagles and other migratory birds. Nearly 35 individuals and businesses are expected to be charged with selling protected migratory bird parts in a very profitable illegal market.

Undercover agents discovered an illegal market for migratory bird parts including eagle skins, wings, tails, and wing bones; whole hawks, wings, and tails; and owl wings — all of which were being sold to trading posts, collectors, tourists, and individuals participating in pow-wows. Many of the bird parts were used to make popular Native American -style items such as fans, Kachina dolls, and bustles. Feathers on the items sold came from at least 25 different species including eagles, hawks, kestrels, magpies, flickers, scissor-tailed flycatchers and anhingas. All of these birds are protected under the Migratory Bird Treaty Act and bald and golden eagles are protected under the Endangered Species Act.

The case is being prosecuted by the Department of Justice in Albuquerque, New Mexico and Phoenix, Arizona. If convicted, the defendants could be sentenced to as much as five years imprisonment and up to \$250,000 in fines.

Sources: USFWS Press Releases 19 November 1996; 26 November 1996; African Wildlife Update, October 1996.

Penny-A-Pound Bill to Save Everglades Fails in Florida

Florida's voters narrowly defeated a ballot initiative to levy a tax of one-cent per pound on sugar grown in the South Everglades Agricultural Area. The purpose of the tax was to help pay the sugar industry's share of the multi-billion dollar Everglades restoration effort. While 47% of the voters felt the initiative's mandate of taxing sugar growers, charging polluters for their share of abating water pollution, and establishing an Everglades Trust Fund was appropriate, the majority of 53% of the electorate disagreed with the measure.

The Everglades is home to more than 1,500 species, of which 56 are listed as endangered or threatened. Half of the original Everglades system is already gone, along with 93 percent of the egrets, herons and other wading birds that once nested there. The Everglades draws 1.6 million visitors each year, creates 365,000 jobs, and supports a \$13 billion annual tourism industry. In opposition to the initiative, the sugar industry waged a successful TV and print advertising campaign, spending \$20 million by mid-October 1996.

Source: Sierra Club Defending the Environmental Agenda, #290, 14 October 1996; Miami Herald 15 November 1996

USDA Proposes Amended rules for Imported Zoo Animals

The U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) has developed a proposal regarding the movement of ruminants and swine imported from countries where foot and mouth disease and rinderpest exist. A press release from APHIS stated that the new regulations would require imported animals to be received at APHIS-approved zoos for post-entry quarantine (PEQ), remote from public or domestic animal contact. After at least one year in quarantine the animals could then be moved to a non-PEQ zoo provided that the facility was accredited by the American Zoo and Aquarium Association.

A copy of the complete proposed rule can be obtained from Joyce Bowling, Senior Staff Veterinarian, Import-Export Animals Staff, VS, APHIS, 4700 River Road, Riverdale, MD 20737-1228, (301) 734-8688.

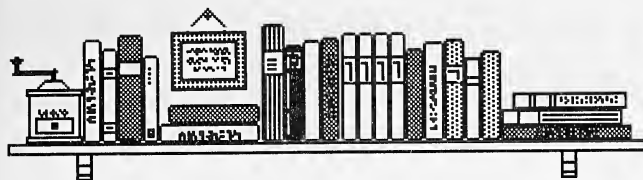
Source: USDA Press Release 31 October 1996

Canadian ESA Bill Update

Committee hearings continue in Ottawa on Bill C-65 for a Canadian ESA, says the Canadian Endangered Species Coalition. The bill was debated in the House of Commons November 29; during a legislative recess this month, field hearings may be held in Edmonton and Vancouver. Letters in support of a strong ESA, particularly encouraging provisions to protect transboundary species, may be sent to Charles Caccia, Chair, Standing Committee on Environment, 353-S Centre Block, House of Commons, Ottawa, ON K1A 0A6, or by email to caccicO@parl.gc.ca.

Source: GREENlines #269, 12-10-96





Book Review

The Last Ape: Pygmy Chimpanzee Behavior and Ecology

By Takayoshi Kano (Translated by Evelyn Ono Vineberg) 1992

Stanford University Press, Stanford, CA

Hardback, 248 pgs Price: \$45.00

*Review by Kelly K. Miles, Zoo Volunteer
Woodland Park Zoo, Seattle, WA*

The Last Ape is a result of the author's observations from 1974 to 1985 at the Wamba forest field research site in Central Zaire. In the author's preface to the English edition he explains that he wrote this book for 'university students and lay people interested in animals, to convey details about the natural history of pygmy chimpanzees'. The author definitely accomplishes this goal in this book. Unfortunately, there are few opportunities for Japanese researchers to present their work to western readers. Fortunately for us, a dedicated translator was motivated by the San Diego Zoo to make Kano's work accessible to the English-speaking public.

Throughout the book the author compares the two species of chimpanzees, giving the reader an appreciation of their contrasting habits. Though the Wamba site utilized provisioning to aid in observations, the author defends this method by the insight into social relationships it provided. The chapters include distribution, social groups and social patterns, food, the behavior of individuals, sexual behavior, social behavior, and social relationships. Many results are in easy-to-read tables and figures. Also included are eight detailed maps and 78 incredible photographs, distributed throughout the book. In the appendix are detailed lists of plant foods, cultigens and other foods eaten by the pygmy chimpanzees of Wamba.

In the final chapter, "Why are pygmy chimpanzees interesting?", the author shows how these individuals can coexist without relying on competition and dominant-subordinant rank structures. He also discusses the beginning of the poacher's threat and the habitat destruction resulting from coffee crops. The Last Ape is thorough, easy to read, full of facts and data. Anyone who reads it will better understand these fascinating apes. As Dr. Kano hopes, understanding will result in conservation.

Iguana Iguana: Guide For Successful Captive Care

By Fredric L. Frye

Krieger Publishing Co. 1995

P.O. Box 9542, Melbourne, Fl 32902-9542

Hardback, 170 pgs, Price: \$39.50

*Review by Paul Suplinskis, Lead Zookeeper
John Ball Zoo, Grand Rapids, MI*

Iguana Iguana is a revised and expanded edition of Iguanas: A Guide to Their Biology

and Captive Care (1993). The author, Fredric L. Frye, was Clinical Professor of Medicine at the University of California at Davis for 26 years and is currently a visiting professor at several universities in North America and the United Kingdom. He specializes in herpetological medicine and has written 16 books and over 300 scientific papers.

The first two chapters, "Understanding Green Iguanas" and "Husbandry", offer good general information about iguanas and their care. The "Feeding and Nutrition" chapter is particularly detailed. This chapter explains how iguanas digest their food and provides numerous tables showing the nutritional values of various foods. Instructions are given on growing vegetables hydroponically and on growing sprouts for food. The five chapters on various disorders, diseases, and parasites are useful because they cover prevention as well as diagnosis and treatment of practically any problem that could befall an iguana. Behavioral and physiological aspects of reproduction are discussed and instructions are given for creating a nesting environment and for incubating eggs. The book closes with a chapter written by a pet owner describing her experiences with 16 iguanas she has owned.

Additions and improvements to the previous volume include 16 more pages of color plates, an appendix showing the normal physiological values of *Iguana iguana*, mention of several on-line computer special interest groups, and an expanded bibliography of sources as current as 1995. Some information on other iguanid species has been eliminated, which is an improvement since what appeared in the previous volume wasn't detailed enough to be of great value and may have been more distracting than informative to readers seeking green iguana information.

Overall, this is an excellent book for anyone seriously interested in green iguanas. Its readability combined with detailed information make it useful for pet owners as well as veterinarians. The book should be useful in a zoo setting also. Much of the nutritional data and the information about diseases and disorders could be applied to other lizard species. I'm sure most reptile departments get plenty of iguana questions from the public which this book could help answer. The book is a little expensive but very complete.

Bats Available for Education Program



Two Big Brown Bats (*Eptesicus fuscus*) are available for use in education programs. Contact: Sue Barnard, Dept. of Herpetology, Zoo Atlanta, 800 Cherokee Ave. S. E., Atlanta, GA 30315; Phone - (404) 624-5618; Fax - (404) 627-7514; e-mail: pszoode@prism.gatech.edu

Hand-Rearing Of The Green Magpie At The Houston Zoo

***By Jim Dunster And Christie Sky
Zoo Keepers Bird Dept.
Houston Zoological Gardens, Houston TX***

The green magpie (*Cissa chinensis*) also known as the Green Hunting Cissa, is a member of the family Corvidae, which in magpies are omnivorous, feeding on fruit, insects, small reptiles, birds, and carrion (Madge and Burn 1994). Green magpies lay a clutch of 3 to 5 eggs which are incubated by the female alone for a period of 18 to 21 days.

The parents of the chick, which was hand-reared at the zoo in 1995, were breaking their eggs. In order to salvage the nesting season the eggs were pulled and artificially incubated at 37.8°C (100° F) and 55% humidity. The chick hatched after an incubation period of 20 days, was weighed and its umbilicus was swabbed with Betadine© solution. It was then placed in a small bowl lined with gauze and put in a brooder, which was set at 37°C (99° F) with humidity ranging between 85-90%.

The Houston Zoological Gardens has found that a higher humidity helps prevent dehydration in hand-reared corvids. The humidity is maintained above 80% by placing wet cloths or sponges inside of the brooder. Pedialyte© (an electrolyte solution) is also given in small amounts to prevent dehydration. Dehydration is usually noted by the chick's skin being dry and wrinkled. It has also been noted that fecals tend to be drier, lacking a thick mucous membrane.

The chick weighed 5.8g (0.2 oz.) at hatching and was not fed the day of hatching, allowing it to absorb the remaining yolk sac. Through out the first day the chick was given only a few drops of Pedialyte©, so it would not become dehydrated.

The chick was weighed and the weight recorded before each feeding. Initially pieces of chopped pinkie and soaked Mazuri® Parrot Breeder were fed every hour and a half to two hours, from approximately 0630 to 2230 hrs. The food was made fresh every morning and was needed throughout the day. After each feeding the unused portion of food was placed in the refrigerator and allowed to reach room temperature before being fed. If necessary the food was then placed in the microwave for a few seconds to take the chill off.

Food was placed in the chick's mouth with forceps when the chick would gape. Until the chick's eyes opened, it was induced to gape by keepers making chirping noises or gently tapping the chick on the upper mandible. As corvid chicks have a very short initial feeding response and chill quickly in the first few days, it is

important to have the food and weight scale ready before taking the chick out of the brooder. This allows you to feed the chick as much as possible in the short time before it stops gaping. Drops of Pedialyte© were also given with a pipette at each feeding. The chick was fed small amounts of food until it refused to eat more. We were always careful to make sure the chick had completely swallowed before additional food was given. The chick's food intake was between 0.1 and 0.2g (.04 and .07 oz.) per feeding in the first few days.

All defecations, pertinent behavior and information were recorded after each feeding. On day six the chick's eyes began to open and on day seven the umbilical scab fell off and was swabbed with Betadine©. Also on day seven, the gauze in the bowl was replaced with a piece of Enka Mat® (sturdier substrate), so the chick could start grasping. On day eight, the brooder temperature was lowered to 30° C (86° F) and the humidity lowered to 80%. On day ten, the feedings were stretched to every 3- 3 1/2 hours. Also, the chick weighed 46.7g (1.65 oz.) was consuming 3- 4g (0.11 to 0.14 oz.) of food per feeding and water was now substituted for the Pedialyte©. On day fourteen, the temperature and humidity was dropped to 35° C (95° F) and 75%.

The amount of food consumed by the chick increased steadily daily as did the chick's weight. Around day 25, the chick's appetite decreased, and its weight began to fluctuate for about the next ten days. It would gain 4g (0.14 oz.) , then lose 3g (0.11 oz.) the next day. At about this time the chick began moving around alot in the brooder and began self-feeding. After about ten days of fluctuating weights, the chick began to steadily gain weight again. By day 20 the chick was continuously jumping out of the nest bowl, so a branch was put in the brooder to allow the chick to perch. On day 24, the chick was moved out of the brooder into a larger brooder box with a 75 watt bulb, lots of perching, and was no longer fed at night; the last feeding being around 1500 hrs. At this point, the chick was being fed larger pieces of pinkie and Parrot Breeder and was now being offered pieces of commercial Bird of Prey diet. Water was also now being offered in a bowl. At this time the chick was only weighed twice a day, first thing in the morning and then again at the end of the day.

The chick was still offered food with forceps, but was also encouraged to eat from a food tray on its own. This was accomplished by taking the forceps and moving small pieces of food around on the tray in front of the chick. We would also pick up the pieces of food, then drop them onto the tray; thus, encouraging the chick to go after the food on its own. The food tray was left in the brooder box during the day, the chick was fed from the tray at each feeding and a fresh tray of food was left overnight in the brooder box.

On day 25 we discontinued weighting the chick in the afternoon. By day 28 the chick was starting to eat on its own, and on day 30 we started offering the chick small amounts of chopped fruit and whole pinkies. By day 34 the chick was eating entirely on its own. At this time the chick was given a food tray in the morning and a fresh food tray in the afternoon before we left work. On day 38 the chick was taken outside for the first time and put in a holding cage for the

day and brought back in the afternoon and placed in the brooder box for the night. This was done daily until day 42 at which time the chick was left overnight in the holding cage. The overnight temperature at this time was around 24° C (75° F). The chick weighed 93g (3.28 oz.).

We continued giving the fledgling a morning food tray and a fresh food tray in the afternoon which was left overnight. On day 62 we stopped giving the fledgling an afternoon tray, and the morning tray was pulled at day's end (this is standard operating procedure to discourage rodents). Its final diet consisted of Bird of Prey mixed with ground parrot pellets, meal worms and crickets two times a day and mice 2-3 times a week.

Of the ten corvid species housed at the Houston Zoological Gardens, we have hand-reared six species. Chicks are not routinely hand-reared at the Houston Zoo, but are instead parent-reared or foster-reared. However, as with the green magpies we sometimes find it necessary to do so. Although we do everything possible to ensure chicks are parent-reared, hand-rearing can be an important and sometimes necessary technique when breeding birds.

Acknowledgments

We would like to thank the Bird Department of the Houston Zoological Gardens for their help, and a special thanks to Chelle Plasse and Trey Todd.

Reference

Madge, Steve and Hilary Burn., Crows and Jays.
Christopher Helm (Publishers) Ltd. 1994.

Condors Released Over Arizona Skies

Six young California condors (*Gymnogyps californianus*) were released on December 12 to soar over the Vermillion Cliffs of northern Arizona in an effort to restore a population of the bird in that area, says Reuter news service. The birds were bred in captivity and will be released in a sparsely populated area anticipated to be safer for the birds than current range in southern CA. Interior Secretary Bruce Babbitt said he does not anticipate resistance from local residents. "It is a peaceful and indeed a pacifist bird," with no interest in attacking living animals, Babbitt said. ---GREENlines #269 12/10/96

A Flying Fox Conservation Project in South Sulawesi

submitted by Scott & Kristy Zahnke-Heinrichs
Sulawesi Fruit Bat Conservation Project

Sulawesi, formerly known as the Celebes, is a strangely-shaped island located at the center of Indonesia. It is a land of lush rainforest, active volcanoes, and terraced rice fields surrounded by some of the most exquisite coral reefs in the world.

Many of the animals found on Sulawesi are found nowhere else. Of the 127 mammal species native to the island, 79 of them are endemic. Due to Sulawesi's isolation, many peculiar forms of animals evolved. Some of the oddest in appearance are the babirusa, a member of the pig family whose males have backward curving tusks that grow up through the skull. The bear cuscus, a large diurnal marsupial with a prehensile tail, is another unusual animal. There are four species of tarsiers, a very small nocturnal primate; as well as seven species of tail-less macaques.

Sulawesi is also rich in mega bats (flying foxes) - 21 species are found there of which six are endemic species or sub-species. Very little is known of their natural history. What we do know is that fruit bats from around the world are the main pollinators and seed dispersers of many rainforest trees and plants. The same is true in Sulawesi. The people of Sulawesi depend on the forest for products they use in their daily lives, and the forest depends on the flying foxes for its survival. It's the natural way—but this balance may be in jeopardy.

Fruit bats in Sulawesi are hunted and eaten by some of the local people, mostly non-Moslems and Chinese. Hundreds of bats are "fished" from the night skies by kites flown with hooks attached to the strings. The bats are then placed in cages that are so overcrowded that they can't even fan their wings to cool themselves in the mid-day heat. In Ujung Pandang we saw over a hundred black flying foxes (*Pteropus alecto*) for sale by a single vendor; and a closer look revealed that they had no water and barely any food. Some of the females were carrying newly-born pups. At present there are no conservation laws protecting the bats; according to Indonesia law bats are considered "noxious".

During our travels in Sulawesi to survey locations for a research/conservation project, we came upon the village of Nanggala. This village is a traditional Toraja style, nine miles east of Rantepao in South Sulawesi. Here you will find a row of 14 rice barns with interesting carvings. After passing through the rows of rice barns, there is a very large stand of bamboo reaching nearly 20 meters. Within the bamboo are large camps of two species of flying fox - *Acerodon celebensis* (endemic to Sulawesi) and a species of *Pteropus*. Off the right are several trees with many more flying fox camps.

Many tourists come to this village to see its uniquely Sulawesi architecture as well as its permanent winged guests. Due to the non-existent graphics and lack of knowledge by the villagers, the tourists who come to view the flying foxes have no idea of what species of bats they are looking at; or the role these bats play in Sulawesi and the benefits they provide there and in the rest of the world.

We are in the process of raising funds to build graphics and to produce t-shirts with a Sulawesi flying fox on them. The t-shirts will be sold by the little village souvenir shop with a percentage of the sales being donated to bat conservation programs in Sulawesi, and a percentage being used to purchase new inventory or expand into new items such as postcards, wood carvings, etc.

We feel this is a great conservation project that benefits people, animals and forest. It is a project that combines local involvement in terms of what ecotourism can do for a community, educating people on the benefits of bats on a worldwide scope, and the conservation of the flying foxes of Nanggala. In turn, the bats will pollinate the surrounding forest and guarantee a home for many of Sulawesi's living treasures.

If you would like more information about this project or wish to help, contact Susan Moy c/o Lincoln Park Zoo, 2310 North Cannon Dr., Chicago, IL 60614; (312) 742-7722.

Third International Conference on Environmental Enrichment Planned

The Third International Conference on Environmental Enrichment, hosted by Sea World, will be held from 12-17 October 1997 at the Clarion Plaza Hotel, 9700 International Dr., Orlando, FL, USA - Phone: (407) 352-9700. The conference opens with an ice-breaker reception on Sunday evening. Presentations, workshops, and a video session will be held from Monday through Thursday. Visits to Busch Gardens Tampa and Sea World of Florida are planned. Finally, a scientific and administrative session is planned for Friday morning. The conference will emphasize the importance of understanding the theoretical bases for successful environmental enrichment programs and the importance of testing theories by implementing practical enrichment programs. Authors are encouraged to consider both the theoretical and practical aspects of their work.

The \$200 conference registration fee includes social events, park admission, and all sessions. Daily room rates at the Clarion Plaza Hotel are \$110/single or double; \$125/triple; and \$140/quadruple room. For more information, contact: Thad Lacinak, VP/Corporate Curator of Training, 7007 Sea World Dr., Orlando, FL 32821-8097. Phone (407) 351-3600; Fax - (407) 345-5397.

Institutions wishing to advertise employment opportunities are asked to send pertinent data by the 10th of each month to: Opportunity Knocks/AKF, 635 S.W. Gage Blvd., Topeka, KS 66606-2066. Please include closing date for positions available and when setting these dates keep in mind that because of bulk-mail, most readers do not receive the AKF until the middle of the month or later. There is no charge for this service and phone-in or fax listings of positions which become available close to deadline are accepted. Our phone is 1-800-242-4519 (U.S.); 1-800-468-1966 (Canada). Our FAX is (913) 273-1980.

ANIMAL KEEPER...candidates are required to have a minimum of one year of experience in the care of brown bears and/or gray wolves. Bachelor's degree in biology, zoology, animal science, or related degree preferred. Salary is commensurate with experience. Send letter of interest, resumé, and two letters of recommendation **by 25 February** to: Dr. Gale Ford, Executive Director, Grizzly Discovery Center, West Yellowstone, MT 59758.

ANIMAL KEEPER...person with stage presence to do animal shows with parrots, raptors and reptiles. Other duties include general keeper work with many animal species. Paid zoo experience and good references required. Send resumé to: Vince Hall, Claws 'n' Paws Wild Animal Park, RD 6, Lake Ariel, PA 18436. **Position open until filled.**

AVICULTURE INTERN...junior, senior, or grad with interests in avian management/zoo biology to work with our animal care staff. 10-12 weeks. Spring and summer positions available. On-site housing provided. Resumé and three (3) references to: Scott Barton, Curator, Tracy Aviary, 589 East 1300 St., Salt Lake City, UT 84105. **Positions open until filled.**

RESEARCH ANIMAL TECHNICIAN...the Zoological Society of San Diego is seeking a qualified Research Animal Technician. A Bachelor's degree in biology, zoology, ornithology or equivalent specialized training is highly desirable. Substantial experience (an example would be at least two years) in avian artificial incubation, hand-rearing, and aviculture is essential. This position will aid in the recovery of the endangered San Clemente Island loggerhead shrike (*Lanius ludovicianus mearnsi*). Must be team-oriented, possess excellent interpersonal and communication skills. Will assist other field researchers in captive propagation, behavioral studies, and release of birds on the island. Work is located on the southern-most Channel island. Some outdoor work and the ability to perform heavy physical labor when necessary may also be required. Position is seasonal, for a period of 16 weeks from mid-March to mid-July 1997. Salary is \$11.58 to \$14.02 per hour with benefits. Send letter/resumé/references **by 24 January 1997** to: San Diego Zoo/Human Resources Dept., P. O. Box 551, San Diego, CA 92112. Attn: Research Animal Technician.

SEABIRD/FALCON KEEPER II...degree in a biological science preferred. A minimum of two (2) years of experience with a wide variety of exotic bird species is preferred. Keeper will be responsible for the daily care of peregrine falcons and arctic seabirds (horned puffins, parakeet auklets, and thick-billed murres). Duties include exhibit care and maintenance (includes scuba diving and rock

climbing), observations, visitor education, training/coaching new staff, enrichment. Will work in a team environment--good communication skills are important. Salary \$18,133.00, increasing to \$19,039.00 upon satisfactory completion of probation, plus benefits. Send letter/resumé by **31 January 1997** to: Human Resources, North Carolina Zoo, 4401 Zoo Parkway, Asheboro, NC 27203.

The following two (2) positions are open at Chaffee Zoological Gardens which is located in the heart of California's San Joaquin Valley, only one hour to Yosemite, Kings Canyon and Sequoia National Parks; and only three hours drive to the ocean. Fresno is the most affordable place to live and work in California. Salary and benefits are excellent. Applications for either position may be obtained from Fresno City Human Resources, 2600 Fresno St., Fresno, CA 93721, (209) 498-1575. Filing deadline is 5:00 p.m. 14 February 1997. Postmarks are not accepted. AA/EOE.

ZOOKEEPER...one year of experience in the care, handling and feeding of animals in a zoo setting. Twelve (12) units in animal science, zoology, wildlife management may be substituted for six (6) months of the required experience. Salary range \$1,855.00 to \$2,257.00 per month.

SENIOR ZOOKEEPER/BIRD DEPARTMENT... Thirty (30) units in animal science, zoology, wildlife management AND two (2) years of journey-level paid experience in the care, handling and feeding of zoo animals with an emphasis on birds. Must have working knowledge of bird husbandry, behavior, breeding, incubation of eggs, and rearing of chicks in a wide variety of species. Additional experience may be substituted for the required education on the basis that fifteen (15) semester units equals one year of experience. Knowledge of behavioral enhancement of exhibits, setting up breeding conditions, and specialized requirements of raising young is desirable.

Animal Keepers' Forum 1996 Index

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symbols used with pager numbers mean:

(?) - information please

A - Husbandry Alert

B - birth

c - Chapter News

co - correction

H - hatching

HA - husbandry alert

HR - hand raising

KA - keeper alert

L - legislative

M - management/training

N - nutrition

R - reproduction/breeding

v - veterinary

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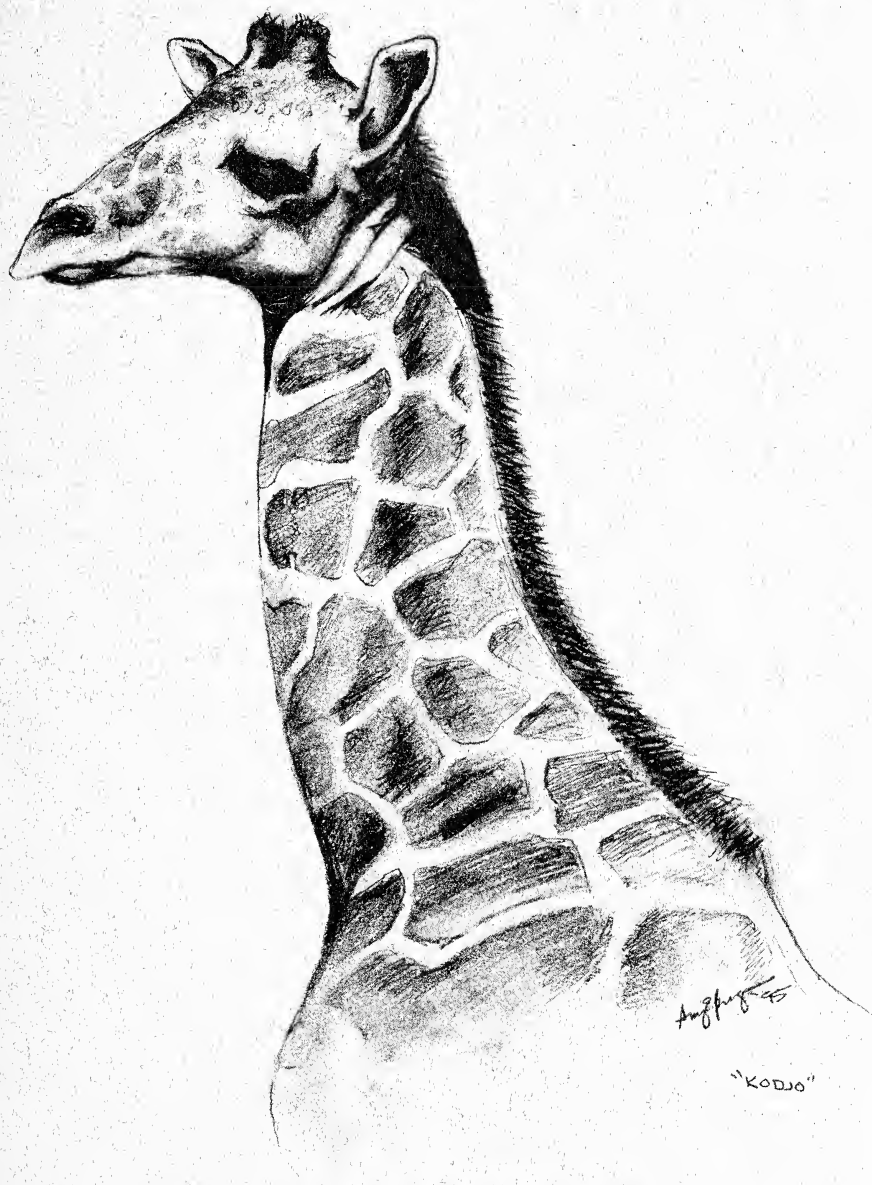
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**The Journal of the American
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FEBRUARY 1997

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Incubation Notebook Project - Scott Tidmus, Sedgewick County Zoo, Wichita, KS



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About the Cover.....

*This month's cover features a Reticulated Giraffe (*Giraffa camelopardalis*) named Kodjo at two days of age. The cover was drawn by Amy E. Burgess, a keeper at the Oakland Zoo, Oakland, CA where Kodjo also resides. The horns of Giraffidae are unlike those of any other mammal. At birth they are cartilaganous knobs which rapidly ossify and grow slowly throughout the animal's life. Also known as ossicones, they are covered in hair and are present in both sexes. Although adult male giraffe may reach a height of 20 feet, they have the same number of vertebrae as a mouse or a human. The males may weigh two tons while the females average around 1300 pounds. They have a lifespan of about 20 years, and females produce a single young after a gestation period of 450 days. Thanks, Amy!*

Information for Contributors

Animal Keepers' Forum publishes original papers and news items of interest to the animal keeping profession. Non-members are welcome to submit articles for consideration. Articles should be typed or hand-printed and double-spaced. Articles may be submitted on disk by arrangement with the Editor. All illustrations, graphs, charts and tables should be clearly marked, in final form and should fit in a page size **no greater than 5.5" x 8.5"** (14cm x 22cm). Literature used should be cited in the text (Brown, 1986) and alphabetically in the final bibliography. Avoid footnotes. Include scientific name (as per ISIS) the first time an animal name is used. Thereafter use common name. Use metric system for weights and measurements (standard equivalents may be noted in parenthesis). Use the continental dating system (day-month-year). Times should be listed as per the 24-hour clock (0800, 1630 hrs. etc.). Glossy finish black and white photos **only are accepted**. Color slides should be converted to black and white prints (minimum size 3" x 5" [8cm x 14cm]) before submission. Clearly marked captions should accompany photos. Please list photo credit on back of photo.

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 and FAX contributions of late-breaking news or last-minute insertions are accepted as space allows. However, long articles must be sent by U.S. mail. Phone 1-800-242-4519 (US); 1-800-468-1966 (Canada); FAX (913) 273-1980.

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.

Items in this publication may be reprinted providing credit to this publication is given and a copy of the reprinted material is forwarded to the editor. Reprints of material appearing in this journal may be ordered from the editor. Back issues are available for \$3.00 each.

Scoops & Scuttlebutt



AAZK, Inc. Acknowledges Donations to Association

The Board of Directors and the staff of the American Association of Zoo Keepers, Inc. would like to sincerely thank the following for their recent donations to the Association: the Rocky Mountain AAZK Chapter (Denver, CO) for their donation of \$500.00 to cover the cost of printing the new AAZK Membership Brochures; the Chesapeake AAZK Chapter (Salisbury, MD) for their unrestricted donation of \$404.60; and Life Member Marvin L. Jones (San Diego, CA) for his unrestricted gift of \$100.00.

Because the Association has been going through some difficult financial times, these donations are much appreciated, not only because they help to offset expenses associated with AAZK's programs and publications, but also because they show the support and commitment of these AAZK members to the positive future growth of AAZK, Inc. Our sincere thanks.

Conference '97 Hits the 'Net'

It's a Texas thing! Zoos and aquariums from around the Lone Star State are excited that the 1997 AAZK/ZRA National Joint conference is coming to Houston. Everyone is pitching in wherever they can. The Conference is now on the Internet, courtesy of the San Antonio Zoo. The Conference's cyberspace address is: <http://www.sazoo-aq.org/conference>

Pull it up and check it out. Watch for new information on the Conference and how you can visit the family of Texas institutions on your travels to Houston in October.

ADT Forms Available for Animal Shipments

Animal Data Transfer Forms (ADT Forms) for use whenever an animal is shipped to a new institution are available free as a professional courtesy from AAZK, Inc. These forms help provide vital information on an animal's medical, dietary and reproductive history to the receiving institution's staff and veterinarian. We hope you will encourage the use of ADT Forms at your facility whenever an animal is shipped. To order a supply of ADT Forms, contact Bernie Feldman, Burnet Park Zoo, One Conservation Place, Syracuse, NY13204

Conservation Grants Availability Announced

The American Association of Zoo Keepers announces the availability of two \$500.00 conservation grants for the benefit of local and global conservation

efforts. AAZK members in good standing should direct their inquiries **by 1 March 1997** to: Bret Sellers, Chair, AAZK Conservation, Preservation and Restoration Committee, Metro Washington Park Zoo, 4001 S.W. Canyon Rd., Portland, OR 97221.

The CPR Committee wishes to congratulate John Heine, the 1996 recipient of the Zoo Keeper Grant in Conservation. John operates the Riverside Zoo Raptor Rescue Project in Scottsbluff, NE. A total award of \$750.00 was awarded to the project to be used during this calendar year. Congratulations, John!

Bowling for Rhinos Update - *submitted by Patty Pearthree, BFR Coordinator*

Bill Nelson, Dallas Zoo, and Jay Weston, Hogle Zoo, will soon be heading to Kenya as the 1996 Bowling for Rhinos trip winners! You can do the same next year but it takes some time and planning.

Now is the time to start thinking about your 1997 events, form a committee and get rolling! Postcards were mailed to Chapters requesting information on your event date. Please put BFR on your Chapter's next meeting agenda and let me know the date of your event. If you did not receive a postcard, please drop me a line at: Patty Pearthree, P. O. Box 199026, Indianapolis, IN 46219-9026. If you have any questions, please call at (317) 322-8723 or e-mail at ppear3@pager.ind.net

Exhibit Design Resource Comes to AO

The Exhibit Design Resource Project, which had been under the direction of Michael Demlong of The Phoenix Zoo, has been assigned to Administrative Offices by the AAZK Board of Directors. While the Board felt it was not feasible at this time to publish a notebook on the materials which have been gathered, they did want to make the information available to the membership. The objective of the Exhibit Design Resource Project is to create a resource that facilitates the creation or improvement of animal exhibits. This resource will provide general exhibit design and maintenance information pertaining to specific animal species, and is intended to complement a comprehensive research format.

A listing of the species for which we have completed Exhibit Design documents will be published in the March 1997 issue of *Animal Keepers' Forum*. Individuals or institutions may then order copies of pertinent forms from AAZK Administrative Offices. There will be a \$3.00 basic one-time per order retrieval fee, plus a fee of \$2.00 for each species form requested.

Watch next month's *AKF* for a complete listing of species for which we have exhibit resource information available.

Message from the President

Greetings from the Lone Star State!

The year 1996 has issued the members of the American Association of Zoo Keepers, Inc. a wake-up call. The Association is in the midst of a financial strain. Our annual operating costs have historically been covered by membership fees and profits from publications. Looking back, the membership remained steady and membership fees have not seen an increase since 1989. However, the needs of the membership and inflation have grown steadily every year.

Earlier last year, the Board of Directors looked at the situation and recommended a membership drive. An increase of members would have helped offset the operating expenses of the organization. The membership drive, however, fell far short of its goal.

During the Annual Meeting in Detroit, the Board of Directors voted to increase membership fees across the board and increase Chapter recharter fees. The Board also made these immediate recommendations: to freeze staff wages (temporarily); to eliminate the travel to the AZA Regional Conference by the Immediate Past President/AZA Liaison; to suspend publications; to restrict the 800 number to regular office hours; to limit the cost of production of the *AKF* to a \$3000.00 per month maximum (printing, mailing, and postage). With these immediate actions, the Association will be able to stabilize and design a plan for financial development.

As members of AAZK, we have always looked for what we can do to make a difference in conservation around the world. We do all this under the auspices (and tax shelter) of the Association. WE make contributions to the glamorous, high-profile environmental causes and neglect to support the home organization. As members we use the organization for many different things. Mainly, each of us receive *Animal Keepers' Forum* each month. The *Animal Keepers' Forum* provides us with a venue of communication that ranges from new job opportunities to hand-feeding techniques for a particular species. The *Animal Keepers' Forum* is soliciting advertisers and Chapter sponsors for special columns each month or for dedicated issues.

Future publications of AAZK will be produced by sponsorships or through a contract with a publishing company. Many publications in the past have been produced through gracious Chapter contributions. This is a great thing for the Association. These publications enable us to get the information out to those who need it for a nominal fee.

Professionally, AAZK has continued to grow in 1996. Our relations with related organizations have been better than ever. The alliance between AAZK and the American Zoo and Aquarium Association (AZA) is even stronger today. Through out jointly-sponsored workshops with AZA during the Annual Conferences, we

have shown our dedication and commitment to being contributors to the zoo community. We will continue to work together with AZA in conducting future workshops that will enhance the professional development of the membership of AAZK.

Members of AAZK are continuing to work on nutritional and developmental information for several taxonomic groups. AZA has acknowledged the importance of this information and had offered its endorsement of the projects through access to the Taxon Advisory Groups for survey information. Please assist your colleagues in completing these surveys as you receive them and by returning them promptly.

AAZK has begun an educational venture geared toward the younger zoo visitor. The Junior Keepers' Forum was unveiled during the Annual Conference in Detroit. This quarterly publication is geared towards the ages 8-12. The JKF will contain information about zoos and the people who work in them as well as fun games and activities. Each member will receive a cool patch, too. The Junior Keepers' Forum Project is totally self-supporting. Donations and JKF membership fees fuel the production of the newsletter. Profits from the JKF projects will go directly to the Association. The JKF Editor, Diane Callaway, is looking for articles by keepers about an interesting animal or a special animal with a handicap - a tortoise that rides a skateboard, a crane with a leg made of a fishing rod, or a wallaby that wears a tennis shoe.

During the next couple of months, the Board of Directors will be drafting a long-range plan to guide the growth of the Association into the new millennium. This is your professional organization and you can help in its development. Contact your Board of Directors and let them know what is important to you as a member of the American Association of Zoo Keepers.

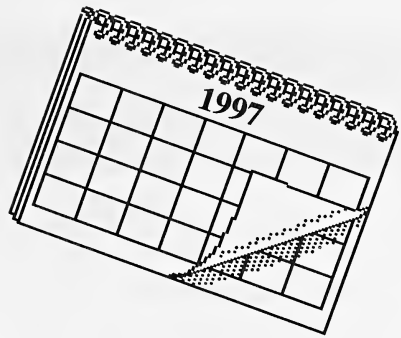
AAZK is an organization of strong and dedicated individuals. We are committed to raising the standards of quality animal care in all aspects of the profession. We have a commitment to conservation and education, while continuing to make the latest information on husbandry and enrichment available to the membership. Together we can accomplish anything. Remember this is your professional Association. What you do as an individual can make a difference.



Ric Urban, AAZK President
Houston, TX



Coming Events



The 5th Annual Conference of the International Association of Avian Trainers and Educators - February 7-10, 1997 in Concord, CA. Hosted by Marine World Africa-USA. For information contact: Polly Gusa, Land Animal Coordinator, Marine World Africa-USA, Marine World Parkway, Vallejo, CA 94589, (707) 644-4000 Ext. 212 or FAX (707) 644-0241.

The First International Congress of Butterfly Exhibitors and Breeders - March 12-19, 1997 in San Jose, Costa Rica. For further information, contact Frank Elia, Callaway Gardens, Pine Mountain, GA 31822, (706) 663-5020 or e-mail at 5503.2345@compuserve.com.

The International Gorilla Workshop - April 2-5, 1997 in Pittsburgh, PA. Hosted by the Pittsburgh Zoo. Registration packets are now available. For further information contact Debra McGuire or Roseann Giambro at (412) 665-3794; FAX (412) 665-3661.

International Society of Zoo Culturists 10th Anniversary and Annual Conference - April 14-16, 1997 in Simi Valley, CA at the Radisson Hotel. For conference packet information, call or fax Mary Deroo (610) 352-6927 or write ISZ, 7 North Gate Rd., Upper Darby, PA 19082-1610.

American Association of Zoo Veterinarians Annual Conference - October 26-30, 1997 in Houston, TX at the Sheraton Astrodome. Program sections include legislation, regulation and zoonotic diseases; anesthesia and monitoring; new technologies in diagnostics and therapeutics; field veterinary medicine; pathology and parasitology; and presentations on medical and surgical problems of small and large mammals, birds, fish, amphibians and reptiles. For conference information contact: Wilbur Armand, VMD, Executive Director/AAZV, 6 North Pennell Rd., Media, PA 19063; Phone (610) 358-9530; Fax (610) 892-4813.

AZA Conference Schedule

AZA Eastern Regional Conference, March 19-22, 1997 - Memphis, TN. For further information, contact Carol Cratin, Memphis Zoo, 2000 Galloway Ave., Memphis, TN 38112 (901) 725-3450.

AZA Western Regional Conference, April 9-12, 1997 - Phoenix, AZ. For further information, contact Bruce Bohmke, The Phoenix Zoo, 455 North Calvin Parkway, Phoenix, AZ 85008 (602) 273-1341.

AZA Central Regional Conference, May 15-18, 1997 - Cleveland, OH. For further information contact Jim English, Cleveland Metroparks Zoo, 3900 Brookside Parl. Dr., Cleveland, OH 44109 (219) 661-6500.

AZA Annual Conference, September 14-18, 1997 - Albuquerque, NM. For further information contact Terry Axline, Albuquerque Biological Park, 903 Tenth St., S.W., Albuquerque, NM 87102 (505) 764-6200.



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Animal Behavior Concerns & Solutions

A Question and Answer Forum for the Zoo Professional

By Diana Guerrero

Independent Behavior Consultant, Ark Animals of California, San Diego, CA

Emergency Behavior Strategies: Part 2 of 2 Zoological & Privately Owned Facilities, Multiple Species: Handling Attacks or Aggression

QUESTION

See Volume 24, No.1 For Details

SPECIFIC STRATEGIES

Distraction

Audio

Visual Barrier

Psychological Control/Spatial Distance

Physical Action

Physical Barrier

Exhibit Design

Chemical

Membrane Irritant

Other

DISTRACTION

This is something that is done to distract an animal away from an area, event, or item. Generally verbal or audio distraction is used; sometimes visual or physical distraction can work. The use of distraction comes just BEFORE the animal is really into a reaction.

AUDIO

Noise distraction can often startle an animal away from an injured person. It needs to come from another source away from the person. Loud marine horns, clashing metal trash can lids, banging on metal containers, and other things such as a siren can be quite effective. Look around you and see what might be usable. Animals conditioned to a variety of noise around them may not react at all. This is because high levels of noise and exposure to a variety of environmental stimulus can desensitize them.

VISUAL BARRIER

Plyboard sheeting, tarps, or vehicles placed between the animal and the person form a visual barrier if the animal can be distracted away. Larger species of mammals pose more of a challenge.

PSYCHOLOGICAL CONTROL/SPATIAL DISTANCE

Using the flight distance of some animals can help to move them away from an area or a person. One of the more dominant animals can sometimes be used to coerce or lead the masses away.

Under stress, some animals will respond to a person with whom they have a good relationship or trust bond with. Under stress, normal responses and desire for food usually plummet while the trust bond remains intact. Action must be taken quickly however since this may only work for a limited time period.

“Killer rakes” and other keeper items that create an aversive atmosphere or that the animals are afraid of are part of this category. Sometimes it is just a matter of what you can convey with your body language and attitude. Nuances such as eye contact or none, facing the animal, sideways stancing in relation to the animal, or protective postures may also come under this category.

PHYSICAL ACTION

This can refer to actually controlling or restraining an animal or to using some sort of other method, such as the stream of water from a fire hose. Also see some of the topics listed under OTHER.

PHYSICAL BARRIER

Keeping the public out of exhibits is one of the uses of a physical barrier that doesn't always work. Special meshing and protected walkways within the exhibit are some others. Many of these types come under exhibit design but this can also refer to barrier shields, vehicles, and other such tools.

EXHIBIT DESIGN

Special features in any exhibit should include escape areas for staff in the event of an emergency or accident. Slopes of moats, ladders to other areas, false walls, and escape passages or doors are some of the necessary additions. Wide keeper walkways where the animal cannot grab you is another (Sorry, couldn't resist).

CHEMICAL INTERFERENCE

This is where on-site Veterinarians are handy. Chemical immobilization is a tool that can be used however it takes time and the problem in an emergency is the time constraints.

MEMBRANE IRRITANT

Not something generally desired but this can be effective with some animals. This refers to agents such as pepper spray, mace, or ammonia and water. These are some of the emergency remedies that some people have on them when working animals.

OTHER

Group discussions on this topic can contribute a variety of ideas. Don't screen them at first, just collect them and later decide what is appropriate. Creativity in a pinch is a must. If an animal is really after you then the adrenaline rush may be the only thing to save you. Other than sprinting and pole vaulting, some things to remember are the sensitive areas on an animal. Thoughts should include asking: Where are the vital areas (eyes, nose, genitals, etc.,)? Can you

knock the air out of them? Do they have some sort of primal fear (i.e., some primates=reptiles)? Having rope ladders that can be dropped into an exhibit in an emergency is another idea. See what else you can come up with.

Audio and visual distraction is done very effectively with CO2 fire extinguishers. These are only effective if used as an element of surprise and must be fully refilled and charged to work! Remember that if an animal has had these methods used on them before, the tactic is less effective due to desensitization. This technique will work less powerfully on that individual if needed again, so use sparingly and only if warranted in an emergency. If nothing else, most facilities will have these around.

Remember that with most species, the reaction to aggression is more escalated aggression. Most would agree that in an emergency you will do whatever it takes. Hickory canes used by backups as arm extensions have been used to push back crowds, and rammed down throats of attacking animals. Bamboo poles or sticks will work here too. Ramming one down the carnivore's throat to save someone's life will usually create a gag reflex and cause the animal to let go.

Another version of this aggression tactic would be the use of the Hot Shot or Cattle Prod. Batteries must be charged for them to work so they should be monitored and tested periodically. A Hot Shot to the tongue, rather than the body will get a carnivore to release a victim. Only watch out! Once the animal lets go of the victim, he may turn on you.

Both hitting and the hot shot tactics will work but they often result in the animal turning on the backup. In the private industry "crawling the chain" (coming up the leash chain at the trainer) and other terms are used to describe this event.

Someone asked specifically about rubber bullets in controlling conspecific aggression. In the particular situation the aggression was allowed to escalate beyond low levels. The time to take action would have been previous to the escalation, which was showing in the group dynamics for over a year. It could work, but remember there is danger of other injuries from reflected bounces or misfires at other animals and people. At any rate, preparation and planning are the best courses of action but you will need to decide what actions to take.

EXAMPLE: Visual, Psychological, Physical Barriers. During an Event.

One of the male lions at a private facility had attacked the trainer and dropped him on the ground; the back-up was standing over him protecting him with a cane and psychological control while the lion fought through the fence with another male. A plywood sheet was being torn off one of the surrounding cages to be used as a visual barrier when a truck was driven down slowly between the lions and the people, providing both a visual and physical barrier. Just before the incident occurred, all the volunteers and visitors were being thrown into empty cages since it was apparent that an incident would occur. The lion was exhibiting low warning levels for several minutes prior.

(About the Author: Since 1978 Diana has been active both in the U. S. and England working with zoos, private collections, an oceanarium, a marine aquarium, and other animal-related organizations involving captive wildlife. She has a broad base of animal experience involving movie & television training, zookeeping, show performances with live animals, education, behavior management, modification and enrichment, rescue and rehabilitation as well as captive breeding and management of endangered species. She currently works as an Animal Behavior Consultant and Trainer for Ark Animals of California working with both exotic and domestic animals. She has authored numerous articles on animal behavior and training. If you have questions for Diana, you may contact her at 1-800-818-7387 or visit her Home Page at <http://www.ni.net/brookhouse.com>)

NOTE: The Ark Animals's Website has completed the change to Electronic Magazine Format. The "Zine" will feature articles related to captive animal behavior, enrichment, conservation, and similar topics. The publisher welcomes electronically submitted articles (previously published or new work) and event announcements. Deadline is the 10th of the month previous to publishing. Interested parties may contact the publisher at arkabc@ix.netcom.com Site address is <http://www.ni.net/brookhouse.com/DGHome.html>

Next Month: "Common Training Errors 101: Confusing Consistency with Predictability"

Third International Conference on Environmental Enrichment Planned

The Third International Conference on Environmental Enrichment, hosted by Sea World, will be held from 12-17 October 1997 at the Clarion Plaza Hotel, 9700 International Dr., Orlando, FL, USA - Phone: (407) 352-9700. The conference opens with an ice-breaker reception on Sunday evening. Presentations, workshops, and a video session will be held from Monday through Thursday. Visits to Busch Gardens Tampa and Sea World of Florida are planned. Finally, a scientific and administrative session is planned for Friday morning. The conference will emphasize the importance of understanding the theoretical bases for successful environmental enrichment programs and the importance of testing theories by implementing practical enrichment programs. Authors are encouraged to consider both the theoretical and practical aspects of their work.

The \$200 conference registration fee includes social events, park admission, and all sessions. Daily room rates at the Clarion Plaza Hotel are \$110/single or double; \$125/triple; and \$140/quadruple room. For more information, contact: Thad Lacinak, VP/Corporate Curator of Training, 7007 Sea World Dr., Orlando, FL 32821-8097. Phone (407) 351-3600; Fax - (407) 345-5397.

American Association of Zoo Keepers & Zoo Registrars Association 1997 Joint National Conference October 5 - 9, 1997 ~ Houston, Texas

The Greater Houston Chapter of the American Association of Zoo Keepers, Inc., and the Houston Zoological Gardens are proud to host the 24th National Conference of the American Association of Zoo Keepers. The Spirit of Texas will be shining bright as the membership comes to Houston October 5 - 9, 1997. The 1997 National Conference will be a conference of firsts. It will be the first AAZK National held in Texas and in Houston. It will be the first conference where AAZK will be joined by the Zoo Registrars Association for a joint conference. The Houston meeting will be the 14th gathering of zoo registrars and a first for Houston. Full registration for AAZK/ZRA members and spouses has been set at \$125.00. Daily registration rates are to be announced.

Our conference theme of "Conservation is an Attitude" reflects the emotion of Texans and our feelings for the world around us. Zoos are no longer taking the "Noah's Ark" attitude to collecting, and are becoming increasingly involved in conservation and breeding programs. The concept of maintaining appropriate social groups and settings is essential to the well-being and longevity of animals in captivity and thus biodiversity and survival of a species. Texans are as dedicated to conservation as we are to our western heritage.

Houston is the largest metropolitan area in Texas, with more than three million residents. As the fourth largest city in the United States, Houston is equidistant from both coasts and is an international hub for the world's major airlines. Houston is home to two major airports: Houston Intercontinental Airport and the William P. Hobby Airport. Rental cars are available at the airports and the hotel.

The conference will be held in the shadows of the Houston Astrodome at the Sheraton Astrodome Hotels. Conference room rates have been set at \$69.00 for a double room. These rates will be in effect three days before and three days after the conference. This should offer delegates an opportunity to visit the sights and sounds around Houston before and after the conference. The Houston Conference will follow the traditional AAZK Conference schedule:

Saturday, 4 October - Early registration, Pre-Conference Tours
Closed Board Meetings

Sunday, 5 October - Registration, Association /Committee Meetings and
ICEBREAKER

Monday, 6 October - Welcome/Opening Remarks,
Paper Presentations, Poster Sessions and Exhibit Hall
Evening Event at the Houston Zoo

Tuesday, 7 October - Day at the Houston Zoo, behind-the-scenes tours and
workshops
Evening Reception and Silent Auction

Wednesday, 8 October - Morning Paper Session
Trip to Moody Gardens/Zoo Olympics

Thursday, 9 October - Paper Presentations, Poster Sessions
Exhibit Hall, General Meeting,
Conference Bid Presentations
Reception, Banquet, Wildlife Art Auction &
Entertainment

Friday, 10 October - Post-Conference Tours

Daily registrations will be available. Exhibit Hall will be open daily for the delegates. Evening workshops and training sessions are being planned. The Hospitality Room will be open each evening.

Our Conference Committee hopes that you take the opportunity to experience the Real Texas. We are proud of our zoo, which is among the top ten visited zoos in the U. S., and we welcome the chance to show the world. Come and see why Texas is not just a state, It is an Attitude. So dust off your boots, straighten up your hat and adventure into the Spirit of Texas. Be prepared for a Taste of Southern Hospitality - "Y'all Come Down and See Us!"

For more Conference '97 information contact Ric Urban or Christina Smith, '97 Conference Chairpersons, Houston Zoological Gardens, 1513 North MacGregor Way, Houston, TX 77030.

First Call for Papers

"Conservation is an Attitude" is the theme for the paper sessions and workshops at the 1997 AAZK/ZRA National Conference. Any topic related to the care of captive exotic animals will be considered, however, those that involve new animal care techniques, significant achievements and special projects, technical innovations and fresh approaches toward captive animal management and conservation may be given priority.

The Program Committee is expecting a record number of abstract submissions, so early contact with the Program Committee Chair is critical. Abstracts will be accepted for review **until 15 July 1997**. Abstracts should be limited to one or two paragraphs, should clearly describe the significance of the presentation

topic, and should briefly list the results, conclusions or benefits of the work described. Because the abstracts will be printed in the conference program, it is essential that submissions be well-organized and clearly written. Abstracts that are poorly written, that do not contain proper submission information, or do not otherwise meet submission criteria will be returned with a letter rejecting the abstract outright or else suggesting the corrections or alterations required for acceptance.

Upon acceptance of a paper or workshop abstract, a letter of notification will be mailed to the presenter. Guidelines for preparing manuscripts for publication in the 1997 AAZK Conference Proceedings will be supplied to speakers by AAZK Administrative Offices. A correctly formatted manuscript for publication in the Proceedings **must** be submitted to the Program Committee **prior** to the speaker's presentation at the Conference. If such a manuscript is not provided, the speaker will not be able to present his/her paper to the delegates and will be barred from speaking at an AAZK National Conference for a period of three years. There will be **no exceptions**.

Abstracts must include the following information: Name of Presenter and Co-Authors; Zoological Affiliation; Position/Title; Title of Paper/Title of Workshop; and Audiovisual Equipment Needs

Send abstracts to: Stan Mays, Program Chairperson
 '97 AAZK/ZRA National Conference
 Houston Zoological Gardens
 1513 North MacGregor Way
 Houston, TX 77030

The Program Committee is eager to assist anyone who has an idea for any kind of presentation: formal paper, workshop, poster presentation, panel discussion, etc. Additional information and advice on the design and development of presentation ideas may be obtained by contacting the Program Committee Chairperson.





REACTIONS

A Question and Answer Forum for the Zoo Professional on Crisis Management

By Bill K. Baker, Jr.
Zoologist, Lufkin, TX

QUESTION: We have a feral dog intrusion problem at our facility. What can we do about it?

FERAL ANIMALS

A feral animal is defined as any animal that is not part of the zoological collection. Historically, feral dogs and coyotes exceeded all other species in damage to animal collections and frequency of attacks. Essentially, there are three ways to approach this situation: prevention, passive measures, and active measures.

PREVENTION

1. Inspect all perimeter fence lines at least once a week and make repairs as needed.
2. Inspect all exhibit fence lines once a day and make repairs as needed.
3. Keep all fence lines clear of brush and debris.
4. Keep trees that encroach on fence lines trimmed back.
5. Keep all perimeter and keeper service area gates closed and secured. Maintain visual security of all public entry and exit gates.

PASSIVE MEASURES

1. Modify the existing perimeter fence.
 - A. Install a barrier made of heavy mesh that extends three feet below ground level and secures to the existing fence line. This is also an effective barrier when used on fences that cross lakes and ponds.
 - B. Install fence aprons constructed of cyclone fence or heavy mesh material. The aprons should be secured to the existing fence line and extend out at a right angle for three feet and be at least six inches underground.
 - C. Install heavy mesh barriers over all culverts or drains that pass through the perimeter fence. Ideally, these should be designed so that they can be opened and cleaned if necessary.

2. Drive construction grade rebar into the ground at six-inch intervals along the perimeter fence line.
3. Place stone or concrete barriers at the base of the perimeter fence. Ideally, this should be done on both sides of the fence line in order to be effective.
4. Install motion sensitive flood lights directly inside the perimeter fence. Most animals will avoid bright light during nocturnal activity and this will alert night security when there is a potential problem.
5. Install hot wires at ground level along the perimeter fence and across suspected entry points.

ACTIVE MEASURES

1. Use baited live traps (e.g. Have-A-Hart).
2. Install surveillance cameras for night security.
3. Use capture nets or snare poles for live capture.
4. Use dart rifles to sedate the animals.
5. Use high-powered air rifles to exterminate (e.g. Airrow, Beeman, Marksman, or RWS). Airguns are inherently quieter and safer than a .22 caliber rifle in an urban environment.

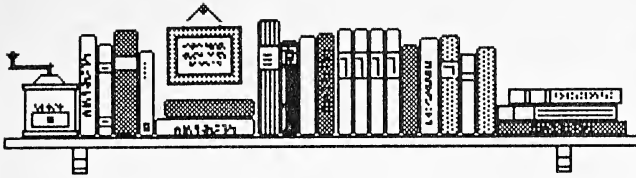
COMMENTS

Feral animal intrusion can cause serious animal management problems for the zoological professional. This would include animals subjected to disease transmission, stress-related shock, flight injury due to fence crashing, or trauma from direct attack. The easiest way to prevent this is by ensuring that the perimeter fencing is in good condition. If feral animals do enter the zoo perimeter, they should be either captured or killed. The animal collection and the endangered species within it must come first.

NEXT MONTH: How can aquariums and aquatic facilities possibly be affected by a crisis management situation?

If you would like to submit a question for this column or have comments on previously published material, please send them to: Reactions/AKF, 635 S. W. Gage Blvd., Topeka, KS 66606-2066.

(About the author: Since 1985 Bill has been active in the fields of science, zoology and wildlife management. His education and experience include a B.S. in wildlife management and post-graduate studies in zoology, Lab and Museum Assistant, Shoot Team leader, ERT Member, Senior Keeper and Large Mammal Keeper at various AZA facilities. His area of research is crisis management in zoological institutions, which draws upon practical experience and training as a Rescue Diver, Hunter Safety Instructor, NRA Firearms Instructor, and Red Cross CPR/First Aid Instructor.)



Book Review

Snakes: The Keeper and the Kept

By Carl Kauffeld, 1969 (reprint 1995)

Krieger Publishing Company

P. O. Box 9542, Melbourne, FL 32902-9542

Hardback, 248 pgs. Price: \$32.50

Review by Bernard Gallant

Keeper - Rodents, Insects, Reptiles & Domestic species

Magnetic Hill Zoo, Moncton, N.B., Canada

The book was first published in 1969. At first glance, I thought that the book would be out-of-date and that the information would be of no value to me. I soon found out that I was quite mistaken.

Carl Kauffeld was the Curator of Reptiles at the Staten Island Zoo. He started in 1936 and worked there until he passed away in 1973. He wrote three books (including this one) and about 200 papers. He is truly knowledgeable in the field of reptiles.

This book consists of 11 chapters and four appendixes. The first few chapters describe the husbandry of snakes. The author tries to answer a few common questions that today's new snake keepers would probably ask, for instance: "How do they (the snakes) feel about this (captivity)?" Some of his answers were given in too general of terms.

The next few chapters cover the author going out in the field trying to catch specific snakes for the collection at the zoo. He describes it interestingly as an adventurous story. In these chapters, he mostly deals with venomous species of the United States. The author takes the reader into areas like the states of Arizona, South Carolina, and New York.

In the last couple of chapters, he shows the public's interest in nature has grown. The last chapter is called, "A Further Plea for Conservation". The author realizes that the topic of conservation was going to become more and more important in the future.

The appendixes cover a few different subjects: scientific names; common names for American snakes; references; and last what is known about the feeding, care, and acceptance of captivity for native snake families.

The sections of photographs are in black and white, which is not very useful in identifying the interesting colors of these snakes. Some of the photos are of poor quality, but some photos were taken by the author himself and do give a basic idea of the snake in question.

Unfortunately, the author does sometimes take the view of a collector. He wanted to "acquire all of the 32 (native species) of rattlesnake of the United States for the first time in the history of zoos." He does acknowledge that collecting from the field causes pressure on the wild population, but he continues to do so throughout the book.

Overall, I enjoyed reading this book. I believe if a person is interested in the history of keeping snakes (especially native venomous) or simply a different view point of keeping snakes, they should try this book.

Herpetology In Australia - A Diverse Discipline

Edited by Daniel Lunney and Danielle Ayers

Royal Zoological Society of New South Wales, 1993

P. O. Box 20, Mosman, NSW 2088, Australia

414 pages, paperback

50 color ill., 43 B&W

*Review by Ken Naugher, Zoo Keeper
Montgomery Zoo, Montgomery, AL*

This book presents an impressive collection of 67 papers. It represents a huge group of herpetologists who study the entire spectrum of Australian herpetology. In fact, this book is a fine example of how diverse Australian herpetofauna and herpetologists really are. From natural history to palaeontology, field studies to captive propagation, this book has something for everyone. There are even a few articles such as "Twenty Years of Wondering and Worrying About How Crocodiles Live in Salt Water" by Gordon Grigg which are reminiscent of a Sherlock Holmes mystery. This will be a much appreciated work for those who have experienced the difficulty in locating up to date information on this region. Many valuable accounts of speciation of little known animals are presented in this volume. Also, this book does not forget amphibians. Four papers are included on these animals. It is pleasing that the majority of the papers in this work cover conservation. This material clears up the often complicated and confusing wildlife laws of Australia.

This book does have a weakness however, limited information is presented on captive husbandry, propagation and management in zoos. Only two papers deal with captive husbandry with only one concerning zoos.

Overall, this book would be essential to professional teaching herpetologists, but of limited practical value to zoo keepers.



Seeking Dedication to Animal Care and Conservation.

As an Animal Keeper at Disney's Animal Kingdom, you have the opportunity to work with an elite team of conservation minded professionals who are dedicated to building one of the world's finest zoological parks. We are currently looking to hire more than 80 Animal Keepers to join Bruce Read, Rick Barongi and the growing team here as we create a whole new species of theme park opening in Spring of 1998.

You'll work under the direction of the Zoological Manager or Curator, and will be responsible for the care, management, welfare and enrichment of all the animals in the collection. The pay is competitive, the benefits are great and you'll have the opportunity to be in on the ground floor of the next generation in animal care and conservation.

You should have a high school degree or equivalent with work experience. A college degree in biology or related field is strongly preferred.

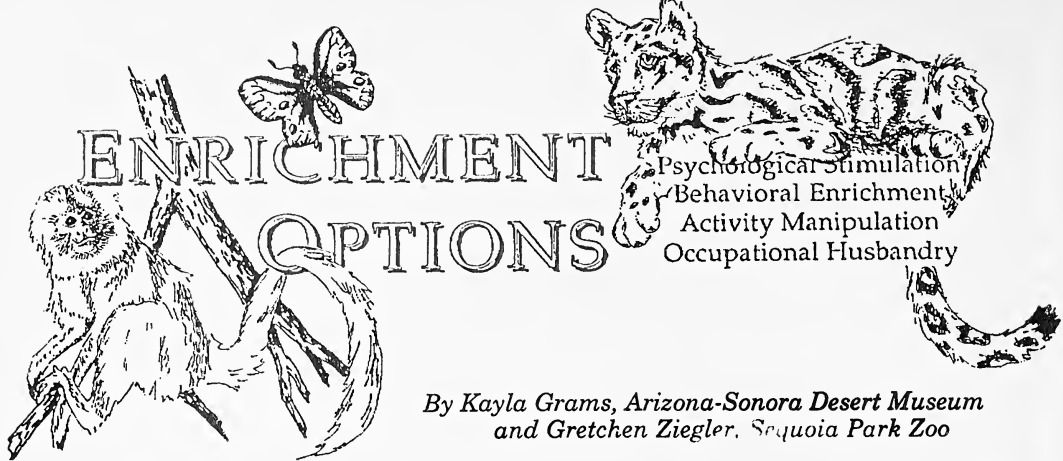
If you are dedicated to Animal Care and Conservation and are interested in joining Disney's Animal Kingdom, send a formatted résumé on white paper to: Salaried Casting, XADSAK720, P.O. Box 10090, Lake Buena Vista, FL 32830 or fax to 407-828-1571.

Disney's Animal Kingdom will be conducting interviews with Animal Keepers during these Regional Conferences*:

March 19 - 22, 1997 Memphis Zoo, Memphis, TN; April 9 - 12, 1997 Phoenix Zoo, Phoenix, AZ;
May 15 - 18, 1997 Cleveland Metroparks Zoo, Cleveland, OH

*** Interviews will be conducted only with candidates who have submitted résumés
and have been scheduled in advance of event.**





*By Kayla Grams, Arizona-Sonora Desert Museum
and Gretchen Ziegler, Sequoia Park Zoo*

FRUIT BATS: Many kinds of fruits and vegetables are offered an enrichment for Old World fruit bats housed at The Lube Foundation. The following is a list of fruits and vegetables that have been given to the collection:

- | | |
|------------------|--------------------------|
| Watermelon | Raw & Cooked Onion |
| Oranges | Celery |
| Grapefruit | Romaine Lettuce |
| Strawberries | Bok Choy |
| Cantaloupe | Sweet & Dill Pickles |
| Honeydew | Raw Corn-on-the-Cob |
| Mango | Variety of Cooked Squash |
| Guava | Figs & Dates |
| Peaches | Apricots |
| Nectarines | Garlic |
| Pineapple | Ginger |
| Frozen Bananas | Cooked Plantains |
| Muscadine Grapes | |

The daily diet we offer the bats is about 2/3 chopped apple. Therefore when the apples are hung as enrichment there is very little interest from the bats. Because of this we try to offer as great a variety of enrichment as possible to keep it as novel as we can. The more novel the enrichment item, the greater the interest from the bats.

--Caroline Cooke, The Lube Foundation, Gainesville, FL

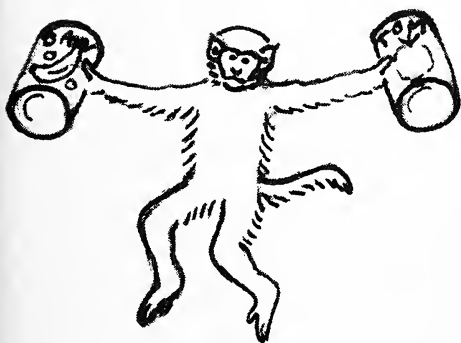
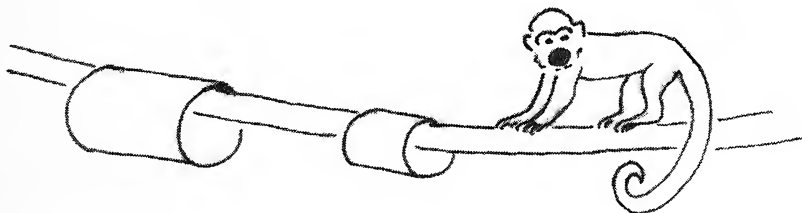
CATS, ETC.: Have people bring in their empty seasoning/spice containers (the smell is still quite strong even when empty). Fill container with woodchips and some water and close up the container and let it sit a few days. The woodchips will now smell like the seasoning. Place the chips in the exhibit and the cats will sniff, roll in and scent mark the chips. The container can be reused this way several times, and you can have several different scents to use all the time.

--Linda Pastroello, The Zoo, Gulf Breeze, FL

PRIMATES: Objects to Carry and Manipulate

For small to medium sized primates - This may sound too simple, but primates on display who have nothing in their environment to carry, throw, stack or roll are missing out on an easy inexpensive enrichment option. Offer blocks of wood such as 4", 6", 8" and 10" or larger pieces cut from a log so they can be carried, thrown or stacked. Log "blocks", especially with the bark left on, do not detract from a beautiful, natural enclosure. If your adult primates have become "jaded", initial interest in new items can be hurried along by smearing peanut butter, mustard or fruit spread on them or by laying them over normally offered foods so that they have to be removed first. Langurs, macaques, capuchins, spider monkeys, lemurs, guenons etc. will also make use of rocks or sea shells of various sizes and textures or even tin cans (cans opened with inner rim filed with a metal file to remove sharp edges or unopened cans can be offered to stack or throw). Opened cans of various sizes (inner rims filed) can be used as inexpensive stacking toys or incorporated as moveable objects on a perching rope, pole or chain.

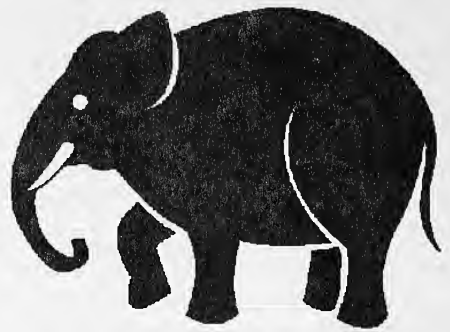
—Camille Dorian, Monkey Zoo, Orinda, CA



Stacked tires for large primates--



Chapter News Notes



A Challenge to All Chapters!

Greetings from Topeka, Kansas! This is not a standard Chapter News bulletin, but instead it is a wake-up call. Working where we do we have a little closer contact with the National Office of AAZK and with its current financial problems. Therefore, we would like to inform the rest of you that the Association needs your help. In response to this need, the Topeka Chapter has decided to donate 10% of all its income for the 1997 calendar year to AAZK, Inc. and we would like to challenge each and every Chapter to do the same. We, as Chapters, would not exist were it not for the national organization and we need to keep it strong so that we can all grow and carry out our common goals of continuing keeper education, information exchange, and the support of deserving conservation projects worldwide.

—*Michael Davis and Dina Signorelli,
Topeka Chapter AAZK*

Oklahoma City Zoo AAZK Chapter

The Oklahoma City Chapter of AAZK recently elected the following officers for 1997:

President.....Kirsten Christensen
Vice President.....Brian Whitsitt
Sec'y/Treasurer.....Margaret Jones

The year 1996 was a good one for us. Bowling for Rhinos was a success with a total of \$2,500.00 raised. An Oklahoma City Zoo Animal Keeper, Janet Wiard, ranked eighth in total donations collected nationally.

We continue to collect aluminum cans for recycling and frequently participate in other Oklahoma City Zoo functions including Career Day and Haunt the Zoo.

Recently the zoo celebrated the birth of the sixth western lowland gorilla since the opening of Great EscApe in 1993. Also, the first greater one-horned Indian rhinoceros was born at OKCZ on 6 December of 1996. We are hoping for an even stronger year in 1997.

—Margaret (Peggy) Jones, Sec'y/Treas.

Chesapeake Chapter of AAZK

Nineteen hundred-ninety-six finally saw the establishment of our Chapter. After much red tape and dealing with City Charters, we were able to get up and running. Special thanks go out to the Salisbury Zoo Commission and our Director Jim Rapp for their support and aid in dealing with the city bureaucracy.

On 20 December 1996, we met and voted on dispersement of the funds we earned this past year. The dispersement was as follows: AAZK, Inc. - \$404.60 unrestricted; Salisbury Zoo Camp Scholarship - \$250.00; AAZK Junior Zoo Keeper start-up assistance - \$250.00; AAZK Bowling for Rhinos Fund - \$261.00; conservation work within the city of Salisbury - \$202.30; and Nanticoke River Alliance - \$700.00.

Thank you to Dr. Jimmy Tragle, DVM and his wife Billye and all their friends

for their donations toward spider monkey conservation at Punta Laguna Forest Reserve. With their help and the sale of toy monkeys, we were able to send \$3,000.00 to this project which is particularly relevant towards our collection of New World animals.

We have been very pleased with our efforts thus far considering the small size of our Chapter membership. Hopefully, with the continued support of all staff and docents, 1997 will be as successful. Again, thank you to everyone who has helped us.

—Ann Meyer Kuntz, Pres/Sec'y

Wildlife Safari AAZK Chapter

Hello and Happy New Year! We are proud to install the following officers for 1997:

President.....Scott Bentall
Vice President.....Gena Bentall
Treasurer.....Pat Roberts
Secretary.....Jan Bell
Liaison.....Judy White

Nineteen-ninety-six was a positive year for us. Starting with only two members in January, we now total 13. We set and met several goals. Staff lunches with volleyball competitions, guest lecturers for many monthly meetings, a subscription to *Shape of Enrichment*, and several enrichment events helped us to meet our goals of staff unity, keeper education, and continued animal enrichment.

We held two very successful fundraisers - both with no overhead. In exchange for maintaining a road clean-up program (a 2-mile stretch leading to our park), Wildlife Safari donated \$25.00 monthly to our Chapter. We also held a "Three Winner Raffle" with an elephant ride, a "greet the

cheetahs" walk-through, and an animal program at a private residence as prizes. This was a last-minute raffle and we raised \$200.00 in three days.

We look forward to 1997. Best wishes to all our fellow AAZK Chapters.

—Judy White, Liaison

Suncoast AAZK Chapter

The Suncoast Chapter had a very successful 1996. The level of participation by members and non-members increased approximately 50%. This can be attributed to increased organization, longer notice of upcoming events, and social activities at events. Of particular note was our Bowling for Rhinos event which included bowling, a raffle, and a silent auction. We had over 90 participants and raised over \$3100.00. Our banquet in December was a great hit with special thanks to Rick Barongi, Director of Disney's Animal Kingdom, for being our keynote speaker.

Thank you to our past officers for a great year! President/Jennifer Hackshaw; Vice Pres/Peter Hoke; Treasurer/Jill Piltz; and Secretary/Charlene McKee.

And welcome to our new officers!

President.....Sylvia Inglefield
Vice-President.....Valerie Burke
Treasurer.....Jennifer Young
Secretary.....Jill Piltz

Looking forward to another great year!

--Kevin Shelton, Chapter Liaison

**REQUEST FOR
CHAPTER INFORMATION.**

from the AAZK Historian

It is important that a history of the significant activities of AAZK be documented. As the AAZK Historian, I am requesting that Chapters provide information concerning their activities. Examples of information that I would like to receive include: Chapter work with conservation groups; providing training and/or supplies to personnel at a foreign zoo or conservation group; a brief description, photograph or sample of any merchandise associated with the Bowling for Rhinos fundraisers, etc. Any other information of historical importance is also welcome. Your participation would be greatly appreciated.

Please send any merchandise or photos to Susan Chan at AAZK Administrative Offices, 635 S.W. Gage Blvd., Topeka, KS 66606-2066. Bowling for Rhinos and other activity information should be sent to me at 3038 Arrowhead Lane, Norristown, PA 19401. If you have any questions, I may be reached during the day at (215) 737-8740 or e-mail at fsyzoo@aol.com

—Mark Levin, AAZK Historian

Final Word. . . .

As of the end of 1996, there are 1,614 species of animals and plants listed under the Endangered Species Act. 1049 of those species are in the United States: 835 are listed as "endangered" (322 animals; 513 plants); 214 are listed as "threatened" (114 animals, 100 plants).

—EICACTION 1-3-97

ATTENTION CHAPTERS

Recharter packets were mailed to all Chapter Presidents the first week in January. Completed Recharter Packets are due at Administrative Office by 1 March 1997. Chapters rechartering after this deadline will be assessed a late fee of \$75.00.

Be sure to completely fill out the annual activity and financial reports as this information is needed by AAZK, Inc. for tax reporting to the Internal Revenue Service

UNDER SIEGE: Of all grasslands birds in the Northeast, only the bobolink and savanna sparrow "appear to be holding their own," says a New York Times article. Numbers of grasshopper sparrows in NY dropped by 97%; populations of field sparrows in VT are down 92%, the Times says. Preserving and restoring native prairie used by grassland species "has long been a high profile cause" in the Midwest but has resulted in little concern in the northeast, the article states. Regional populations of grasslands birds in the northeast will depend on managing hay meadows, fallow fields, and airfields says Dr. Robert Askins of Connecticut College.



--GREENlines Issue #287 Jan. 2, 1997

Zoonotic Disease Concerns for the Pregnant Zoo Keeper and Expectant Father

*By Ed Hansen, Senior Keeper
Reid Park Zoo, Tucson, AZ*

A recent inquiry to the editor of the *Animal Keepers' Forum* on this subject was directed to me as resource for both useless and useful (mostly useless) information. Never having been pregnant, but having been an expectant father, I set about researching pregnancy and zoonotic disease concerns and it became obvious that the two subjects have never really met and been condensed into the same resource. This article is a brief attempt to accomplish just that, but it would be imperative that each family conduct their own research to ensure the health of their child.

It is also incumbent upon the parents to bring forth their concerns to their obstetrician and make sure that your OB/GYN is aware of your profession, or that of your spouse and is also aware of the potential transference of infection from zoonotic diseases. You may have to bring your research along with you when you visit the doctor, as the average OB/GYN knows the dangers of toxoplasmosis but probably never heard of psittacosis. It is important to remember that even healthy pregnant women are considered immunosuppressed, especially during the first trimester and susceptible to many organisms that they would normally fight off with little or no effect.

Why bring expectant fathers into the equation? Because some of the zoonotic diseases to be discussed can be transferred by fluid/fluid (oral, sexual) contact with your spouse. However, with almost all zoonotic diseases, by utilizing effective hygiene practices and adequate Personal Protective Equipment (PPE), you can all but eliminate the threat of transference to your family and imminent family.

In the article, reference will be made to wearing respirators. Recent studies have shown surgical or dust masks to be ineffective against constant or prolonged exposure to aerosol particulates. The most effective prevention is to wear a half-mask, cartridge type respirator, meeting ANSI Standards, fit tested by a respiratory therapist or qualified industrial hygienist after a complete physical exam.

In an effort to be organized, the zoonotic diseases that you may encounter in your workplace are listed alphabetically and not ranked according to which may be the most serious potential health threat to your unborn child. Consider them all to be a serious threat and take the adequate precautions.

CAMPYLOBACTERIOSIS

Campylobacter, in its most common form *Campylobacter jejuni*, is a gram-negative enteric organism causing severe diarrhea, cramps, nausea and fever. This organism is most commonly found in the stool of infected warm-blooded animals including birds. Typical infection occurs from fecal to oral contact or eating raw or undercooked poultry. Mothers are at risk during the entire pregnancy. The fetus is at risk from electrolyte imbalances caused by fluid loss resulting from diarrhea or lack of fluid intake by the mother during illness. This organism has been identified as a specific cause of spontaneous abortion in some species of mammals.

Fetal Risk: Abortion (undocumented in humans), cardiac arrhythmia.

Precaution: Disposable gloves, cook poultry thoroughly

Diagnosis: Stool culture

Treatment: Antibiotics, fluid therapy

CRYPTOCOCCOSIS (European blastomycosis)

Cryptococcosis is an encapsulated yeast-like fungus most commonly isolated from the feces of birds, usually pigeons. Typical infection comes from fecal to oral contact or by the ingestion of dried fecal aerosols. Mothers are at risk during the entire pregnancy. This fungus has a predilection for invading the brain causing headaches, dizziness, vertigo and sometimes coma. This illness is similar in form (but not in symptoms) to **Coccidiomycosis**, which has been known to pass from mother to fetus through the so called "placental barrier" by way of the umbilical cord.

Fetal Risk: Respiratory distress

Precaution: Disposable gloves, respirator

Diagnosis: Fungal cultures

Treatment: Anti-fungals

CRYPTOSPORIDIOSIS

Cryptosporidium is an enteric coccidian protozoan commonly found in the intestinal tract of fish, birds, reptiles and mammals. Mothers in the first trimester should be considered immuno-suppressed and are at considerable risk to the organism. Typical infection occurs from fecal to oral contact, but transmission from person to person is also likely. Rodents can also carry Cryptosporidium in a latent form. Symptoms range from diarrhea to severe dysentery. The fetus is at risk from electrolyte imbalances in the mother caused by fluid loss from diarrhea or lack of fluid intake due to illness.

Fetal risk: Cardiac arrhythmia

Precaution: Disposable gloves

Diagnosis: Stool culture

Treatment: Metronidazole

GIARDIASIS

Giardia is a flagellate protozoan more common than **cryptosporidium** previously detailed with the exception that human transmission is greatly reduced. Symptoms, risks, precautions, diagnosis and treatment are identical.

PSITTACOSIS

This organism is the avian form of chlamydia. Psittacosis or ornithosis is the term applied to birds. The organism is commonly found in the feces of infected birds and typical infection occurs when the mother ingests fecal aerosols. Symptoms are flu-like, often accompanied by respiratory distress. Mothers are at risk during the entire pregnancy. While the disease itself is not known to be risky to the fetus, the treatment for psittacosis can be. Tetracycline is the drug of choice and is known to inhibit calcium absorption which may harm the fetus during development.

Fetal Risk: Unknown

Precaution: Disposable gloves, respirator

Diagnosis: Serum titers (unreliable: false +/- results)

Treatment: Tetracycline, which inhibits calcium absorption

SALMONELLOSIS

Salmonella is a bacterium found in the intestinal tract of warm-blooded animals, birds and reptiles. Typical infection occurs from fecal to oral transmission, but person to person transmission is documented. Salmonella is also commonly found in all raw animal-derived food products and is commonly found in the soil contaminated by the feces of infected animals. Both animals and humans may carry the bacteria in latent form. Mothers are at risk during the entire pregnancy and, according to the New York State Department of Health, there is a documented case of Salmonella transference from mother to unborn child, resulting in the death of the newborn. This case was traced directly to a reptile(iguana) handling in the home.. Symptoms of salmonella usually occur within six to 72 hours of ingesting the bacteria. The fetus is at risk from electrolyte imbalances caused by fluid loss from the mother from diarrhea or lack of fluid intake due to illness. Infants should be considered at extreme risk for infection. Tetracycline, which is known to inhibit calcium absorption, is also commonly used to treat symptoms and may harm the fetus during development. *Salmonella typhimurium*, one of the most commonly occurring types of salmonella found in horses and cattle has been documented to cause sporadic abortions in those species.

Fetal Risk: Intrauterine infection, death, cardiac arrhythmia

Precautions: Disposable gloves, cook foods

Diagnosis: Stool culture

Treatment: Antibiotics, including Tetracycline

SHIGELLOSIS

Shigella is a gram-negative bacterial rod belonging to the family *Enterobacteriaceae*. It contains a number of species which cause digestive

disturbances ranging from mild diarrhea to severe dysentery. The bacteria is commonly found in the stool of infected warm-blooded animals. Typical infection occurs from fecal to oral contact. Mothers are at risk during the entire pregnancy. The greatest risk to the fetus occurs when the mother is experiencing symptoms, fluid loss and electrolyte imbalance, from a severe attack of Shigellosis, which can trigger significant cardiac episodes in both mother and fetus. Infants are known to be highly resistant to *Shigella sp.* until about six months of age, but there have been reported cases of Shigella infections occurring in newborns, possibly due to transient bacteria present during birth.

Fetal Risk: Dehydration, arrhythmia, toxic shock (newborns)

Precaution: Disposable gloves

Diagnosis: Stool culture

Treatment: Antibiotics, fluid therapy

TOXOPLASMOSIS

Toxoplasmosis is caused by the protozoa *Toxoplasma gondii* and is common in warm-blooded animals, including birds. The most common transference to people comes from cats. Because the protozoa is shed in animal feces, it is also commonly found in the soil. The protozoa are shed in the stool of infected animals and becomes infectious after 1-5 days. Typical infection occurs from fecal to oral contact. Mothers are at risk during the entire pregnancy, but especially in the first trimester. Toxoplasmosis cannot be transferred by fluid contact, but in addition to exposure from animal feces, infection can be caused by eating raw or undercooked, infected meat or by eating unwashed vegetables.

VIRAL HEPATITIS

Hepatitis is an inflammation of the liver caused by a virus. The specific hepatitis viruses have been labeled A, B, C, D, E, F, and G. Type A hepatitis, once referred to as "infectious hepatitis" can be spread by fecal/oral contact from the stool of infected animals. Zoonotic transmission usually occurs in great apes, but the virus can be found in other warm-blooded animals. Mothers are at risk during the entire pregnancy as this virus can be spread by fluid contact. Type B hepatitis, once known as "serum hepatitis", can be spread by the transfer of blood/serum from accidental needle sticks after injection of an infected animal, usually primates, or other fluid contact. It is now known that after exposure, Hepatitis B can be transferred to family via fluid contact or childbirth. Type C hepatitis is very similar to Type B, but transmission of the virus by fluid contact is considered rare. The fetus is also at risk from fluid loss in the mother associated with diarrhea, vomiting and lack of fluid intake during illness.

Fetal Risk: Liver damage, jaundice, cardiac arrhythmia

Precaution: Disposable gloves, caution with sharps

Diagnosis: Blood test, liver function analysis

Treatment: Symptomatic unless acute. Vaccine available and recommended for newborns.

X-RAYS

Radiographs are one of the most common, but often overlooked hazards to your unborn child. Mothers are at risk during pregnancy, especially in the very early stages of fetal development. It is quite common, during the crisis of diagnosing a traumatic injury or illness to one of "your" animals, that you may forget your medical condition while x-rays are taken. If you even suspect that you may be pregnant, leave the animal restraint to someone else or leave the room. Lead shields are not designed as protective devices against radiation exposure for pregnant women.

DISCUSSION

This list is certainly not complete or all-encompassing, and does not even consider zoonotic diseases such as Simian Herpes Virus (Herpes B) or Tuberculosis, which would assume that your personal health problems are more acute.

At a glance, this list is certainly frightening to any expectant parent in the zoo profession. However, consider that you and your co-workers are exposed to these health threats every single working day and fortunately, not many of us knowingly suffer from these zoonotic diseases. Think about what you're doing. Exercise caution. Use adequate PPE, which includes good quality disposable gloves and a respirator. Practice thorough hygiene. Read your MSDS and limit or eliminate your exposure to chemicals. Leave your work clothes, especially your work boots, at work.

Happy parenting, because these worries over your children most certainly won't be your last.

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Books Available for Review

The following books are available to be reviewed for the Book Reviews section of *Animal Keepers' Forum*.. Those who currently have a book review **outstanding** are **not** eligible to request these books. If you are interested in any of the following titles, contact *AKF* Editor Susan Chan at 1-800-242-4519 U. S.) or 1-800-468-1966 (Canada). Book reviews are due **within 90 days** of receipt of the book and the reviewer may keep the book once their review is submitted. Distributed on first come, first served basis.

1. Wild Mammals in Captivity: Principles & Techniques edited by Devra G. Kleiman, et al. 656 pages.

2. Integrated Principles of Zoology by Cleveland P. Hickman, Jr. et al 901 pages

3. Hormones, Brain and Behavior - Biology of the Reptilia, Vol. 18, Physiology E edited by Carl Gaines and David Crews 564 pages

4. The World of the Penguin by Jonathan Chester 112 pages

5. The World of the Shorebirds by Harry Thurston 116 pages

6. Ratite Management, Medicine and Surgery edited by Thomas N. Tully Jr. and Simon M. Shane 188 pages

7. Softbills: Care, Breeding and Conservation by Martin Vince 278 pages

8. Waterfowl: Care, Breeding and Conservation by Simon Tarsnane 278 pages

Legislative Update

Compiled by Georgann Johnston
Legislative Advisor
Sacramento, CA
1-800-338-7348



Conference On Biodiversity Concludes With Few Results

The Third Conference of the Convention on Biological Diversity (CBD) met in Buenos Aires, Argentina in November 1996. The CBD is an intergovernmental working group comprised of over 1500 delegates from countries around the world, sent to the convention as representatives of their country's government. Started approximately five years ago, the CBD has as its goal conservation of the earth's resources with a particular emphasis on forests. The CBD feels that forests are of particular importance because they contain about 70-90 percent of the world's terrestrial biodiversity.

Despite the efforts of a number of delegates, no concrete program or plan for forest conservation was developed for the delegates to take back to their respective governments for implementation. A spokesperson from the World Wildlife Fund criticized the CBD at the conclusion of the conference because it failed to assume its natural role in the conservation of these essential ecosystems and, instead, decided to postpone for another 18 months any decision on what it will do with regards to forests. Further information about the CBD convention can be obtained from the World Wildlife Fund at their Web site <http://www.panda.org/news/press>

Source: World Wildlife Fund Press Releases, November 1996

Joint German-American Survey Gives Hope For Siberian Tigers

A study funded by the U.S. Program for Environmental Cooperation and the World Wildlife Fund of Germany has concluded that there are between 415 and 475 Siberian tigers roaming free in Russia's far east. The survey was undertaken by both U.S. and Russian scientists and is based on counting tracks in the tiger's habitat. A similar survey in 1985 identified approximately 250 animals but the 1995 study — utilizing 675 counters — resulted in a count of 330 adults and 104 cubs.

Source: World Wildlife Fund Press Release December 1996

USFWS Abandons "Category 2" Endangered Species Classification

The USFWS has decided to discontinue the practice of maintaining a list of species regarded as "Category 2" candidates for listing under the Endangered Species Act. Instead, futures lists of species for listing will be limited to those

for which the agency has on file sufficient information to support issuance of a proposed listing of concern. Alternatively, the USFWS will continue to maintain lists of "species of concern" or "species in decline" for use in land management planning and natural resource conservation efforts beyond the mandates of the SEA.

The effect of the deletion of "Category 2" listing is to eliminate the quasi-protected status for a number of species whose populations are unknown but who anecdotally appear to be dwindling. The Service will continue to accept information on the biological status and treats to individual species but will require more extensive documentation before an animal or plant can be placed on the formal SEA pending candidate list.

More information about this change in policy may be obtained by contacting E. LaVerne Smith, Chief, Division of Endangered Species, USFWS, 4401 North Fairfax Dr., Room 452, Arlington, VA 22203.

Source: Federal Register Online 50 CFR Part 17

IUCN Calls For Inspection Of Wildlife Shipments

The International Union for the Conservation of Nature's World Conservation Congress (IUCN) has issued a resolution calling for a strengthening of all wildlife inspection procedures by all member countries. The resolution was passed amid great debate at the annual meeting of the IUCN held in Montreal, Canada in the fall of 1996.

An initial resolution was put forth by the Wildlife Society of Bangladesh, Primarily Primates, and three other organizations and targeted the United States, where a low inspection rate has been documented. The German government representative announced its opposition to the resolution, saying that no proclamation should be issued that singled out any one government or country.

The compromise document is based on a report issued by the U.S. General Accounting Office entitled "Wildlife Protection: Fish & Wildlife Service's Inspection Program Needs Strengthening". In summary, the resolution calls upon all members of IUCN to strengthen law enforcement efforts to protect CITES-listed species through physical inspection of entering and departing wildlife shipments. The document also calls upon the governmental members of IUCN to dedicate the resources needed to accomplish the inspection and enforcement goals.

Source: International Primate Protection League Press Release, December 1996

Utah Fails In Its Attempt To Block Release Of California Condors

A plan to release captive bred California condors into the Grand Canyon area

in Northern Arizona was almost halted by legal action filed by Utah's San Juan County. The County claimed that the presence of the bird in the area would restrict the use of private and federal land in southern Utah under the terms of the Endangered Species Act. In response, a spokesperson for the U.S. Fish & Wildlife Service pointed out that the Service had officially designated the proposed condor population as "non-essential" which would prevent land-use restrictions in the area.

Despite the dispute, the release of six young birds took place the second week of December 1996. Bruce Babbitt, Interior Secretary, stated that the area was chosen because it is sparsely populated and is anticipated to be a safer habitat for the birds than the species current range in southern California.

Source: Audubon Magazine November-December 1996; GREENLines Issue #269, 9 December 1996.

Interior & Commerce Departments Announce Streamlined Habitat Conservation Planning

Guidelines designed to streamline and expedite the habitat conservation plan permit process under the federal Endangered Species Act were released by the Interior Department and Commerce Department in December 1996. Habitat conservation plans provide for conservation of endangered species during development of privately owned land within the United States. The goal of each plan is to conserve endangered species while allowing for economic development which will not "appreciably reduce the likelihood of the survival and recovery of the species in the wild", said John Rogers, acting director of the Fish and Wildlife Service, a branch of the Interior Department.

A new Habitat Conservation Program Handbook has been issued which provide the basic guidelines for applications and procedures to be followed by private landowners whose land is inhabited by endangered or threatened wildlife and who wish to develop their property. Various alternatives are set out in the Handbook including procedures for conservation (through acquisition or conservation easements) of existing habitat, restoration of degraded or former habitat, creation of new habitats, establishment of buffer areas around existing habitats, or modifications of land use practices and restrictions on access to the target land.

Copies of the HPC Handbook may be obtained by writing to the HCP Coordinator, Division of Endangered Species, U.S. Fish & Wildlife Service (ARLSQ 452), 1849 C St. NW, Washington, DC 20240.

Source: Interior Department Press Release 3 December 1996

The Use of the World Wide Web by Zoo and Aquarium Professionals

*by Donna FitzRoy Hardy, Ph.D.
California State University, Northridge*

Many zoo and aquarium professionals are beginning to think of their personal computers (Pcs) as communication tools, although Pcs will probably not compete with the telephone, fax or post ("snail mail") until we are well into the next century. But electronic communications technology is evolving so fast that an article I wrote in spring 1993 on computer-mediated communication was out of date when it appeared in the *International Zoo Yearbook* the following year (Hardy, 1994)!

The PC as a Communication Tool

Perhaps the main problem people are having with accepting computer-mediated communication has to do with how we have come to regard the PC. Most of us begin using it as a fancy typewriter and "number cruncher", then as a kind of filing cabinet for electronic documents or as a way to organize data in spreadsheets. Some of us later come to regard it as a wonderful way to format documents for desktop publishing. But most of these uses involve printing things on paper as the end product. Mass communication involving paper has been around for more than 450 years: it is called the First Media, based on Guttenberg's printing press. For mass communications today, we use the radio (the Second Media) and television broadcasting (the Third Media) as well a print media. And since we are familiar with the technologies of these three media, complex though they may be, we feel comfortable with them. But the electronic media is an entirely new way to disseminate information. Termed the Fourth Media, the World Wide Web allows us to do something that previously only radio and television could do: communicate to millions of other people instantaneously! And since today the World Wide Web gives us the ability to communicate this way as individuals, it is setting a new standard or model for communication. This is the paradigm shift: a new way of thinking about mass communication.

When a person experiences the paradigm shift that comes from Web publishing, it sometimes comes as a shock. For example, the other day I was tinkering around with the HTML coding of my Home Page [<http://www.csun.edu/~vcpsy00h/index.html>]. I had decided to add a quote from Chief Seattle and insert a hypertext link to the Web site of the letter from which the quote came. When I had accomplished this of coding in HTML (hypertext markup language), I immediately checked my Web page to see what the quote looked like. It then struck me: a person in Japan (or anywhere else in the world!) who happened to be accessing this site would see this addition at exactly the same time as I did! [With this power to disseminate information through one's own PC comes the

responsibility to make sure that the information that ones posts on the Web is accurate. And a challenge for the "Web user" is to weed out misinformation. However, this challenge may have originated with the First Media: don't believe everything you read!

Browsing the Web

Indeed, a revolutionary change is taking place in the way many people are now using computers. This is largely due to great popularity of the World Wide Web, which came about as a result of development of programs called "browsers." Web browsers have made it possible for new users of this technology to find information on the Internet with great ease. While other Internet applications like email and Internet Relay Chat have continued to gain popularity, the current focus on the Web is due to its unique features: its hypertext orientation and its ability to support hypermedia (graphics, color, sound, motion). A simple click of the computer mouse on hypertext links (highlighted parts of a Web document) invokes an HTML code that is ordinarily not visible to the viewer; these links allow browser programs to access files (including multimedia graphics, audio and video files) from computers anywhere in the world. Hypertext links form the threads of information that are the structure of the World Wide Web, and new applications utilizing the interactivity of the Internet are rapidly being developed (Hardy, in press). [A summary of Internet resources can be found in the May 1996 issue of *Animal Keeper's Forum* (Peterson, 1996).]

One gains access to the World Wide Web by using a PC with a modem and a communications program which connects that PC (called a client) to another computer (server) at an online service, such as America OnLine, Compuserve, or Prodigy, or at an Internet service provider, such as Netcom, PSINet, or UUNet. If one's PC is operating in a Windows environment or is a Macintosh, a graphical Web browser like the popular Netscape Navigator can be used. Once connected to the online service or Internet service provider, one has the ability to access computer files located in another computer (Web server) anywhere on the Internet, although the actual speed of this access depends upon the speed of the modem and the type of connection to the server. A person in the United Kingdom entering <http://www.selu.com/~bio/cauz/> will be retrieving files from a server in the United States - in this case, Seattle, WA. This is the address or URL (Uniform Resource Locator) for the Web Site of the Consortium of Aquariums, Universities and Zoos. [The <http://>, which stands for hypertext transfer protocol, tells the browser to find that document in the World Wide Web.]

The C.A.U.Z. Web Site

The C.A.U.Z. Network was founded in 1985 for the purpose of facilitating communication and collaboration between university scientists and educators and their counterparts at zoos and aquariums around the world (Hardy, 1992). For many years, however, its ability to disseminate information depended on the distribution of annual printed directories. Since 1987, these directories

have proven to be a valuable resource for many people. [For a 1993 analysis of the C.A.U.Z. database, see my chapter on zoo research in the newly published *Wild Mammals in Captivity* by Kleiman et al.] The C.A.U.Z. Web Site was created by Tim Knight in August 1995, and since then, the entire database has been available (and searchable with key words) for the Internet community.

Many items at the C.A.U.Z. Web Site contain hypertext links to other documents, some of which are files in same server in Seattle. In addition, Tim has provided more than 800 links to documents in other servers. This collection of useful hypertext links can serve as a convenient "launching pad" into the Web. Many of us who are interested in conservation have changed the "HOME" location of our browser program from its default location (e.g., Netscape Corporation) to the C.A.U.Z. Web Site because it provides easy access into the World Wide Web and its vast resources.

Using Search Engines to Find Information

Information on the Internet is not well-organized, so the task of finding specific information among the millions of files that reside on thousands of Web servers can be quite intimidating. [By the fall of 1995, there were about 200,000 Web sites and the numbers are said to be growing exponentially.] In addition to following hypertext links provided in Web documents as a way to find information on the Internet, the use of computer programs called "search engines" can be quite helpful. The first search engine Yahoo! [<http://www.yahoo.com>.] was developed in 1994 at Stanford University, and since then, many other search engines have been become available - such as Lycos [<http://www.lycos.com>] and WebCrawler [<http://www.webcrawler.com>]. Since each search engine uses a unique "strategy" to search the Internet, the results of various search engines may not contain the same documents. Consequently, one must use more than one search engine to insure that searches of the Internet are comprehensive. Two recent programs "harness" existing search engines in parallel to provide a combined result: MetaCrawler [<http://www.metacrawler.com>] and UseIt! [<http://www.he.net/~kamus/useen.htm>]. Yahoo!, Lycos, WebCrawler, MetaCrawler, AltaVista, Excite, and other useful search engines can be found at the C.A.U.Z. Web Site.

Hypermedia

In addition to being able to move from one document to another with hypertext links, hypermedia makes the World Wide Web very special. With the Web, one can retrieve color images or graphics, sound and motion pictures as well as text. Some zoos are making pioneering efforts to provide educational programs via the Web and their Home Pages offer glimpses of future applications of hypermedia by adding short motion pictures and sound to their collections of colorful animal photographs. But while many Web applications are dazzling and entertaining, this technology cannot serve the needs of the international conservation community until computer-mediated communication is widely accepted. Email, for example, is clearly more efficient and less expensive than

facsimile or post, but it is only one use of modern electronic communications technology. In the near future, other applications of the Internet will be found to be absolutely essential.

The interactive capability of the Internet has not yet been fully explored. Some of the more innovative means of communicating are now beginning to evolve, including live images from strategically- placed Internet "cams" all over the world. And relatively inexpensive hardware and software now make it possible for people to utilize visual and voice (or voice alone) communication via the Internet in "real time" - rather like a two-way "video-phone" (or Internet phone). Indeed, video conferencing is now possible through software provided from the CU-See-Me Web Site (<http://cu-seeme.cornell.edu/>). And other innovative Internet applications are being rapidly developed.

Practical Uses of the Internet

Dave Thompson (Assistant Director, White Oak Conservation Center) and Dave Ellis (General Curator, Northwest Trek) have given me examples of how computer-mediated communications are currently being used by the zoo and aquarium community. They agree that the primary way that the Internet is playing a role in daily zoological operations is through the use of email: one can correspond with colleagues much more easily by email than by the post or telephone. And colleagues all over the world are discussing current, cutting edge animal management issues - and animal care jobs are being posted - in listserv mailing lists as well as in Usenet newsgroups.

The use of the Internet to find information relevant to animal management (using online library catalogs like MELVYL as well as services like CARL UnCover) is saving a great deal of time, energy and expense over other reference sources or research methods. And a great deal of valuable information is now found on the Web itself: ISIS Online Abstracts, which are updated monthly, summaries of the current status of SSP's at AZA Home Page, USFWS's Endangered/Threatened Species Lists, the IUCN Red List, CBSG's Online Global Zoo Directory, material data safety sheet files, poisons/toxins databases, weather information (including percentage-based landfall predictions for tropical storms and hurricanes), easy-to-use online phone books, airline schedules, ticket prices, online hotel reservations, online book dealers, product lines and vendors, etc. And animal record keeping (ARKS, ISIS) is becoming dependent upon the ability to transmit and receive data via computer and modem. According to Dave Ellis, "The World Wide Web is an information revolution and you will have either to join or plan on becoming ever more ignorant of the world around you."

The Future of the Web

To make the World Wide Web a legitimate communications media is truly a prodigious task for us all. In some ways, the international conservation community has an advantage over other groups who now taking advantage of

this new form of mass communication. For one thing, we already pretty much know who the "players" are: individuals who have already established a place in the zoo and aquarium community and who will no doubt be taken more seriously than others who have not yet established their credibility. But individuals working in conservation are generally associated with institutions (e.g., zoos, aquariums, universities) or organizations to whom they are responsible. So information posted in a World Wide Web document that bears the seal or logo of that institution will be perceived as credible, even if the name of its author is less familiar. And information emanating from Web Sites of recognized organizations (e.g., CBSG, IUCN, AAZK, AZA) will also be regarded as accurate.

But the World Wide Web can be used for more than mere posting of information or "electronic publishing," and the use of the Web is not like using email. One distinction between email and the use of the Web to distribute information is that rather than "sending" it like mail, one "publishes" information on the Web. Whereas you need to know to whom you send information via email, Web publishing (much like posting information in a Usenet newsgroup) makes it available to everybody on the Internet, not just people on your mailing list (or subscribing to a particular listserv). And the power to distribute information that we have been enjoying with email will increase through the use of the World Wide Web because of its potential for the use of hypermedia.

Electronic publication in the future will also include online versions of publications like *Animal Keepers' Forum*, *Communique*, and *International Zoo News*; since they are already in electronic form for modern printing methods, it is an easy matter to archive past issues to the Web sites of their publishers. [People will always want paper copies of - and always eagerly await the arrival of the new issue - so posting past issues of the publication on the World Wide Web will undoubtedly increase the circulation of printed versions.] And the valuable information from such Web archives will be available to anybody - at any time - anywhere!

Only the future can tell how computer-mediated communications will actually be used. Perhaps you will be at an otter meeting in Toronto and recall that relevant information about a successful introduction of North American river otters had been published in *Animal Keepers' Forum*. Without having to bring old copies of this journal to meetings like this, with an Internet connection to one's lap top computer, one could easily quote the article by Jan Outlaw in the June 1996 issue had been placed on the AAZK Web site. And this Internet connection would also allow you to share decisions made at a meeting like this by adding them to the Web as soon as the votes were taken! Indeed, minutes of the entire meeting could be made immediately available to the international conservation community even while the meeting was in progress! As could information shared at that meeting - or problems delineated. All one would have to do is use the Internet connection to telnet to one's home account (like mine in the UNIX here in Northridge), modify the information in that account, and voila! These additions and modifications would instantaneously appear on

the Web page for anybody logged onto the Internet to view. And although this scenario seems futuristic, it is being done today because it depends upon technology that is already in existence. And with existing Internet programs like CU-See-Me, sound and pictures can be placed on a Web page so that everybody could see and hear what is happening at this hypothetical otter conference!

Conclusion

The implications of this remarkable communications technology are obvious: in the future, zoo and aquarium professionals involved in conservation will have more and better information and will be able to play more active roles in decision making as well as in conservation projects themselves. The technology is here and all the players (members of the international conservation community) are in place. What is needed now is better understanding of the problems (and better solutions to these problems) we are facing in captive propagation of endangered species, wildlife conservation, restoration of damaged and fragmented habitats, etc. And better implementation of solutions to these problems. We need better communication in order to facilitate cooperation and collaboration on joint conservation efforts. But communication cannot just remain between the existing players. The World Wide Web will broaden our ability to reach beyond the zoo and aquarium community to enlist the human and monetary resources needed to accomplish the tasks at hand. I believe that the World Wide Web is the "mighty weapon in the fight for the conservation of life on Earth," as Aldo De Moor predicted to me by email from the Netherlands in 1990 (Hardy, 1994).

Literature Cited

- Hardy, D.F. 1992. The Consortium of Aquarium, Universities and Zoos. *International Zoo News*, No. 241 (Vol. 39/8):17-20.
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- Peterson, Carin. 1996. Online Resources for the Zoo Professional. *Animal Keepers' Forum*, 23(5):202-205.

[To join the C.A.U.Z. Network, email Dr. Hardy at dhardy@huey.csun.edu or write to her at the Department of Psychology, California State Univ. Northridge in Northridge, California 91335-8255.]

Institutions wishing to advertise employment opportunities are asked to send pertinent data by the 10th of each month to: Opportunity Knocks/AKF, 635 S.W. Gage Blvd., Topeka, KS 66606-2066. Please include closing date for positions available and when setting these dates keep in mind that because of bulk-mail, most readers do not receive the AKF until the middle of the month or later. There is no charge for this service and phone-in or fax listings of positions which become available close to deadline are accepted. Our phone is 1-800-242-4519 (U.S.); 1-800-468-1966 (Canada). Our FAX is (913) 273-1980.

ANIMAL KEEPER...candidates are required to have a minimum of one year of experience in the care of brown bears and/or gray wolves. Bachelor's degree in biology, zoology, animal science, or related degree preferred. Salary is commensurate with experience. Send letter of interest, resumé, and two letters of recommendation **by 25 February** to: Dr. Gale Ford, Executive Director, Grizzly Discovery Center, West Yellowstone, MT 59758.

ANIMAL KEEPER...person with stage presence to do animal shows with parrots, raptors and reptiles. Other duties include general keeper work with many animal species. Paid zoo experience and good references required. Send resumé to: Vince Hall, Claws 'n' Paws Wild Animal Park, RD 6, Lake Ariel, PA 18436. **Position open until filled.**

AVICULTURE INTERN...junior, senior, or grad with interests in avian management/zoo biology to work with our animal care staff. 10-12 weeks. Spring and summer positions available. On-site housing provided. Resumé and three (3) references to: Scott Barton, Curator, Tracy Aviary, 589 East 1300 St., Salt Lake City, UT 84105. **Positions open until filled.**

The following two (2) positions are available at The Thompson Park Conservancy, Watertown, NY. For either position send resumé and references to: Glenn Dobrogosz, Executive Director, Thompson Park Zoo, One Thompson Park, Watertown, NY 13601. Deadline is 1 March 1997.

ZOOKEEPER/NATURALIST...requires two years of college in biological/science related studies, one years paid zookeeper experience. Responsible for the daily care and management of a North American indigenous animal collection and children's farm. Applicant must have excellent observational, organizational and communication skills. Will become an integral team member in a progressive, growing institution working towards AZA accreditation. Must be willing to work weekends, holidays and in winter conditions. Salary range \$12,000.00 to \$14,000.00 per year , plus benefit package.

VISITOR SERVICES MANAGER...responsible for leading the volunteer/docent program, development and reorganization of the zoo gift shop, zoo membership, animal adoptions and various public service activities. A degree in Parks and Recreation or Communications preferred. A minimum of one years paid experience in a zoo, nature center or recreation facility is required. Must be willing to work odd hours, weekends and holidays. We are looking for a highly motivated and independent worker to be an integral team member in a progressive and growing institution. Salary commensurate with experience. Good benefits package.

The following two (2) positions are available at the Salisbury Zoological Park, P.O. Box 2979, Salisbury, MD 21802-2979. The Salisbury Zoological Park is a free admission, 12.5-acre facility specializing in exhibiting wildlife from North, Central and South America. For more information, call (410) 548-3188. Please note application deadlines under individual positions.

ZOO KEEPER...requires a motivated animal care professional willing to work a flexible schedule in a small, AZA-accredited zoo. Prefer degree in biology/zooology or a related life sciences degree, plus one year's paid experience working with animals. Must be a team player with a deep interest in zoos and conservation. Salary \$17,326.00 to \$19,787.00, plus benefits. Send resumé/letter **by 1 March 1997** to Gary Muir, Animal Supervisor at the address above.

SUMMER INTERNSHIPS (2)...seeking two student interns for the 1997 summer season. Interns will work in every area of the zoo for ten weeks, and will gain valuable experience in animal care and exhibit-grounds maintenance. Stipend is \$1,000.00 per intern. Internships must be completed between 15 May and 15 September 1997. Zoo will assist in finding affordable housing. Send letter/resumé **by 1 April 1997** to Gary Muir, Animal Supervisor at the address above.

The following two (2) positions are available at the Miller Park Zoo, 1020 S. Morris Ave., Bloomington, IL 67107. Send resumés by 5 March 1997 to John Tobias, Zoo Superintendent at the address above.

ZOO KEEPER...requires four-year degree, two years zoo experience. Experience with free flight tropical bird exhibit helpful. Will be responsible for tropical rain forest exhibit and a variety of small reptile, mammal and invertebrate exhibits. Will require working weekends and holidays. May be assigned other duties as needed. Salary \$15.99/hr. plus benefits.

ZOO EDUCATION INSTRUCTOR...requires four-year degree in education/life sciences, two years teaching experience, preferably in a zoo or natural setting. Will be responsible for Junior Zoo Keeper program and conducting on and off-site school programs under the supervision of the Education Coordinator. Will be in on ground floor of new ZooLab Building — interactive exhibit experience preferred. Schedule will vary with seasons —some weekend work required. Establishing candidate pool for position scheduled for spring 1997. Salary range \$28,327.00 to \$42,491.00, excellent benefits.

ZOOKEEPER...this is a unique opportunity for an individual who is interested in working with exotic captive animals in a public zoo focused as a teaching institution. This individual will primarily be an animal keeper who will be involved with working with high school students in our new Science Focus Specialty High School Program. Duties include all aspects of exotic animal husbandry, including feeding, cleaning, exhibit design and maintenance, and veterinary procedures. He/she will work cooperatively with the education

department by directing student projects and activities, while communicating the essence of their job to those students. The preferred applicant is a highly motivated, self-starter individual with exotic animal experience. Good public speaking skills and flexibility in work day a must! Salary \$6.82/hr plus benefits. Full-time permanent position. Send resumé to Randy Scheer, Folsom Children's Zoo, 1222 S. 27th St., Lincoln, NE 68502. **Position open until filled.**

SMALL MAMMAL AND HOOFSTOCK/ELEPHANT/PINNIPED KEEPERS...two (2) positions available; minimum of Associates Degree in zoology, Biology or Wildlife Management with 1-2 years experience working with animals. Duties include feeding, cleaning and maintaining exhibits, medicating, preparing records or reports, assisting and guiding work study students and other related duties. Full-time positions with comprehensive benefits. Salary \$7.19/hr. Send resumé **by 1 March 1997** to: Human Resources, Riverbanks Zoo and Garden, P.O. Box 1060, Columbia, SC 29202 or fax to (803) 253-6381.

ELEPHANT HANDLER...position available spring/summer 1997. Duties include daily feeding, cleaning and husbandry of 1.5 African elephants in a hands-on management program that incorporates rides and educational programs. Elephant experience required. Send resumé and cover letter to: Dan Beetem, General Curator, Wildlife Safari, P. O. Box 1600, Winston, OR 97496.

HEAD KEEPER/ANIMAL ENCOUNTERS...we are looking for a candidate with a good background in domestic animal management, with at least four years of zoo experience. A highly motivated, hard-working, organized individual with excellent people skills and some supervisory experience will be considered. Animal Encounters emphasizes visitor and animal interaction through exhibition, shows, pony rides, horse drawn trolleys, and keeper interaction. This position reports to the curator and is responsible for the daily operations of the area. These operations include: staff supervision, overseeing husbandry programs, interfacing with veterinarians and other zoo departments. Send letter/resumé to: Mary Jane Bennett, Director of Human Resources, Indianapolis Zoo, 1200- W. Washington St., P.O. Box 22309, Indianapolis, IN 46222-0309.

ANIMAL KEEPER...requires high school diploma and preferably some experience caring for exotic animals. Daily duties include feeding/cleaning/general husbandry of animal collection; observation and record-keeping; exhibit maintenance; assist vet/vet tech; interaction with zoo volunteers and public. Weekend and holiday work required. Please mail or fax resumé and salary requirements to: Willie Bennett or Richard Rummel, Jackson Zoo, 2918 W. Capitol St., Jackson, MS 39209.

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check here if renewal []

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Mail this application to: AAZK Administrative Offices, Topeka Zoo, 635 S. W. Gage Blvd., Topeka, KS 66606-2066. Make checks/money orders payable to AAZK, Inc. Must be in U.S. FUNDS ONLY. Membership includes a subscription to *Animal Keepers' Forum*. The membership card is good for free admission to many zoos and aquariums in the U.S. and Canada.

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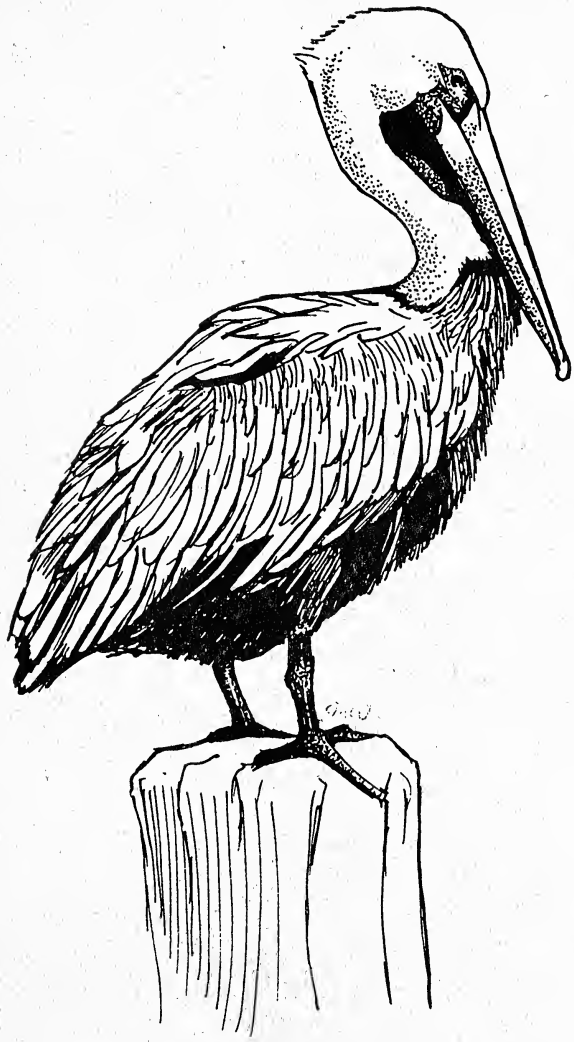
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ANIMAL KEEPERS' FORUM



The Journal of the American
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MARCH 1997

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AAZK PUBLICATIONS - CONTINUING DATA COLLECTION

Zoo Infant Development Project - Teri Maas-Anger/Maggie Liguori, Philadelphia Zoo (Birds/Nonpasserines); Jennifer Hackshaw, Lowry Park Zoo and Suzanne Chacon, Costa Rica (Birds/passerines); Jeanne Stevens, Newark Museum Mini-Zoo (Reptiles); Linelle Lone, Denver Zoo (Amphibians)

Incubation Notebook Project - Scott Tidmus, Sedgewick County Zoo, Wichita, KS



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About the Cover.....

This month's cover features the Brown Pelican (*Pelecanus occidentalis*) drawn by Joan Watson who works in the Graphics Department at the Metro Toronto Zoo. The Brown Pelican is purely a marine bird, breeding on the South Atlantic and Gulf Coasts of America, through the West Indies to Venezuela, and on the Pacific coast from central California to Chile. This striking bird has dusky brown body plumage with the crown and sides of the head a buff-yellow; a white stripe runs down each side of the neck. The Brown Pelican is the smallest member of the family Pelicanidae of which there are six species. Pelicans are clumsy waddlers on land, but are superb swimmers and strong fliers. They use their long, pouched beak as a scoop for the fish which make up their daily diet. Thanks, Joan!

Information for Contributors

Animal Keepers' Forum publishes original papers and news items of interest to the animal keeping profession. Non-members are welcome to submit articles for consideration. Articles should be typed or hand-printed and double-spaced. Articles may be submitted on disk by arrangement with the Editor. All illustrations, graphs, charts and tables should be clearly marked, in final form and should fit in a page size **no greater than 5.5" x 8.5"** (14cm x 22cm). Literature used should be cited in the text (Brown, 1986) and alphabetically in the final bibliography. Avoid footnotes. Include scientific name (as per ISIS) the first time an animal name is used. Thereafter use common name. Use metric system for weights and measurements (standard equivalents may be noted in parenthesis). Use the continental dating system (day-month-year). Times should be listed as per the 24-hour clock (0800, 1630 hrs. etc.). Glossy finish black and white photos **only are accepted**. Color slides should be converted to black and white prints (minimum size 3" x 5" [8cm x 14cm]) before submission. Clearly marked captions should accompany photos. Please list photo credit on back of photo.

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 and FAX contributions of late-breaking news or last-minute insertions are accepted as space allows. However, long articles must be sent by U.S. mail. Phone 1-800-242-4519 (US); 1-800-468-1966 (Canada); FAX (913) 273-1980.

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.

Items in this publication may be reprinted providing credit to this publication is given and a copy of the reprinted material is forwarded to the editor. Reprints of material appearing in this journal may be ordered from the editor. Back issues are available for \$3.00 each.

Scoops & Scuttlebutt



From the President....Ric Urban, Houston Zoo

As a member of AAZK, you have the privilege of expressing your opinions and concerns to the Board of Directors at any time during the year. Due to the cancellation of the Midyear Meeting, AAZK Vice President Diane Callaway and I are meeting May 2-4, 19967, to evaluate the progress of the Association. This meeting will be at no expense to the Association. To insure continuity, AAZK Committees will offer Midyear Reports to their Board of Director Oversight who, in turn, will report to the rest of the Board. Communication is important and I want to hear from you. If you have comments, suggestions or questions concerning the Association, please send them **by 11 April** to the Administrative Offices of AAZK, or to me at the Houston Zoo, or E-mail: RicUrban@aol.com Thank you.

Association Acknowledges Recent Donations

The AAZK Board of Directors and the Administrative Office staff wish to acknowledge the following donations which have been sent in by Chapters to support the work of this Association: The Virginia AAZK Chapter's donation of \$200.00 (\$100.00 designated for general operating fund; \$100.00 for the Conservation, Preservation and Restoration program); and the Greater Kansas City AAZK Chapter's donation of \$50.00 in support of the Junior Zookeepers' Forum newsletter. Such support from AAZK's Chapters is greatly appreciated and insures the ability of the Association to carry on with its projects and programs.

AAZK Nominations & Elections Committee Position Open

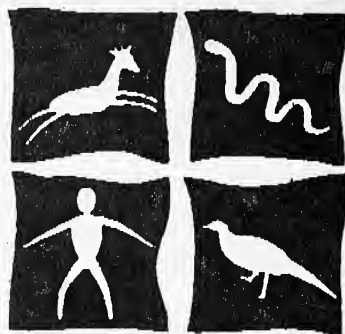
There is a position available on the Nominations and Elections committee. Any AAZK member continuing in "good standing" who wishes to fill this vacancy is eligible. A Committee member is responsible for assisting the Chair in coordinating the election process of the AAZK Board of Directors and the President and Vice-President. Must have good reporting skills and computer literacy is helpful.

The AAZK Board of Directors election will be coming up in April. Three Board positions are open and will be voted upon by all AAZK Professional members from a listing of eligible candidates.

If interested, send resumé or for more information contact Sheri Leavitt, NEC Chair, Houston Zoological Gardens, Children's Zoo, 1513 N. MacGregor Way, Houston, TX 77030.

1997 AZA Central Regional Conference - May 14 - 17, 1997 Welcomes AAZK Members

The staff at the Cleveland Metroparks Zoo invites all AAZK members to the 1997 AZA Central Regional Conference in Cleveland, OH. We hope to offer many programs and workshops of interest to AAZK members. For registration information, see the *AZA Communiqué*, or contact Cleveland Metroparks Zoo, 3900 Wildlife Way, Cleveland, OH 44109. Telephone (216) 661-6500 or Fax (216) 661-3312.



**CLEVELAND
METROPARKS
ZOO**

Some Regional Conference highlights include: Great Ape TAG, Marsupial TAG, Terrestrial Invertebrate TAG, and Bear TAG. There will be a special meeting on Tree Kangaroos and New World Primates, and special symposiums on New World Primates and Bears.

There will also be workshops on enrichments, multi-disciplinary conservation, marsupials, invertebrates, bear conservation, small zoo conservation projects, pest control, reptiles and amphibians, primate conservation, and aquatic conservation. We hope to see you in May!

Elephant Training School Announced

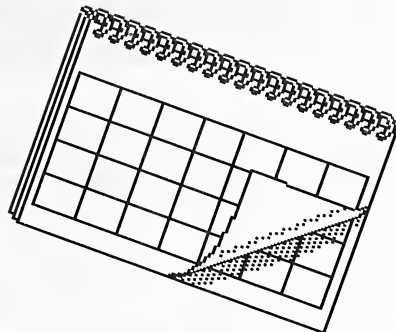
The Fourth Annual Comprehensive School in Elephant Training, Handling and Safety Procedures will be held from May 2-30, 1997 at Riddle's Elephant Sanctuary in central Arkansas. The school is held in two, two-week sessions and will cover the spectrum of elephant handling, management and reproduction - from the basics through advanced training techniques. A variety of elephant experts will share their knowledge, including special guest Dr. Krishnamurthy, an elephant veterinarian from India.

If you are interested in receiving registration information, do not delay in contacting:

Riddle's Elephant Breeding Farm and Wildlife Sanctuary
Attn: Heidi Riddle, Education Coordinator
P. O. Box 715
Greenbrier, AR 72058

Phone: (501) 589-3291
Fax: (501) 589-2248
e-mail: elephant@gamma.hendrix.edu

Coming Events



The First International Congress of Butterfly Exhibitors and Breeders - March 12-19, 1997 in San Jose, Costa Rica. For further information, contact Frank Elia, Callaway Gardens, Pine Mountain, GA 31822, (706) 663-5020 or e-mail at 5503.2345@compuserve.com.

The International Gorilla Workshop - April 2-5, 1997 in Pittsburgh, PA. Hosted by the Pittsburgh Zoo. Registration packets are now available. For further information contact Debra McGuire or Roseann Giambro at (412) 665-3794; FAX (412) 665-3661.

International Society of Zoo Culturists 10th Anniversary and Annual Conference - April 13-16, 1997 in Simi Valley, CA at the Radisson Hotel. Registration is \$150 for members/\$175 for non-members. Student registration, with valid campus I.D. is \$100. There are single day rates also. Fee covers all events and transportation. For further info, contact: Mary C. Deroo by phone or fax at (610) 352-6927 or e-mail at deroom@castle.Beaver.edu

3rd International Small Felid Workshop May 27-29, 1997 in Las Vegas, NV. Sponsored by the Zoological Society of San Diego and SOS Care, this year's focus will include representatives from range countries and small felid populations on other continents. Presentations will include field studies, enrichment, housing, husbandry, diets, veterinary perspectives, infant nutrition, and much more. For further information and registration packets contact: Pat Quillen, 15453 Woods Valley Rd., Valley Center, CA 92082 Phone: (619) 749-3946; Fax (619) 749-1324.

Association of Avian Veterinarians - Sept. 9-13, 1997 in Reno, NV. To request registration information call AAV at (303) 756-8380 or fax (303) 759-8861 or e-mail (AAVConOfc@aol.com) or mail request to AAV, 2121 So. Oneida St., Ste. 325, Denver, CO 80224.


American Association of Zoo Veterinarians Annual Conference - October 26-30, 1997 in Houston, TX at the Sheraton Astrodome. For conference information contact: Wilbur Armand, VMD, Executive Director/AAZV, 6 North Pennell Rd., Media, PA 19063; Phone (610) 358-9530; Fax (610) 892-4813.

AZA Conference Schedule

AZA Western Regional Conference, April 9-12, 1997 - Phoenix, AZ. For further information, contact Bruce Bohmke, The Phoenix Zoo, 455 North Calvin Parkway, Phoenix, AZ 85008 (602) 273-1341.

AZA Central Regional Conference, May 15-18, 1997 - Cleveland, OH. For further information contact Jim English, Cleveland Metroparks Zoo, 3900 Brookside Park Dr., Cleveland, OH 44109 (219) 661-6500.

AZA Annual Conference, September 14-18, 1997 - Albuquerque, NM. For further information contact Terry Axline, Albuquerque Biological Park, 903 Tenth St., S.W., Albuquerque, NM 87102 (505) 764-6200.



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AAZK Award Nominations Are Now Being Accepted for 1997!

The AAZK Awards Committee is accepting nominations for the **Certificate of Excellence in Exhibit Renovation (CEER)**; the **Meritorious Achievement Award (MA)**; and the **Certificate of Merit for Zookeeper Education (CMZE)** to be presented at the 1997 AAZK Conference in Houston, TX. The deadline for all award nominations is **1 June 1997**. Information concerning the qualifications, nomination procedure, selection procedure and an explanation of the awards may be obtained by contacting Janet McCoy, Chair, AAZK Awards Committee, Washington Park Zoo, 4001 S.W. Canyon Rd., Portland, OR 97221.

Certificate fo Excellence in Exhibit Renovation (CEER) - The purpose of the award is to recognize institutions or organizations in the zoological community for the design and renovation of existing animal facilities which involved active keeper participation in the process. The CEER was established by Janet McCoy, 1990 CHAIR. Bill Whittaker proposed the award to the AAZK Board of Directors. The award is presented at the annual AAZK National Conference.

Qualifications:

1. Any North American zoological institution or organization is eligible.
2. The renovated exhibit must be in full operation for at least two years.
3. The exhibit must be nominated by a keeper at that same institution or organization. Supporting nominations may be submitted by management personnel from the same institution.

Nomination Procedure:

1. List institution or organization's name, address, phone and Director.
2. **Document** local awards or commendations for exhibit, drawings, 8 X 10 color photos - no slides (2 before and 8 after), and renovated exhibit type: single or multispecies, and size.
3. **Document** keeper participation in the design and why the existing facility was renovated.
4. **Document** interface with other zoo divisions; and maintenance of exhibit after completion.
5. The deadline for nominations is **JUNE 1st** of each year.

NOTE: Materials will not be returned

Selection Procedure: - The Awards Committee, consisting of 5 keepers, will independently review each nominee.

Nominee Evaluation:

The evaluation of each nomination is broken down into four categories based on the general guidelines outlined for the award. The four categories are: Keeper

Involvement, Exhibit Functionality, Exhibit Management and Visitor Point of View/ Other Information. Items the committee is looking for are the following:

A. KEEPER INVOLVEMENT:

- a) degree of keeper involvement with conceptual development of exhibit
- b) degree of keeper involvement with facilitation of completion of exhibit, (fund raising, promotion, assist with construction)
- c) contribution to educational experience (graphics, conservation message)
- d) originality - is it something new and different, or has it been tried before

B. EXHIBIT FUNCTIONALITY:

- a) versatility - indoor/outdoor, four seasons, protection from elements
- b) accommodates and encourages animal's natural behavior - climbing structures, land area, height, water
- c) hard (gunite, concrete) vs soft (grass, dirt) environments - as to animal needs
- d) sight lines valuable to animal as well as visitor - important to some animals (polar bear, chimps)
- e) physical and visual barriers for animal's use, animal safety
- f) flexible entrance/exits (hoofstock - more than one entrance)
- g) ability to exhibit natural social grouping
- h) breeding success

C. EXHIBIT MANAGEMENT:

- a) how management of exhibit interfaces with other zoo divisions (grounds, maintenance - simple repair, paint)
- b) keeper serviceability, overall maintenance of exhibit and surroundings
- c) adequate drains and properly located
- d) quality and versatility of holding areas - ease of separating animals, moving, breeding, sick
- e) keeper sight lines - can you see animal when they come into holding or when shifting them between areas, keeper safety
- f) ease of providing time change items (browse, logs, feed, novel objects)
- g) environmental control (ease of seasonal adjustments - ventilation, heat)

D. VISITOR POINT OF VIEW/OTHER INFORMATION:

- a) educational experience (conservation message)
- b) immediate and sustained viewer interest
- c) sight lines - not see doors, drains, fencing - does it have esthetics
- d) bonus point - local awards, commendation, "wow" factor
- e) include anything else pertinent to the renovated exhibit that you think is important

Meritorious Achievement (MA) Award - The purpose of the award is to recognize professional members of AAZK and AAZK Chapters, in good standing in the Association, for their extra work performed outside the keeper level of performance. This includes keeper participation in AAZPA Bean Award projects, dedicating time to other zoo related projects (conservation, wildlife education and individual breeding projects) and educating others in such programs as Scout Patch Programs. The MA was established in 1982, by Mike Crocker, 1980-1985 CHAIR, as a means of recognizing work done outside of the scope of the Excellence in Zookeeping award. It is the only award presented by the Awards Committee that you have to be a member of the Association to receive.

Qualifications:

1. The nominee must be a full-time keeper and professional AAZK member employed in any North American zoo, aquarium, or related facility. In the case of an AAZK Chapter, it must be 'in good standing' having an up-to-date charter with the AAZK.
2. The nominee must have been employed at least one year on a permanent basis at a zoo, aquaium or related facility. In the case of an AAZK Chapter, it must have been active for at least one year.
3. The nominee must be nominated by his/her peers or colleagues, while supporting nominations may be submitted by other zoo, aquarium or related facility personnel. The nominators need not be from the same institution.

Nomination Procedure:

1. List name, position, institution's name, address, phone and Director, years of service in the field and the recommendation of a peer or colleague.
2. List and **document** the outstanding achievements: AAZPA Bean Award project participation, exhibits, breeding, conservation, etc.
3. The deadline for nominations is JUNE 1st of each year.

Selection Procedure: The Awards Committee, consisting of five keepers, will independently review each nominee.

Certificate of Merit for Zookeeper Education (CMZE) - The purpose of the award is to recognize individuals, institutions and organizations in the zoological community most actively promoting educational programs for zookeepers. Examples of such support are: reimbursements for formal education, keeper training courses and staff seminars. The CMZE was founded by Jeff Roberts, 1976-1978 CHAIR, in 1978, to compliment the work of the AAZK Education Committee that had been formed at that time. The award is presented at the annual AAZK National Conference.

Qualifications:

1. Any staff individual, institution or organization from a North American zoo, aquarium or related facility is eligible.
2. The keeper training program must have been in existance for at least one year.

Nomination Procedure:

1. If you feel that your institution, organization or a staff individual merits such an award, please submit a letter of nomination which mentions specifically the educational programs that are offered.
2. Claims made should be backed up with documentation for the committee to review.
3. List the institution or organization's name, address, phone and Director.
4. The deadline for nominations is JUNE 1st of each year.

Selection Procedure: The Awards Committee, consisting of five keepers, will independently review each nominee.

The character of these three awards includes a certificate, letter of notification to the institution's director and national recognition by professional journals. Such journals include: the American Zoo and Aquarium Association (AZA) and the Canadian Association of Zoological Parks and Aquarium (CAZPA) Newsletters, Animal Keepers' Forum (AAZK), Awards, Honors and Prizes: Volume 1; United States and Canada. The latter is published by Gale Research Company based in Wheaton, MD and found in medium to large sized libraries across the U.S. and Canada.

Award Nominations should be submitted to: Janet McCoy, Awards Chair, Metro Washington Park Zoo, 4001 S. W. Canyon Rd. Portland, OR 97221

Next month we will include information on making nominations for the **Jean M. Hromadka Excellence in Zookeeping Award (EZ)** and the **AAZK Lifetime Achievement Award**.

**Award Nomination Deadline
Submission is 1 June 1997**



Information Please

We are writing a book entitled *Wild Love: The Erotic Livers of Animals* and are looking for stories of wild animals. The book defines erotic activity in a broader sense than the usual "sex for reproduction" approach. We are interested in stories of animals expressing erotic affection toward other animals of either sex, of other species, or even toward human beings. If you have such a story, please send a brief synopsis of it along with your name, address and telephone number to: Gayle Elanor, 4483 Clear Creek Court, Concord, CA 94521 or e-mail to Robert McNally at rbmcnal@aol.com.

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AAZK Announces New Professional/Contributing Members

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Joanne McGilly Caddy, **Blank Park Zoo (IA)**; Deborah L. Kieman, **Lowry Park Zoo (FL)**; Emily R. Dreyling, **Knoxville Zoo (TN)**; Jamie Ashcraft, **Washington Park Zoo (IN)**; Joel D. Vanderbush, **Potter Park Zoo (MI)**; Debra Cummings, **Zoo Montana (MT)**; Kevin Bittle, **Brookfield Zoo (IL)**; Lisa R. Burton, **Topeka Zoo (KS)**; Gretchen Jeff, **Audubon Zoo (LA)**; Sam Messell, **Dallas Zoo (TX)**; Brad Hazelton, Patricia S. Cassidy and Joseph Lindholm, **Ft. Worth Zoo (TX)**; Sid Price, **Wildlife West Nature Park (NM)**; Percy Marie Lacy, **San Francisco Zoo (CA)**; Roslyn Bass-Fournier, **Woodland Park Zoo (WA)**; Berna-Dean Gaudry, **Calgary Zoo (Alberta)**.

Renewing Contributing Members

Central Park Wildlife Conservation
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Enrichment Notebooks Now Available to Institutions

The AAZK Enrichment Committee, under the direction of Dianna Frisch (now retired keeper/Columbus Zoo) gathered enrichment ideas and information and, with generous underwriting from the Columbus Zoo, put together an Enrichment Ideas Notebook. This Notebook was made available to institutions at the 1996 National AAZK Conference held in Detroit, MI. The remaining inventory of the Enrichment Notebook has been transferred to AAZK Administrative Offices in Topeka, KS.

At the current time, AAZK and the Enrichment Committee would like to continue to make these available to institutions that did not have their representative claim one at Detroit. If your institution is not included on the list below, and you would like to have a copy, do the following: 1) complete the form below and 2) send a check or money order made payable to AAZK, Inc. for \$10.00 (domestic) or \$15.00 Canadian and foreign to cover postage. Send this request and payment to: AAZK, Inc. 635 S.W. Gage Blvd., Topeka, KS 66606-2066. Each institution may receive **ONLY** one notebook at this special price.

Copies to institutions for only the cost of postage will continue **until 1 July 1997**. After that time there will be a fee charged for the Enrichment Notebook and they will also be made available to individuals for purchase.

The following institutions have **already claimed** their copy of the AAZK Enrichment Notebook: African Wildlife Safari, Akron Zoo, Arizona-Sonora Desert Museum, Assiniboine Park Zoo, John Ball Zoo, Belle Isle Zoo, Benchner Park, Bergen County Zoo, Blank Park Zoo, Brookfield Zoo, Brookgreen Gardens, Buffalo Zoo, Caldwell Zoo, Calgary Zoo, Capron Park Zoo, Chaffee Zoo, Chehaw Wild Animal Park, Cleveland Zoo, Clinder Park, Dallas Zoo, Denver Zoo, Detroit Zoo, Disney Animal Kingdom, Ellen Trout Zoo, Franklin Park Zoo, Ft. Wayne Children's Zoo, Great Plains Zoo, Greater Baton Rouge Zoo, Gulf Breeze Zoo, H. D. Mt. Road Menagerie, Honolulu Zoo, Houston Zoo, Independence Oaks Nature Center, Indianapolis Zoo, Jackson Zoo, Jacksonville Zoo, Kansas City Zoo, Lincoln Park Zoo, Lube Foundation, Memphis Zoo & Aquarium, Mesker Park Zoo, Metro Washington Park Zoo, Miami Zoo, Mill Mountain Zoo, Milwaukee County Zoo, Newark Museum Mini Zoo, Niabi Zoo, North Carolina Zoo, Oakland Zoo, Omaha Zoo, Oschner Park Zoo, Philadelphia Zoo, Potawatomi Zoo, Potter Park Zoo, Racine Zoo, Rio Grande Zoo, Riverbanks Zoo, Roger Williams Park Zoo, St. Louis Zoo, San Diego Zoo, San Francisco Zoo, Seneca Park Zoo, Storybook Gardens, Sunset Zoo, Thompson Park Zoo, Toledo Zoo, Topeka Zoo, University of Colorado, Valley Zoo, Woodland Park Zoo and Zoo Aves.

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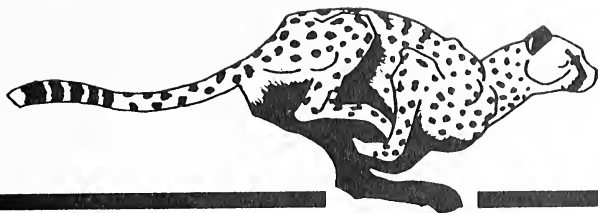
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REACTIONS

A Question and Answer Forum for the Zoo Professional on Crisis Management

By William K. Baker, Jr.,
Zoologist - Lufkin, TX

QUESTION: How can aquariums and aquatic facilities possibly be affected by a crisis management situation?

AQUARIUMS AND AQUATIC FACILITIES

Historically, aquariums and aquatic facilities maintained collections that were composed mainly of various species of fish. This meant that the opportunity for direct contact with a specimen was low. However, in recent years that has changed. Aquatic facilities have undergone changes similar to zoological institutions in order to provide a more diversified experience for the visitor. This diversification of the animal collection has led to the inclusion of mammals, birds, reptiles, amphibians, and invertebrates. The aquatic park experience no longer means "just fish". As a result, aquatic facilities are subject to many of the same Crisis Management Situations (CMS) that their zoological counterparts encounter. To illustrate this point, I refer to the following examples:

In January, 1995, a major earthquake struck Kobe, Japan. Reports indicated that the Kobe Aquarium suffered severe damage and loss of over 50% of the collection. Source: *Animal Keepers' Forum*. March 1995:83.

In August, 1996, a speedboat at Sea World of Ohio lost control during a performance, struck a guardrail, and then soared into the grandstands and injured 23 people. Source: *Houston Chronicle*. 19 August 1995:3A.

During a public training demonstration at a Sea World facility, a trainer is crushed between two killer whales. The trainer survived, but suffered a broken back and massive internal injuries. Cause of incident unknown. Source: Face to Face: Deadly Encounters. National Geographic Explorer. TBS, Atlanta. 12 January 1997.

COMMENTS

These examples are not meant to fix blame in any form or fashion. They are

intended to illustrate a point, that the crisis situation can strike unexpectedly at any zoological institution, whether they are aquatic or terrestrial in nature. The zoological profession often requires us to come into close proximity to animals for various reasons. The daily care, management, and training of animals all have an associated degree of risk. Yet, as zoological professionals we accept this risk in order to pursue our chosen profession. By being aware of the risks inherent in our profession we have taken a step forward in attitude and safety.

Still, anyone who has spent any time in the industry is aware that there is so much more involved in our daily duties than just animal management. We are zoologists, conservationists, educators, entertainers, trainers, and managers. This means we are meeting the needs of the animals and the public; and, the public means people. The more people present in a facility means a greater probability that an accident can occur. Also, aquatic facilities are subject to the same forces of nature that impact the rest of us. So, what does all of this mean? It means that we do not live in a vacuum and the problems of the outside world do not stop at the gates of a facility. As zoological professionals we are faced with all the problems of animal management and the entertainment industry. Remember, there are all kinds of visitors and not all of them are friendly.

CMS AWARENESS IN AQUARIUMS AND AQUATIC FACILITIES

Zoological disaster

1. Dangerous Animal Escapes - I'll be the first to admit that an escaped fish is probably not a major problem. However large reptiles such as alligators or crocodiles, venomous snakes, or an aggressive elephant seal or sea lion could cause problems.

2. Human-Animal Interaction - This can be a definite problem for aquatic facilities. I remember as a child watching an adult reach over a plexiglass barrier with his leg to retrieve his daughter's doll from the shark tank at feeding time. The staff members pulled him back just as the doll disappeared into a lemon shark. Expect the worst. The fish can't come to the public, but the public can come to the fish. Also, don't forget accidents happen during training sessions, too (nips, bites, and body slams). Many facilities maintain collections of coral, venomous fish, and reptiles (lion fish, stone fish, and sea snakes). Remember, all of the hazards of diving the reef are in that salt-water tank.

3. Outbreak - It all depends on what animals are in the collection and how zoonotic the pathogen is. Pay special attention to reptiles (salmonella) and primates (Eboli).

Natural Disaster

An aquatic facility is vulnerable to all of the forces of nature. There is also the factor of increased animal mortality. If containment is lost on a terrestrial exhibit then the animal is recaptured. If tank integrity is lost, then it's a race to recover the specimen before it dies.

Manmade Disaster

Facility and equipment maintenance can prevent problems with filtration systems, ozonators, and structural integrity. It's important to remember that if a tank loses structural integrity that a lot of water and plexiglass are going to be airborne, which could be a real safety concern. If staff members are dive certified and it's part of their job description, then remember dive safety and the dangers of barotrauma, decompression sickness, and arterial gas embolism. Hazardous materials spills can be a problem when working with acids, bases, and other chemical compounds. Also, don't forget bomb threats and acts of terrorism. It only takes one person with an agenda to shut your facility down with a phone call. Remember, terrorism is the ultimate variable reinforcer in modern human society.

CONCLUSION

Aquariums and aquatic facilities are prone to many of the same Crisis Management Situations that can affect zoological institutions. As such, it's important for staff members to be aware of possible hazards and keep safety first and foremost in mind as they go about their duties.

NEXT MONTH: What is a law enforcement protocol agreement?

If you would like to submit a question for this column or have comments on previously published material, please send them to: Reactions/AKF, 635 S. W. Gage Blvd., Topeka, KS 66606-2066.

(About the author: Since 1985 Bill has been active in the fields of science, zoology and wildlife management. His education and experience include a B.S. in wildlife management and post-graduate studies in zoology, Lab and Museum Assistant, Shoot Team leader, ERT Member, Senior Keeper and Large Mammal Keeper at various AZA facilities. His area of research is crisis management in zoological institutions, which draws upon practical experience and training as a Rescue Diver, Hunter Safety Instructor, NRA Firearms Instructor, and Red Cross CPR/First Aid Instructor.)

Information Please

In the Fall of 1997 Riverview Park and Zoo in Peterborough, Ontario, Canada will be opening a 2,000 sq. ft. Primate Habitat exhibit. The exhibit will consist of two indoor viewing areas (25ft. x 25ft. x 14ft. high), and two outdoor exhibits, one measuring approximately 40ft. x 40ft. and the other slightly smaller. The theme of one exhibit will be the Amazonian Rainforest featuring squirrel monkeys and the other exhibit will tentatively feature gibbons. We are looking for information on successful use of live plants both tropical and non-tropical regarding these two species. Also we are interested in species that have been successfully mixed with these species. Please send information to: Wally Davidson, Curator, Riverview Park and Zoo, 1867 Ashburnham Dr., Peterborough, Ont., Canada K9J 6Z5. (705) 748-9300 ext. 303; Fax (705) 745-6866.

Hippopotamus Underwater Behavior and Communication

By Stephen K. Krueger
The Toledo Zoo, Toledo, OH

The hippopotamus (*Hippopotamus amphibius*) is the second largest terrestrial mammal in the world; however, very little information can be found in the literature about the ecology, behavior and communication of this species. Although the hippopotamus is considered a terrestrial species it may be more correct to refer to it as an amphibious species, living in social groups (herds) in an aquatic environment and foraging solitarily in the terrestrial environment at night. Hippopotamuses are highly adapted to the aquatic environment and it is interesting to note that this may have evolutionary implications in light of recent genetic studies indicating that hippopotamid artiodactyls are close relatives of cetaceans (Arnason, U., A Gullberg, 1996; Gatesy, J. et al 1996). The amphibious nature and aquatic environment of hippos has presented field researchers with practically insurmountable obstacles.

Knowledge of hippopotamus behavior and communication in the aquatic environment was especially lacking until recent ground breaking research by Dr. William Barklow (Framingham State College of Massachusetts). This research has provided evidence of hippopotamuses emitting a variety of sounds in the aquatic environment, possibly used as a form of communication and in conjunction with specific underwater social behaviors (Barklow, W. 1994; Schwartz, D. 1996). This is being further investigated with captive hippopotamuses in the controlled environment of a zoo exhibit that provides unimpeded underwater observation and no extraneous animal sounds.

Since 1989, Barklow has studied hippopotamus herds in their natural habitat and has analyzed recorded water surface behaviors, above water vocalizations and underwater vocalizations. Hippopotamuses apparently make elaborate vocalizations like click-trains (a series of rapid click sounds similar to those used by cetaceans for echolocation) and other sounds that are transmitted in the aquatic medium only (Barklow, W. 1995). Approximately 80% of hippo vocalizations occur underwater (Schwartz, D. 1996). Also, these animals may be able to produce and process sound in three environments: air, underwater and air/underwater [simultaneously - amphibious communication] (Barklow, W. 1994; Schwartz, D. 1996). This suggests that hippopotamuses may have a more advanced communication system than before imagined. An interesting addition to this is that a more highly advanced communication system often indicates a more sophisticated social structure.

The dilemma that is faced with studying and recording hippopotamuses in their natural habitat is that the water is too murky to observe underwater behaviors and that the hydrophones not only record hippo sounds, but all sounds of other animals (i.e. crocodiles, fishes, frogs, turtles, etc.) in the aquatic habitat as well. This makes it difficult to discern which sounds are emitted by the hippo and which are not. The Toledo Zoo's Hippoquarium (a 360,000 gallon, filtered water, glass viewing, naturalistic exhibit) has provided a unique opportunity to investigate hippopotamus underwater behavior and communication in a controlled environment (i.e., no sounds produced by other animals and clean underwater viewing through glass and filtered water). William Barklow and Stephen Krueger began this study at The Toledo Zoo in early 1994.

This type of study had never been attempted before. It is providing evidence for specific hippopotamus sounds made in the aquatic environment and possibly what they may mean in regard to communication and related behaviors. The first clear recording of underwater hippo sounds from the hippos (1994) in The Toledo Zoo's Hippoquarium was a significant addition to Barklow's work. From just this one recording he was able to discern many sounds in his underwater recordings from the wild to be hippo sounds rather than fish or crocodile sounds as he originally thought (Krueger, S. 1995). The source of one type of sounds, tusk clashes (in the click like sounds category), has been discovered through analyzing the audio-video recordings of the two hippos exhibited in the Hippoquarium. It has also been discovered that two types of click like sounds are used in a social context (rather than echolocating) and that click-trains (pulse bursts) can be produced with the mouth agape. Underwater recordings in the Hippoquarium have also confirmed that underwater croaks, as recorded among hippo herds in the field, are another category of sounds produced by hippos.

Underwater courtship with ritualistic tusk clashing sounds of hippos has been documented and confirmed in the Hippoquarium. The courtship behavior occurs when the female is apparently in estrus (monthly) and involves underwater sparring and tusk clashing between the male and female while they gyrate around and chase one another. Copulation usually occurs after approximately fifteen minutes of this behavior and may take place a few days.



Analyzing underwater hippopotamus behavior and sounds from audio/video recordings is ongoing and a study of the morphology of hippo hearing and sound production is currently underway. Dr. Darlene Ketten, a research scientist at Harvard Medical School, is studying a newborn hippo head from a baby that died 20 minutes after birth at The Toledo Zoo. The study is concentrating on adaptations for aquatic and amphibious hearing involving the inner ear and

associated structures. Preliminary observations from recent CT scans of this head are revealing that *Hippopotamus amphibius* hearing anatomy is a mixed bag of aquatic and non-aquatic traits (Ketten, D. 1996). An experiment to determine if the hippos are using click trains for echolocation is underway and hearing tests involving task determination training to determine if hippos can hear underwater sounds in the amphibious and submerged positions is planned for the near future.

Acknowledgements

I would like to thank William Barklow for providing direction and information for the project at The Toledo Zoo; Toledo Zoo Docents - Tim Birthisel, Dave Evans and Duane Johnson - for their many hours of observations; The Toledo Zoo Maintenance Department for their expertise in water filtration; the Exhibits Department for installing video equipment; and Darlene Ketten of the Massachusetts Eye and Ear Infirmary for her work and information on the anatomy of hippo hearing. This project has been funded primarily by the Toledo Zoological Society. Funding was also provided by the American Association of Zoo Keepers, Inc. (Zoo Keeper Grants in Zoology).

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Animal Behavior Concerns & Solutions

A Question and Answer Forum for the Zoo Professional

By Diana Guerrero

Independent Behavior Consultant, Ark Animals of California, San Diego, CA

COMMON TRAINING ERRORS 101: Confusing Consistency With Predictability

One of the most common training errors is to confuse consistency with predictability. What is the difference and why is it a problem or challenge? To the new trainer there may not appear to be any difference, however it can make a very strong difference in your results or degree of success and communication with an animal. Here are the formal definitions for you technically oriented types: con-sis-ten-cy (n): ability to be asserted together without contradiction; harmony of conduct or practice with. (Training meaning would be: where you will use the training principles in the same manner with appropriate adaptations to maintain the criteria.)

Pre-dict-abil-ty (v): to declare or indicate in advance; foretell on the basis of observation, experience, or scientific reason; anticipating eventualities being usually concerned with certainties. (Training meaning would be: where you will always approach things and do things the same way without changes; often the animals/co-workers will know your pattern.)

Consistency is something we as trainers strive for. We want to make sure we are fair and maintain the same criteria required from the animal for the desired behavior and for reinforcement. It helps us to be clear and gives the animal some guidelines. However, sometimes we have to be more persistent than the animal in order to obtain these results and maintain this criteria!

Consistency is in relation to the level or degree of performance and the reinforcement related to it. In this sense it does not refer to consistent ratios or schedules of reinforcement. Some examples would be in order here.

Consistency in training a dog to sit, for instance; once you have shaped the final behavior, you will require a square sit in a certain position, with eye contact, and it should be held until the animal is released ALWAYS even if the behavior is acquired in different areas.

If you accept a crooked sit on a hip, you become inconsistent, and may lose the particular parameters you originally set up. You will always ask the animal for the behavior in a certain way, always give a certain amount of time to respond, and not accept substandard behavior. Eventually you will expand the location and degree of distraction paired with this sit as the variables. You will also

reward in some capacity, although the reward ratio and schedule will be variable.

Predictability is when the animal can anticipate your movements. This can be in relation to the sequence of a show (accidental "chaining" or linking behaviors together in the same sequence so the animal does them all together in a specific order). You may also have certain patterns that the animal links to the training session.

In the same example of the dog and a sit behavior, this predictability would be present if you always did the sit behavior in the same sequence or perhaps in the same location at the same time. People very often do this around feeding time, where the dog is fed in the same place and has to sit down. The down becomes chained and the two behaviors combined create a loss in the stability/performance of the original sit. So, everytime you ask for the sit behavior, the dog lays down following the sit without directives.

In a show example, this can be seen in a couple of ways: first, the trainer may always do the behaviors in the same sequence or secondly, the trainer may always do the same behavior in a certain location rather than varying the area of performance. Many times rewarding a behavior is done with a primary reinforcer when it is not needed or even deserved. For some reason the give-the-animal-food thing is a common trap even some animal training professionals fall into.

Unpredictability in this sense is more desirable. It means that the animal has to pay attention to you, is more interested and stimulated, and has to actually think about what is transpiring. Of course, this all applies to the trainer too! Verbal feedback, variances in rewards, and in rewarding/reinforcement schedules should be unpredictable BUT consistent. i.e. the right response, the highest degree of response, the fastest response are always rewarded. It gets complicated when you move into a different area with higher distraction but that is another topic!

Combining both consistency and unpredictability is how you get a good performance from the animal. In this way the animal will never know what is going to transpire but does know the parameters of the variables that could be presented. i.e., low performance will not be rewarded and things will be interesting (variable or varied). Hope this helps you understand the difference between the two!

NOTE: The Ark Animals's Website has completed the change to Electronic Magazine Format. The "Zine" will feature articles related to captive animal behavior, enrichment, conservation, and similar topics. The publisher welcomes electronically submitted articles (previously published or new work) and event announcements. Deadline is the 10th of the month previous to publishing. Interested parties may contact the publisher at arkabc@ix.netcom.com Site address is <http://www.ni.net/brookhouse.com/DGHome.html>

Next Month: Lesh Training Exotic Felids and Other Exotics

Lion Kills Zoo Keeper in Ethiopian Zoo

submitted by A. Alycin Hayes, AAZK
Affiliate Member, Archer, FL

On 6 December 1996, Takaling, a new zoo keeper at the Lion Zoo in Addis Ababa, Ethiopia, was killed by a six-year-old male lion. According to Zoo Director, Meseret Berhane, Takaling neglected to completely close the shift door while he was cleaning the lion's exhibit.

Zoo Supervisor Evasu Kifle said that the youngest adult male lion in the zoo pushed the shift door open and immediately attacked Takaling, breaking his neck and killing him. A gun had to be fired in the air to get the lion away from the body.

Zoo Leader Muluwork Kassa said that Takaling, a former store salesman, was

new to the zoo. He had taken a job at the zoo because it paid slightly more than his previous job. An average monthly salary in Ethiopia is about 150 Birr. There are approximately five Birr to one U.S. dollar.

This lion and the others at the Addis Ababa Zoo may be some of the last surviving Barbary lions (*Leo leo leo*) in the world (see *AKF*, Oct. 1996 pgs. 559-561). DNA tests need to be performed to confirm their true lineage.

On 22 November 1996, the man-killing lion's mate gave birth to two healthy cubs increasing the total number of lions at the zoo to 21.

Information Please ...

Hamadryas Baboon (*Papio hamadryas*)

The Lion Zoo in Addis Ababa, Ethiopia is requesting information which would assist them in designing a new enclosure for Hamadryas baboons. This is a small, low budget zoo in the second poorest country in the world. The keepers in the zoo have a sincere interest in the welfare of the animals in their zoo. Due to the economic and political situation in Ethiopia, this zoo and others in the country have been isolated from other zoos throughout the world for several years. They are eager to communicate with other zoo keepers now.

If you can send them any information on diet, care, feeding, enrichment or enclosure design for Hamadryas baboons, please write to:

c/o Alemensh Shalu,
Muluwork Kassa, Zoo Leader,
National Bank of Ethiopia,
P. O. Box 5550
Addis Ababa, Ethiopia.

If you have questions about the zoo, please contact A. Alycin Hayes - e-mail: afn50335@afn.org or write to P. O. Box 89, Archer, FL 32618-0089.

American Association of Zoo Keepers & Zoo Registrars Association
1997 National Conference
October 5 - 9

“Conservation is an Attitude” is the theme of the 1997 AAZK / ZRA National Conference in Houston. The theme best reflects the emotion of Texans and our feelings of the world around us.

Full registration for the conference is \$125 for AAZK members and spouses. The Conference Hotel is the beautiful Sheraton Astrodome. Conference rates have been set at \$69/ dbl. These rates will be in effect 3 days before and 3 days after the conference. This will allow delegates the opportunity to see the sights around Houston on their own pace.

The weather in the South is always beautiful. Average temperatures range from the mid 80's during the day to the mid to upper 60's in the evening. And yes, there is a bit of humidity to deal with. But that's what ceiling fans are used for. Dress light, shorts and t-shirts are the normal attire. Collared shirts are recommended when visiting many local establishments.

Three pre-Conference tours have been arranged for early arrivals. First, if you are into birds, you won't want to miss this opportunity to go birding along the Texas Gulf Coast. Bring your life list and be prepared to make plenty of checks. Second, is a one day trip to visit the San Antonio Zoo. The third p.c. trip is a two-day adventure to the Dallas Zoo, an overnight stay at the Fossil Rim Conservation Center and the next day a visit to the Fort Worth Zoo.

If this is still not enough of Texas for you, stick around for the post conference trips. Texans are fortunate to be in the migratory bird flight path. So we are offering a second opportunity to venture out and immerse yourself in the beauty of the Southern Woods. Secondly, there will be a 2-day post conference trip to San Antonio, Texas. Delegates will visit the San Antonio Zoo, spend the evening near the historic Riverwalk (the Alamo is very real close), and the next day visit Sea World of Texas.

The Houston conference will follow the traditional AAZK conference schedule. The Icebreaker will be “Totally Texas” and the Thursday night Live Auction will feature an impressive collection of Wildlife Artists. The Conference Committee hopes you take this opportunity to experience the Real Texas. Houston is proud to one of the most visited zoos in the U.S. and welcome the chance to show our colleagues. Come and see why Texas is not just a State, It is an Attitude.

Prepare yourself for a Taste of True Southern Hospitality - “Y'all Come Down and See Us in October”

Ric Urban and Christina Smith, '97 AAZK Conference Committee Chairpersons



1997 AAZK/ZRA National Conference

Houston, Texas
October 5 - 9, 1997



CONFERENCE REGISTRATION FORM

Name _____

Address _____

City _____ State/Province _____

Zip Code _____ - _____ Phone (____) _____

Zoo Affiliation _____ Position/Title _____

AAZK Chapter _____ AAZK Membership Status _____

Number of AAZK Conferences you have attended _____

AAZK Committee Member? _____

Presenting a Paper/Poster/Workshop Session? YES NO

Title _____

Participating in Zoo Olympics? YES NO

Bringing a Silent Auction item? YES NO

OPTIONAL ACTIVITIES (extra charges involved):

Need table in Exhibitors Hall? YES NO

Pre-Conference Trip A - Birding the Texas Gulf Coast YES NO
Cost \$40

Pre-Conference Trip B - Dallas Zoo/Fossil Rim/
Forth Worth Zoo, 2 days **Cost \$125** YES NO

Pre-Conference Trip C - San Antonio Day Trip YES NO
Cost \$40

Post-Conference Trip A - Birding the Texas Gulf Coast YES NO
Cost \$40

Post Conference Trip B - San Antonio Zoo/Riverwalk/
Sea World of Texas, 2 days **Cost \$125** YES NO

Vegetarian? YES NO If so, what kind? _____

T-shirt? YES NO Size: S ___ M ___ L ___ XL ___ XXL ___

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Day _____ S M T W T Confirm _____ Refund _____ HC _____

1997 AAZK/ZRA National Conference

Houston, Texas
October 5 - 9, 1997

CONFERENCE FEE SCHEDULE

AAZK Member	\$125.00*	_____
Member's Spouse/Companion	\$125.00*	_____
Non-Member	\$150.00*	_____
Non-Member's Spouse/Companion	\$150.00*	_____
Late Fee (Registrations postmarked after August 1, only applies to full conference registration.)	\$25.00	_____
Exhibitors Table Fee # of Tables _____	\$	_____
<small>(1 table \$125 nonmember, \$50 member/ \$25 additional table)</small>		

DAILY RATES

Sun. Oct. 5 - Icebreaker	\$30.00	_____
Mon. Oct. 6 - Papers, dinner at the zoo	\$30.00	_____
Tues. Oct. 7 - Zoo tour & lunch, workshops	\$30.00	_____
Wed. Oct. 8 - Moody Gardens, Zoo Olympics	\$35.00	_____
Thurs. Oct. 9 - Papers, lunch, banquet	\$35.00	_____
Daily Fee - Specify which day(s) _____	\$	_____

TRIPS -- No reservations for Pre or Post Conference trips accepted after August 1.

Pre-Conference Trip A - Sat. Oct. 4	\$40.00	_____
Pre-Conference Trip B - Fri. & Sat. Oct 3 - 4	\$125.00	_____
Pre-Conference Trip C - Sat. Oct. 4	\$40.00	_____
Post-Conference Trip A - Fri. 10	\$40.00	_____
Post-Conference Trip B - Fri. & Sat. Oct. 10 - 11	\$125.00	_____

TOTAL FEE ENCLOSED \$ _____

A \$25 handling fee will be charged for: refunds prior to September 1, 1997. **NO** refunds after September 1, 1997.

*Fee includes \$25.00 contribution to AAZK National.
Fee does not include cost of Conference Proceedings.

Please make checks payable (in U.S. funds) To : **AAZK/ZRA Conference 1997**

Send Registration Form **AAZK/ZRA Conference '97**
and all fees to : Liz Turner/Beverly Hawkins
Greater Houston Chapter of AAZK
Houston Zoological Gardens
1513 N MacGregor Dr
Houston, Texas 77030-1603

1997 AAZK National Conference
Houston, Texas
October 3 - 10, 1997

HOTEL REGISTRATION FORM

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Zip Code _____ - _____ Phone (____) _____

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Card Number _____ Expires _____

* To guarantee your reservation, your credit card will be charged for one night's room & tax on the date we enter your Reservation. Once guaranteed, there will be no refund for cancellation within 72 hours of arrival.

ROOM RATES:

_____ 2 Double Beds \$69.00

Arrival _____

_____ 1 King Bed \$69.00

Departure _____

Check-in 3:00 P.M.

Check-out: 12:00 NOON

\$10.00 per additional person.

*Not responsible for roommates

Rates subject to 15% Occupancy Tax

Parking at the Sheraton Astrodome is free for those registered at the hotel.

To make reservations by phone dial 1 800 627-6461

Please return this form to:

Attn. Reservations Dept.
The Sheraton Astrodome Hotel
8686 Kirby DR
Houston, TX 77054-2804

Registrations are due by Friday Sept 12, 1997

RAINFOREST RECOLLECTIONS- Part 1 of 3



By Lisa Fitzgerald, Research Technician
Dallas Zoo, Dallas, TX

BEGINNINGS

When I first met Suzi Leonard she was one of my research aides at the Dallas Zoo; now I was one of her volunteer field assistants in the Peruvian Amazon. Suzi had told me once in Dallas, that when she retired from her successful business career she would begin her career as a field primatologist studying red uakari in Peru. Some said it couldn't be done, a business woman with no formal biological training, a neophyte researcher in a foreign land, they said that she would surely fail where zoologists with Ph.D.s had failed before her.

Suzi has just completed her third year of data collection in the rainforest, and has compiled more than 190 hours of observations on one of the least known primates, the red uakari (*Cacajao calvus ucalyalii*). The collective data base on the red uakari consists of 260 hours of field observation compiled over 26 months between April 1993 and July 1996. Suzi has two publications on red uakari and has hosted three Wildlife Research Expeditions (sponsored jointly by the Detroit Zoo and the Dallas Zoo) for working volunteers at her field site. Between field seasons she audits graduate courses in primatology at Duke University, and networks with other researchers.

Political complications, cultural conflicts, and the daily physical and emotional demands of living in an environment unfriendly to humans are all hurdles that Suzi has overcome and continues to face. Yet, every time I speak with her she is just as eager to find a troop of uakari and follow them through mud, insects, thorns, and other natural obstacles, as she was the day she sold all her belongings and left Dallas. Her dedication to the uakari and her love of the rainforest keep her motivated.

Before Suzi departed Dallas, she invited me to join her at her field site. After two years of hearing her intriguing tales of the rainforest, my curiosity overshadowed other travel plans to less humid destinations and I decided to accept her offer. Linda Delay, a friend from student research years at the Oklahoma City Zoo and a rainforest research veteran, joined me.

In preparation for the trip I worked out five times a week, rotating between weights, aerobics, and hiking. I took two conversational Spanish courses and studied language videos. I bought a lot of socks and searched for inexpensive gear. I fought a deep-seated dislike for nylon clothes and purchased those that I thought I could tolerate. At the last minute I purchased a pair of rubber boots at the insistent urging of one of my colleagues recently returned from Suzi's field site. Not prone to exaggeration, John told me if you take nothing else, take rubber boots. I looked at the scars on his shins where the boots rubbed his skin off. I watched my boss, Cynthia, limp around the office favoring the blister sites left by her rubber boots. I glared at John, growled something about hating rubber boots, and decided to follow his advice anyway. I am very glad that I did.

ARRIVAL: LIMA & IQUITOS

Rather than fly directly to Iquitos on the weekly flight from Miami, Linda and I elected to connect through Lima in order to accrue frequent flyer miles. Other than a late start out of Dallas, and a long wait for baggage in Lima, we experienced no problems. We observed many other tourists who were less fortunate. One key to stress-free travel in Peru is repeated confirmation of your flights, difficult from the rainforest you say? Perhaps, but if you join the South American Explorers Club, they will confirm your flights for you.

The flight over the Andes from Lima to Iquitos was breathtaking, and our first view of the expansive Amazonian rainforest was overwhelming. Another bonus was playing Bingo on the flight, every lucky winner walks away with a free gift from Faucett Airlines. I don't know if Aero Peru offers the same incentive.

When we emerged onto the runway I thought I had landed back in Dallas on a bad summer day, it was hot and exceedingly humid. We located our bags and found Suzi in the waiting crowd - it wasn't hard, she was the only blond gringa in the group. Suzi directed us to our taxis which were reminiscent of motorized rickshaws. After a breezy ride through Iquitos we were deposited at our hotel, a friendly hostel with cold water showers and ceiling fans. I knew that the Wildlife Research Expedition group stayed at an air-conditioned hotel with hot water and a swimming pool, but we were on a more restricted budget. La Florentina was a good choice, the location was convenient and the staff was helpful and honest. Linda and I left a bag of belongings in storage at the hotel while we were in the rainforest, and were not charged for the service.

Too excited to sleep, we decided to accompany Suzi on some of her errands. It was a great chance to get our bearings and see a bit of Iquitos. The city lies on the Amazon and was at one time a significant rubber town. The only signs of former glory are found in the architecture of the boom town buildings, ornate iron work, Portuguese tiles, and the multifloored buildings facing the river that are now faded and in disrepair.

We ate lunch at an open air restaurant overlooking the river. Iguanas climbed the tree near our table and the proprietors were proud to point them out. The noise from the caged birds and primates at the center of the restaurant was a bit distracting, but after all, it was a tourist spot. Perhaps even more disturbing was the river itself, the water level was incredibly low, rain had been scarce for the past month. The floating houses below the city were no longer floating, a soccer field had been cut where there should have been water, and it looked like a mile walk from the riverbank to the river. Suzi chose this moment to tell us that she wasn't sure if we would be able to travel the usual distance by boat, that we may have to hike into camp eight hours or more. We put on brave faces and said that we would welcome the challenge. I secretly thanked my aerobics instructor.

The next morning we were up early in order to meet Suzi for breakfast at Aris - a very popular and busy burger joint. Our mission for the day was to go shopping for enough food to take to the field for the next month. Actually, Suzi did the shopping while we wandered through the market town of Belen, wide-eyed with awe at the

mass of humanity and the goods for sale. There were produce stalls with a myriad of unknown fruits and vegetables, there were traditional medicine stalls with unidentifiable plants and concoctions, there were meat stalls where we did unfortunately recognize many of the food items and fought through the swarms of flies, there were clothing and accessories stalls, toiletry stalls, and local drink stalls where common glasses were rinsed in a bucket of recycled water. Despite our thirst, the enticing beauty of the beverages, and our curiosity, we decided to forgo the drinks. Eventually we found some animal dealers, they had tailless toucans, noisy conures and parakeets, dying pygmy marmosets, and a silky anteater. Suzi offered to return the anteater to the forest, but the salesperson declined. She would look for the anteater again before our departure, for one last offer, but the animals and the salesperson were not to be found the next day. We did lose sight of Suzi a few times in the market, but she always found us again and never let on that she knew we were lost. We carried a few items until Suzi's usual shopping assistants arrived, two young boys who knew the market streets and where to find the best products for the best price, or so they told us. They impressed me with their enthusiasm, courtesy, and maturity. In fact, I was impressed with all of the Peruvians I had met so far. My first, and lasting impressions are of an earnest, friendly people who are making a miraculous survival under sometimes very difficult conditions.

After our arduous shopping adventure I was eager to get to the forest to escape the busy rush of the city and to remove the rotten fish smell from my nostrils (little did I know that I would be traveling with and eating that same fish). I was certain that the rainforest would be more easily navigable than the market maze we had just left, and would be teeming with wildlife other than the black vultures so prominent in Belen. While I treated the blisters from my street shoes and stupidly brushed my teeth with tap water, I tried to imagine the next days eight-hour boat ride to El Chino.

UPRIVER

We returned to Belen with its crowded streets and permeating smell of fish left too long in the sun. This time we each took a separate taxi laden with supplies. Suzi was a bit worried that she had not been able to locate her usual porter, Carlos, when we were shopping the previous day. Not to worry, Carlos found us. After my taxi had corrected a wrong turn (we were driving under the stilt houses designed to be accessible by boat - not taxi) a wiry young man jumped on the back of the vehicle and shouted instructions to the driver. I was dropped near a huge pile of supplies guarded by Linda and several eager porters, Suzi had gone to look for the anteater. Carlos quickly took control, he laid four strips from a rice sack on the ground in a checkerboard fashion and then proceeded to stack at least 200 pounds of supplies on the straps. He secured the goods and then slung one strap across his forehead. With a slight visible effort, Carlos squatted and lifted the gear onto his 5-foot 2 - inch frame. Linda shouldered her backpack and followed him the 100 yards down a steep winding street to the boat. I stayed with the remaining gear and fended off the competing porters. Carlos had claimed the entire stack and I had heard him tell the competition so.

Ten minutes later Carlos returned for the remainder of the supplies and me. Because the second load was larger, I offered to carry a few items. Carlos begrudgingly allowed me to carry my backpack. I followed him down the steep, slippery grade. He paused once to transfer his flip flops from his feet to his hands and another time

to shift the weight of the load. While following him in total awe, I forgot the cardinal rule of being aware of ones surroundings and had a close encounter with a pickpocket. All he got was a pocket mirror, but it was enough to wake me up and make me shift my backpack to my chest. After a five-minute walk we arrived at the brightly painted, tin roofed colectivo - a floating bus that traveled upriver. I walked through the mud and slipped on the six-inch wooden gangplank; friendly hands helped me aboard. As I headed towards Linda I glanced back to watch Carlos climb the gangplank with his 250-pound load, no one helped him.

Seating in the colectivo was provided by 12 -inch wooden benches perched on the sides of the boat. We rested our feet on the supplies and baggage stacked in the middle of the boat. I eyed the route to the toilet, an open air affair perched over the water and accessible by climbing over the boats two outboard engines and driver. I vowed not to drink too much during the boat ride. The boat was filled with well-dressed, happy families and their purchases from Iquitos. I wondered if the boat would float, but everyone else seemed fairly confident, so I joined them in their optimism. Suzi appeared and set up her hammock over the stacked supplies. Andrew, a British primatologist, jumped on the boat to send us off and to settle some last minute business with Suzi. Finally, the boat reversed into motion, Andrew climbed out the window with a wave, and we were on the river. Suzi told us we would be climbing out the windows on our return, but I was too excited to pay attention.

On the way out of Belen we were passed by canoes and motor boats, colorful wooden houses lined the shores - some were neatly kept, others were near collapse. The inhabitants bathed in and drank out of the river. Suzi joked that a gringo doing the same would surely die within five minutes; the low water conditions certainly seemed ripe for cholera. We merged into a wider, but shallow section of river. Iquitos stood proudly on the high shore to our left, the old Franciscan monastery perched precariously on the bank. Soon we were away from the city, and the banks of the wide river were inhabited with rural dwellings and small farms. Most of the trees had been cleared from the banks, but a few isolated ones remained. Linda and I watched for birds, but spied only a few brightly colored fruits on the lone trees. After an hour or so we turned to our books. A little girl next to me liked my ponytail and played with it for a while before leaning into me for a nap. The afternoon heat and sun were stifling, the passengers all sought solace in the shade they could find and dozed off. Occasionally the boat pulled into shore depositing a few passengers and their goods. The owner of the boat seemed to know all of the passengers and where they lived.

Halfway through the journey, we pulled into a small river town with a floating cafe and vendors in canoes. Suzi purchased two banana leaf-wrapped packages containing rice and meat, which we tentatively identified as mutton or goat. It was good and we quickly had our fill, remainders and scraps were thrown over the side for the fish. Some vendors sold sweets, others dispensed beer or soda into plastic bags for the passengers to drink from. We purchased warm sodas from the boat owner, our last ones for three weeks. At this juncture we also left the Amazon and headed up the River Tahuayo.

We passed several small villages on the banks of the Tahuayo, most very picturesque. We passed people in canoes of varying sizes. Families, couples, children and hunters were all on the river highway. We began to see herons, swallows and kingfishers on

the narrow river. With amazing dexterity we avoided submerged logs. We traveled through a short rainstorm and came ashore in time to see a beautiful rainbow. I photographed the rainbow, but was not quick enough to catch the antics of the river dolphins. The entire entourage of remaining passengers took delight in watching the dolphins, I even saw the boat owner smile as he watched them. Soon it was dark, but we still had a few hours of travel to our destination. Except for the drone of the outboard motor all was quiet. We donned mosquito repellent. Suddenly I noticed that the owner of the boat was swinging a flashlight back and forth on the bow of the boat. I asked Suzi what he was doing and she calmly replied that he was piloting the boat. Seven hours into the journey it dawned on me that the man operating the engines at the rear of the boat couldn't see the river; the river with the submerged logs, the river that was dangerously low because of the lack of rain, the river I couldn't even see when I leaned out over the side of the boat. I watched the flashlight swing to the right, then to the left, and back to the right. I was utterly amazed.

To be continued next month.....

Announcing: Zoo Keeper Participation Program 1997 Peruvian Primate-Census - Rio Tapiche Project

In 1997, the red uakari project will be moved further upriver to Rio Tapiche and will be expanded to include a comprehensive census of the 15 primate species in the region. Zoo keeper participation as census surveyors is invited at a fee of \$1000 per month, which will cover food, in-country transportation, accommodations, and guide, plus a small donation to the PPC/RTP. Keeper participants will be responsible for their own airfare and one day's expenses in Iquitos. Selection priorities will go to keepers who are able to commit four consecutive weeks to the project. Contact Scott Carter at the Detroit Zoo, phone (810) 398-0903, ext. 3160; Fax (810) 398-0504; e-mail - Scater@Detroitzoo.org



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Chapter News Notes

Jacksonville Zoological Gardens AAZK Chapter

Greetings from the sunshine state! Our chapter is ready to start off a great new year in 1997. We ended 1996 with the election of new Chapter officers:

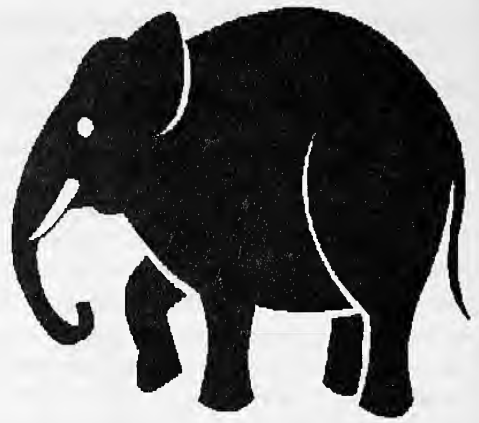
President.....Jason M. Mominee (4th yr.
officer)
Vice Pres./Treas.....Laine E. Burr (3 rd
yr. officer)
Secretary.....Jayne Tardona (1st yr.
officer)

We are starting off our new year with trying to come up with fun new ideas for our chapter. We are planning a membership drive throughout our zoo in the next few months. Also, we are planning an enrichment garden sponsored by our Chapter. Our zoo has already given us an area on display for the garden. They are also helping us come up with great ideas for graphics and ways to obtain donations to get this garden growing.

Our Chapter set up a refreshment table for delegates who attended the Elephant Managers Conference and we got a chance to see many keepers who participated.

Keep an eye out for us this year as we're hoping to have some great ideas to share with everyone.

—Laine E. Burr, V. P./Treas.



CHAPTER INFORMATION.

from the AAZK Historian

It is important that a history of the significant activities of AAZK be documented. As the AAZK Historian, I am requesting that Chapters provide information concerning their activities. Examples of information that I would like to receive include: Chapter work with conservation groups; providing training and/or supplies to personnel at a foreign zoo or conservation group; a brief description, photograph or sample of any merchandise associated with the Bowling for Rhinos fundraisers, etc. Any other information of historical importance is also welcome. Your participation would be greatly appreciated.

Please send any merchandise or photos to Susan Chan at AAZK Administrative Offices, 635 S.W. Gage Blvd., Topeka, KS 66606-2066. Bowling for Rhinos and other activity information should be sent to me at 3038 Arrowhead Lane, Norristown, PA 19401. If you have any questions, I may be reached during the day at (215) 737-8740 or e-mail at fsyzoo@aol.com

—Mark Levin, AAZK Historian



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*By Kayla Grams, Arizona-Sonora Desert Museum
and Gretchen Ziegler, Sequoia Park Zoo*

REPTILE ENRICHMENT - Scenting for Response

At the Jacksonville Zoo we have a walk-around reptile house with 30 public viewing windows. Tortoises, venomous and non-venomous snakes and lizards are exhibited at the reptile house. We routinely change substrates, props, and backgrounds inside the exhibits. These changes usually make the reptiles active. This is great for herps, ourselves, and, of course, the public. I haven't decided which activity the people enjoy watching more - the mobile herp or the keeper squeezed into the exhibit.

Second to "Are you crazy?", the most commonly asked question is, "Do they ever move?". Upon hearing this, reptile keepers start explaining the reasons why herps are SO FASCINATING and WONDERFUL. Sometimes I understand the strange looks I get when the herps are lying perfectly still in their exhibits. Let's face it - some mornings we double check for life signs - we can't blame everyone else for asking. This is where carnivore enrichment comes into play.

"Carnivore enrichment?" you might ask. Fellow keepers were always asking for snake sheds to enrich the cats. I decided we could do a switch - use the carnivores to enrich the reptiles! No, we didn't put our eastern diamondback in with the caracals or anything like that. We just borrowed some hair from the cats' exhibit, or directly from the cat during immobilization - a variety of different furs. After the fur is microwaved for sterilization, we put it in water and scatter splashes of the water in the exhibits.

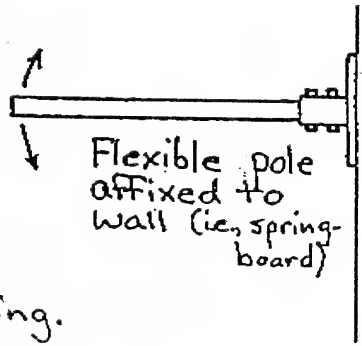
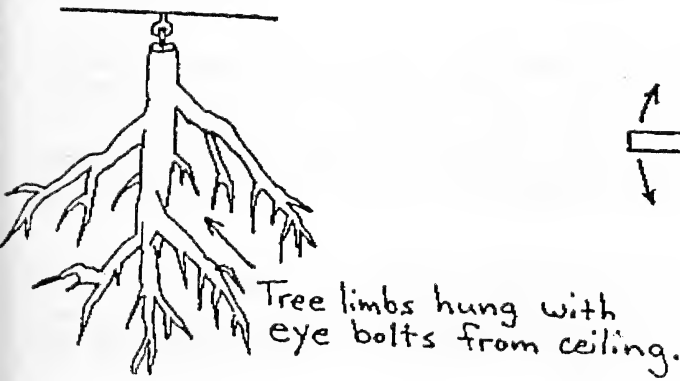
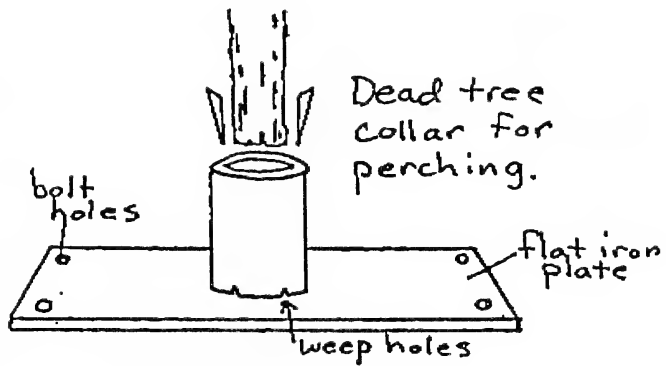
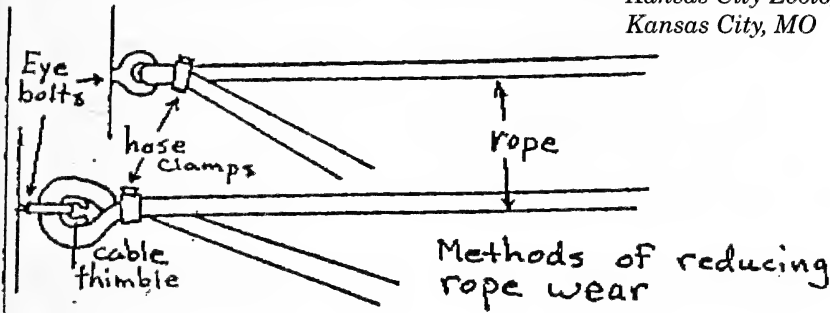
The response to a "cat" being in their "homes" was immense. These are a few of the responses we got: cruising, alert posture, tracking the scent, moving away, tongue flicks, and even some tail vibrating. We have used numerous scents including rabbit, birds, chinchilla, ferret, giant anteater, and hoofstock. These scents have definitely enriched ourselves, the public, and most importantly - the reptiles. So next time someone asks you for a snake shed, try to think of what they could do for that snake.

*—Laine E. Burr, Animal Encounter Trainer
Animal Behavior Management Division
Jacksonville Zoological Gardens, Jacksonville, FL*

ENRICHMENT AND SUPPORT DEVICES

The following drawings are examples of ideas or devices, many of which I have used with success to promote behavioral enrichment in captivity. Some are published and are cited in the section: "Activity Manipulation" of the notebook Applying Ecological Principles to Captive Primate Environments which I authored. All are free to use at your institution. Modificaitons for species-typical needs are hindered only by imagination of the caretaker.

--Bruce Clark, Zoological Curator
 Kansas City Zoological Gardens
 Kansas City, MO



(Ideas appearing in this column have not necessarily been tested by the editors for safety considerations. Always think ahead and use good judgement when trying new ideas. Eds.)

Legislative Update



*Compiled by Georgeann Johnston
Legislative Advisor
Sacramento, CA
1-800-338-7348*

Which Way Does The Wind Blow In Your Congresspersons Office?

The League of Conservation Voters Education Fund has released a detailed analysis of the environmental record of a number of congressional members, particularly those recently elected to office. The information is available at the LCV web site located at <http://www.lcv.org>. Titled "The Green Guide to the 105th Congress", the publication contains biographical information, endorsements, election results, past votes, and positions on key environmental issues.

If you want to know more about your federal elected representative but you are not surfing the Net, call me, the editor of this column, at the toll-free number above and I will do the search for you and mail it to your address. What a deal!!

Source: GREENlines, online environmental journal, 21 January 1997

Native Americans Submit Bison Protection Plan To Federal Agencies; Various Agencies Issue Statements Of Cooperation

Forty Native American tribes in the area of Yellowstone National Park have submitted a proposal to the U.S. Departments of Interior and Agriculture which would allow the Intertribal Bison Cooperative (ITBC) and the National Wildlife Federation (NWF) to repopulate bison that would otherwise be killed if they wandered out of the park. The Cooperative said at a news conference in January that their goal is to stop the slaughter of bison by the Montana Board of Livestock and to restore the bison to areas where they once roamed free.

While the ITBC and the NWF are in agreement on the plan, they require approval from both federal agencies to implement the project. Currently, there are about 50,000 bison on public lands, another 15,000 on tribal lands, and approximately 135,000 in private herds located across the country. At the start of the 19th century there were 60 million bison in America and by the beginning of the 20th century, that number had diminished to an estimated 1,000 animals.

The primary reason for the killing of bison is that ranchers and state officials fear that animals leaving Yellowstone will spread the disease brucellosis to cattle and horses. This winter alone, nearly 600 straying bison have been shot or shipped to slaughterhouses to keep Montana's cattle brucellosis-free.

In response to the ITBC/NWF's efforts, the Secretary of Agriculture and the Secretary of the Interior have contacted the governor of Montana, proposing additional winter grazing lands for the Yellowstone bison while continuing to protect cattle from the

potential spread of brucellosis. "This is a very important part of stopping the slaughter of bison in the Greater Yellowstone ecosystem," said Bruce Babbitt, Secretary of the Interior. The proposal identifies grazing land in the Gallatin National Forest at Horse Butte onto which bison will be allowed. "These measures will help us get through the winter and into the spring while protecting cattle from the spread of brucellosis," said a representative of APHIS, a division of the USDA.

Further information about the ITBC/NWF plan may be obtained from the NWF and comments regarding it, or the current and/or future actions of the Interior and Agriculture Departments can be directed to Bruce Babbitt, Secretary of the Interior, Department of the Interior, 1849 C Street N.W., Washington, D.C. 20240 or Dan Glickman, Secretary of Agriculture, USDA, 200-A Whitten Building, 1400 Independence Avenue S.W., Washington, D.C. 20250 (e-mail agsec@usda.gov).

Source: Orange County Register, 28 January 1997; APHIS-USDA Press Release 7 February 1997

South Africa Reaches Agreement Regarding Elephants

The National Parks Board of South Africa, the Humane Society of the United States, and the Humane Society International have announced that they have signed an agreement that calls on the HSUS/HSI to provide \$1 million (U.S.) to South Africa's National Parks Board (NPB) over the next five years to conduct a study on the use of contraception in elephants. The purpose of the study is to ultimately control reproduction thus humanely controlling the size and growth of elephant populations.

In exchange for the funds, the N.B. is committing itself to managing wildlife in the national parks in a humane manner and in accordance with the highest conservation standards. There is also a plan to undertake an extension of the range of elephant populations in South Africa along with an attempt to reduce conflicts between elephants and other wildlife. Translocation of elephants is to be considered as one possible method of achieving the goal.

South Africa restricts elephants to national parks, one of which is the Kruger National Park which provides habitat for 8,300 of these animals. Rangers in the park have culled an average of 600 elephants each year in an attempt to maintain the population but widespread opposition to culling has forced the South African government to consider alternative means for population control.

Scientists from Zoo Montana, the Medical College of Ohio, the University of Georgia, and the University of Pretoria in South Africa will all participate in the contraception study.

Source: Humane Society of the United States news release, Wildlife Ecology Digest, 22 January 1997

U.S. Submitting Proposals To Cites Secretariat For Next Meeting

The CITES Secretariat in Switzerland is in the process of preparing for the next meeting of CITES countries to be held in June 1997 in Zimbabwe. The Untied States is proposing several animals for inclusion on CITES Appendices I and II. Appendix I lists 700 species threatened with extinction due to international trade while Appendix II lists species not immediately threatened by which may become so if trade is not regulated.

Included in the U. S. Appendix I proposed listing are the green-cheeked parrot, the yellow-headed parrot, and all species of saw fishes. Appendix II proposed species include the alligator snapping turtle, the timber rattlesnake, the straw-headed bulbul bird, and twelve species of map turtles.

One of the most controversial non-animal proposals put forth by the U. S. concerns bigleaf mahogany, a valuable tropical timber on the world market. The U. S. is the largest consumer of bigleaf mahogany which comes from Mexican, Central American and South American rainforests. Organizations interested in animal species are watching the mahogany proposal closely since logging of mahogany has an adverse effect on hundreds of insect, bird, reptile, and mammal species living in the rainforests.

At the same time that the U.S. is calling for additional species to be added to the CITES lists, Germany has proposed the listing of all species of sturgeon not already included in the CITES Appendices. This fish is the source of most of the caviar consumed worldwide and some species are on the verge of extinction in the wild. The United States is co-sponsoring this proposal with Germany in the hopes of taking charge of the significant illegal international trade in caviar and to protect Russian sturgeon populations from exploitation. The proposal would not have an effect on sport fishing for sturgeon in the United States.

In addition to the species-specific proposals above, the United States is also submitting a paper calling for the establishment of a CITES Marine Fishes Working Group, which would work closely with the National Marine Fisheries Service. The proposed group would then address questions of CITES implementation issues for sharks and other marine fishes.

By the time this article is published, the full text of the United States' proposals should be available in the Federal Register. This publication may be obtained at almost all college and university libraries, from your congressperson, or at many larger public libraries around the country. Additionally, a copy can be located by visiting the federal Register site on the World Wide Web.

Source: U.S. Fish & Wildlife News Release, 10 January 1997

USFWS To Act To Protect Colorado Eagles

Bald eagles roosting near the new Denver Airport have been disturbed by jet noise now that the airport is fully operational. Before the airport opened, the Federal Aviation Administration promised the U. S. Fish and Wildlife Service that runways would avoid eagle roosting sites but the FAA did not adhere to this representation. Because of the jet noise, the eagles are relocating their roosts closer to the Rocky Mountain Arsenal Superfund site, an area contaminated by pesticides and chemical weapons residues. Because of this, the USFWS has issued a statement that it is taking formal actions against the FAA to enforce the terms of the original agreement.

Source: GREENlines, 10 January 1997

1996 Conference Proceedings Update

Conference Proceedings for those individuals who ordered copies were mailed in mid-February. Gratis copies were mailed to authors who submitted their manuscripts for inclusion in this publication. A limited number of copies of the 1996 Conference Proceedings are now available on a first-come, first-served basis. The costs are:

AAZK Member \$25.00

Non Member \$35.00

Postage for U.S. orders is included. Canadian and overseas orders should add \$4.00 for Air Mail postage to Canada and Surface postage elsewhere. Overseas orders wishing Air Mail service should add \$10.00. Make checks payable to AAZK, Inc. We will accept Visa and Mastercard orders with completed form below or phone orders may be placed at 1-800-242-4519 (U. S.) or 1-800-468-1966 (Canada) when using a credit card.

A listing of the papers included in the Proceedings may be found in the December 1996 and January 1997 issues of *Animal Keepers' Forum*.

Proceedings Order Form

(Please type or print)

I wish to order ___ copy(s) of the 1996 Conference Proceedings.

of copies x price per copy = \$_____ Additional postage is \$_____ (If applicable)

Total payment for this order is \$_____ (make checks payable to AAZK, Inc.)

My check is enclosed ___ Please charge my Visa or Mastercard (please circle)

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Signature _____

Mail To:

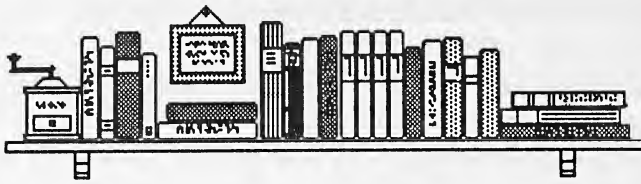
Name: _____

Address: _____

City: _____ State/Province: _____

Country: _____ Zip/Postal Code: _____

After these copies are sold out, individual papers will be available for \$3.00 each



Book Review

Minnesota's Natural Heritage: An Ecological Perspective

By John R. Tester

Mary Kierstad, Developmental Editor

University of Minnesota Press

111 Third Ave. So., Suite 290, Minneapolis, MN 55401

Cloth, 352 pgs. Price:\$29.95

*Review by Janet Cooper, Animal Keeper
Little Rock Zoo, Little Rock, AR*

Minnesota's Natural Heritage is a thorough yet very readable study of the varied facets of Minnesota's environment. Overall the book appears to focus more on flora than fauna; however, there is much to be gleaned by any keeper interested in more than the minimum about their charges.

The first two chapters introduce the state's landscape, weather and climate. As a Minnesota native, I found especially interesting the sections on geologic history and climate. Because of Minnesota's location in relation to the Rocky Mountains and the Great Plains, the state may experience the greatest changes in climate in the shortest distance and time, outside of mountainous areas, in North America. This is a major influence in the development of Minnesota's diverse ecological communities. Animal distributions as limited by temperature extremes are presented in examples of breeding bullfrogs and frostbitten opossums. The third chapter is a good basic introduction to the principles of ecology, a concise version very similar to Dr. Tester's Principles class at the University of Minnesota, as offered when I took it in the early 1980's.

Chapters four through nine discuss the three main biomes of the state...deciduous forest, coniferous forest, and tall grass prairie, and the ecology of wetlands, lakes, rivers and streams. Pre-settlement and present conditions are presented and evaluated in terms of productivity, nutrient cycling, succession, and species interaction.

From an animal keeper's perspective, the discussions of animal and community interactions are of most interest. The most conspicuous species in each class are given individual attention and "lesser" species are grouped. These discussions could give insight into relationships, behaviors, diet variations, browse or other enrichment possibilities, or even possibilities for mixed species exhibits. Vertebrates are also listed individually in the appendixes with status and habitat information.

Easy to read graphs and maps are plentiful. Photos by native and regional

photographers of caliber and tradition, such as Craig and Nadine Blacklock, Tom Mangelsen, and Jim Brandenburg, only added to my opinion that this book would be enjoyed by a variety of readers.

Wild Dogs- The Wolves, Coyotes, and Foxes of North America

By Erwin A. Bauer, 1994

Chronicle Books

275 Fifth Street, San Francisco, CA 94103

Softcover, 120pgs. Price: \$16.95

*Review by Jean L. Starks, Lead Animal Keeper
Oakland Zoo, Oakland, CA*

This book pays homage to the revered cousins of our domestic canine companions. It includes over 130 color photographs by the author and well-known wildlife photographer Erwin Bauer. His contributions to the book are also accompanied by those of his wife, Peggy. The photos display the beauty and strength of wolves, coyotes, and foxes; images of them at play, on the hunt, or just relaxing in a moment of solitude.

It begins with a foreword by nature writer, John Madson, who has contributed to magazines such as Audubon and National Geographic. It is then divided into five sections. It starts with an introduction by the author that explains how his fascination with these often-feared predators began. This is followed by a section of range maps for the gray wolf, the coyote, the red, kit, and swift foxes, and the gray and arctic foxes. The last three parts are each dedicated to the different species of wild dogs: wolves, coyotes, and foxes.

Each of the three sections discusses their natural history, their struggle to coexist with man. The author mentions interesting behavioral and biological facts. One can tell that the author has spent long hours patiently observing these remarkable animals. He includes some anecdotes of his personal encounters with some of them. The text is not too lengthy or tedious, much of the information can be gleaned from the photographs' captions.

This book offers a limited usefulness for animal keepers. It could possibly be useful for those designing an appropriate exhibit and/or enrichment device for these animals. For the domestic and/or wild canine fancier, this book is a must-have addition to their collection. I would recommend it highly. For the person who simply appreciates breath-taking wildlife photography, it is again worth a look. Again, I would recommend it to the lover of these stunning gray and red wolves, the tireless coyote, and the crafty foxes. It is a wonderful tribute to them all.

AAZK Exhibit Design Form Species

The following are species for which Administrative Offices have completed Exhibit Design Forms.

AVES

Casuariiformes

emu
double wattled cassowary

Tinamiformes

small-billed tinamou

Sphenisciformes

jackass penguin

Ciconiiformes

Abdim's stork
boat-billed heron
Chilean flamingo
Caribbean flamingo
lesser flamingo
straw-necked ibis
sacred ibis
hammerkop

Anseriformes

Brazilian teal
blue-winged teal
chestnut teal
hottentot teal
Pekin duck
wood duck
mandarin duck
redhead
canvasback
northern pintail
muscovy duck
North American ruddy duck
red breasted merganser
Australian shoveler
white faced whistling duck
fulvous whistling duck
Eyton treeduck
black-backed radjah shelduck
white-faced treeduck
Australian wood duck
Orinoco goose
New Guinea pygmy goose
domestic geese
Trumpeter swan

magpie goose
Abyssinian goose
black swan

Falconiformes

American kestrel
northern bald eagle
pygmy falcon
turkey vulture

Galliformes

button quail
brush turkey
blue billed curassow
crested guinea
helmeted guinea
vulturine guineafowl
Japanese pheasant
Palawan peacock pheasant
crested wood partridge
red-crested partridge
Rodriquez fruit partridge
domestic chickens
Indian peafowl

Gruiformes

purple swamphen
white-breasted waterhen

Charadriiformes

long-billed dowitcher
tufted puffin
rhinoceros auklet
black turnstone
willet
common murre
long-billed curlew
black-wing stilt
double-striped thick-knee
dunlin
marbled godwit
pigeon guillemot
killdeer

Columbiformes

gree-winged dove
diamond dove
purple-tailed imperial pigeon
pied imperial pigeon
pink-necked fruit dove
black-naped fruit dove
bleeding heart dove
wompoo fruit dove

Nicobar pigeon

Psittaciformes

white cockatoo
salmon-crested cockatoo
greater sulphur-crested cockatoo
Sumba lesser sulphur-crested cockatoo
slender-billed cockatoo
galah
cockatiel
African gray parrot
Australian king parrot
turquoise parrot
budgerigar

Cuculiformes

go-away bird
turacos
white-cheeked turaco
Ross turaco
Hartlaub's turaco
plantain-eaters

Strigiformes

snowy owl

Caprimulgiformes

tawny frogmouth

Apodiformes

hummingbird

Coliiformes

wreathed hornbill
northern pied hornbill
silvery-cheeked hornbill
red-billed hornbill
carmine bee-eater
kookaburra
blue-crown motmot
lilac breasted roller
white-breasted kingfisher

Piciformes

toco toucan
emerald toucanet
spot-billed toucanet
gaudy red-throated barbet
crested barbet
goldenbacked woodpecker
brown breasted barbet

crested barbet
goldenbacked woodpecker
brown breasted barbet

Passeriformes

rufous treepie
laughing thrush
red-tailed laughing thrush
chestnut-capped ground thrush
Elliot's laughing thrush
emerald starling
grosbeak starling
superb starling
purple glossy starling
Bali mynah
Celebean mynah
golden-breasted mynah
white-collared (Viellot's) mynah
Brahminy mynah
red-legged honeycreeper
black-naped oriole
golden song sparrow
crimson finch
white-headed buffalo weaver
orange bishop
pintail whydah
Australian finches (mixed species)
blue-faced parrot finch
red-headed finch

MAMMALIA

Marsupialia

Phascolarctidae
koalas

Macropodidae

wallaroo
New South Wales wallaroo
Tasmanian Bennett's wallaby
dama wallaby
southern scrub wallaby
Bennett's wallaby
red kangaroo
Eastern red kangaroo
Matschie's tree kangaroo

Chiroptera

bat
vampire bat

PRIMATES

Lemuridae

black and white ruffed lemur

red ruffed lemur
ring tailed lemur
ruffed lemur

Callitrichidae

golden lion tamarin
cotton-top tamarin
tamarins
common marmoset
pygmy marmoset

Cebidae

black howler monkey
capuchin monkey
squirrel monkey
spider monkey

Cercopithecidae

deBrazza monkey
mona monkey
colobus
snow monkey
patas monkey
Diana monkey
mandrill baboon
hamadryas baboon
Guinea baboon
spectacled langur
Japanese macaque
Celebes macaque
lion-tailed macaque
talapoin

Hylobatidae

white-handed gibbon
siamang

Pongidae

orangutan
Sumatran orangutan
western lowland gorilla
common chimpanzee

XENARTHANS

giant anteater
Hoffman's two toed sloth

LAGOMORPHA

domestic rabbits

RODENTIA

guinea pig
N. A. porcupine
crested porcupine
woodchucks (ground hog)
chinchilla

CARNIVORA

Canidae

bat eared fox
dingo
black backed jackals
red wolves
Mexican wolves
arctic wolf
grey wolf
African wild dog

Ursidae

black bear
spectacled bear
Asiatic black bear
grizzly bear
brown bear

Procyonidae

red panda
raccoon

Mustellidae

North American river otter
Alaskan sea otter
Asian river otter

Viverridae

Liberian mongoose
meerkat

Felidae

clouded leopard
snow leopard
lion
ocelot
cheetah
Siberian tiger
Bengal tiger
Sumatran tiger
serval
jaguar
mountain lion
black-footed cat
bobcat
jaguarundi

Pinnipedia

northern fur seal
harbor seal
Cape fur seal

Proboscidea

African elephant
Asian elephant

Hyracoidea
rock hyrax

PERISSODACTYLA

Equidae
Grevy's zebra
Sicilian donkey
domestic pony
Przewalski horse
eastern kiang
Somali wild ass

Rhinocerotidae
Northern white rhino
black rhino
Southern white rhino
Indian rhinoceros

ARTIODACTYLA

Suidae
pot bellied pig
warthog

Artiodactyla
Pygmy hippopotamus
hippo

Camelidae
llama/alpacdromedary camel
bactrian camel

Cervidae
American elk
axis deer
Malaysian sambar
Javan rusa
Reeve's muntjac
muntjac
Altai wapiti
fallow deer
barasingha deer
Dybowski's sika

Giraffidae
Masai giraffe
baringo giraffe
giraffe
okapi

Antilocapridae
pronghorn

Bovidae
gaur
Kenya impala
impala
Patterson's eland
Speke's sitatunga
European mouflon
Uganda kob
Defassa waterbuck
greater kudu
African buffalo
Siberian ibex
Sichuan takin
fringe-eared oryx
besia oryx
Arabian oryx
white-bearded gnu
domestic sheep
Scottish highland cow
sable antelope
American mouflon
nilgai
black buck
Nile lechwe
Indian gaur
Himalayan tahr
Persian gazelle
sand gazelle
Roosevelt's gazelle
Thomson's gazelle
dik dik
Gunther's dik dik

REPTILIA

Testudines
pancake tortoise
desert tortoise
red-footed tortoise
Aldabra tortoise
Galapagos tortoise
yellow spotted river turtle

Squamata
spotted tree monitor
komodo mointor
bearded dragon
rainbow agama
chuckwalla
Egyptian spiny-tailed lizard
green iguana
ball python
boa constrictor
Amazon tree boa

Crocodylia
alligator
crocodylidae
dwarf caiman

AMPHIBIANS

Anura
poison frog
southern leopard frog

FISH

Chondrichthyes
bonyfish, sharks

INVERTEBRATES

OCTOPODA
giant Pacific octopus

HOW TO ORDER

If you would like to order photocopies of Exhibit Design Forms for any of the species listed here, please do the following:

1. Send a list of the species for which you desire forms. There is a **\$2.00 per species** charge for copying.
2. There is a **one-time** per order retrieval fee of \$3.00.
3. Send your name, your institution's name and complete mailing address, including zip code and phone number.
4. Make checks or money orders (U. S. Funds Only) payable to: AAZK, Inc.

If you have questions, contact the AAZK Administrative Offices.

Institutions wishing to advertise employment opportunities are asked to send pertinent data by the 10th of each month to: Opportunity Knocks/AKF, 635 S.W. Gage Blvd., Topeka, KS 66606-2066. Please include closing date for positions available and when setting these dates keep in mind that because of bulk-mail, most readers do not receive the AKF until the middle of the month or later. There is no charge for this service and phone-in or fax listings of positions which become available close to deadline are accepted. Our phone is 1-800-242-4519 (U.S.); 1-800-468-1966 (Canada). Our FAX is (913) 273-1980.

ANIMAL CARE SPECIALIST...requires excellent presentation/communication skills, hands-on experience with wild/exotic animals and knowledge of animal husbandry/behavior, nutrition, and zoology. Responsibilities include but are not limited to presentation of wild/exotic animals in outreach settings, on-site educational show, daily animal care, exhibit maintenance, and record keeping. Salary \$7.00/hr., plus benefits. Send resumé to: Six Flags California, Animal Department, P. O. Box 5500, Valencia, CA 91355 (805) 255-4770.

VETERINARY TECHNICIAN...requires completion of an associate degree in Veterinary Technology or a related field from an accredited institution; at least one year of experience as a Veterinary Technician involving work with exotic animals; OR any equivalent combination of experience and training. Must possess or be able to obtain state certification as a Veterinary Technician within one year of employment. Salary range \$17,744.00 to \$26,616.00 plus an excellent employee benefits package. Applicants must complete and submit the following: 1) detailed resumé with complete dates of employment and listing of job duties; 2) a cover letter indicating desired position, and; 3) a Training and Experience Questionnaire **by 5:00 p.m., Friday, 4 April, 1997**, to the following address: City of Little Rock, Personnel Department, 500 W. Markham, Little Rock, AR 72201-1428; phone (501) 371-4590; TDD (501) 371-4405. EOE.

CURATOR CANDIDATES...Rainforest Cafe is currently seeking qualified curator candidates for our spectacular new restaurant, retail and educational facilities opening in major cities across the U.S. beginning in June 1997. Seeking candidates with long-term experience in aquatics and avian husbandry, to oversee our day-to-day habitat operations and to direct our on-going educational programs on and off property. This individual must be upbeat and energetic, with a genuine passion for animal care. We are also seeking full and part-time hourly aquatics and animal care specialists. Wage is based on experience. Qualified applicants please send or fax resumé to: "Rainforest", Rick Turnquist, Corporate Curator, Rainforest Cafe, Mall of America, Bloomington, MN 55425 Fax: (612) 854-5046. Rainforest Cafe - "A Wild Place to Shop and Eat - An Environmentally Conscious Family Adventure". EOE.

ANIMAL KEEPER-GUIDE...several positions available for SEASONAL employment May - October 1997. Requires high school diploma, paid zoo experience preferred, but volunteer experience acceptable. Good opportunity to gain paid zoo experience. Applicants must have strong, audible voices, neat appearance, good personality, and must work well with co-workers. Non-smokers preferred. Duties include daily animal care and feeding, exhibit cleaning and maintenance, various other maintenance duties, and talking to groups in a tour

situation. Will lecture on both non-venomous as well as venomous reptiles. Must have experience in handling NON-VENOMOUS reptiles or a willingness to learn. Salary \$195.00 per week. Living quarters, utilities and uniforms furnished. Send resumé to: Jim Miller, Soco Gardens zoo, 89 Evans Cove Road, Maggie Valley, NC 28751.

The following two (2) positions are available at Tracy Aviary. For either position send cover letter, resumé, salary history and a video showcasing your experience (if available) to: Lee Anne Norris, Director of Education, Tracy Aviary, 589 E. 1300 S., Salt Lake City, UT 84105.

Immediate Opening - Start Date 1 April.

HEAD BIRD SHOW TRAINER ..responsible for the overall creation and production of a highly professional, educational and entertaining Bird Show at Tracy Aviary. Schedule includes both summer shows at the Aviary as well as outreach programs to schools and other venues during the off-season. Requires a minimum of a two-year degree in related field, three years training experience with a variety of bird species, experience in the physical and veterinary care of birds, proven ability to train and supervise volunteers and other show staff. Salary commensurate with experience.

Open until filled

ASSISTANT BIRD SHOW TRAINER...assist the Head Bird Show Trainer in the creation and production of a highly professional, educational and entertaining Bird Show at Tracy Aviary. Schedule includes both summer shows at the Aviary as well as outreach programs to schools and other venues during the off-season. Requires a minimum of a two-year degree in related field, two years training experience with a variety of bird species, public speaking ability. Salary commensurate with experience.

The following two (2) positions are available at the Lincoln Park Zoo. For either position, send inquiries/resumés to: Lincoln Park Zoo, Human Resources, Dept. AK297, P. O. Box 14903, 2001 N. Clark, Chicago, IL 60614; Fax: (312) 742-2299. No phone calls. EOE/M/F/D/V.

ANIMAL KEEPER/Primates...seeking a full-time animal keeper preferably with primate experience. Responsibilities include all aspects of daily animal care and maintenance. Particular emphasis on informal educational exchanges with zoo guests as well as inter-departmental interaction. High school grad or equiv. required, BA/BS preferred. Successful candidates likely to have primate experience. Starting salary \$23,000.00 plus comprehensive benefits.

ANIMAL KEEPER/Carnivores/Pinnipeds...seeking full-time animal keeper preferably with carnivore and pinniped training experience. Responsibilities include all aspects of daily animal care and maintenance. Particular emphasis on informal educational exchange with zoo guests as well as inter-departmental interaction. High school grad or equiv. required, BA/BS preferred. Successful candidates likely to have carnivore/pinniped experience. Starting salary \$23,000.00 plus comprehensive benefits.

ZOO KEEPER...under immediate supervision, takes care of zoo animals and maintains cages, enclosures, grounds and service areas. Requires completion of high school or GED, and one year experience in the care of caged animals. City of El Paso applications must be filed at the City Personnel Dept. **no later than 4 p.m., 28 March 1997**. Salary \$8.45 - \$9.62 per hour.* Contact Paul Mueller, Personnel Department, Two Civic Center Plaza, City of El Paso, TX 79901; (915) 541-4090; fax (915) 541-4220. EEO/AA. *Entry salary for new employees is set at the beginning of the range.

ZOOKEEPER I/SONORAN DESERT HABITAT...the North Carolina Zoological Park is accepting applications from keepers for an entry level position to work with reptiles, birds, mammals and invertebrates in diverse natural habitat exhibits. A degree in a biological science, as well as experience at an accredited zoo are preferred. Starting salary is \$17,179.00 increasing to \$18,037.00 upon satisfactory completion of probation, plus benefits. Send resumé and cover letter **by 31 March 1997** to: Cami Bunting, Human Resources, North Carolina Zoological Park, 4401 Zoo Parkway, Asheboro, NC 27203. Attn: Zookeeper I-Desert. Fax #: (910) 879-2891.

ZOO KEEPERS...requires experience caring for farm and exotic animals. Provides care for zoo animals including preparing diets, observing and correcting animal behavior, providing assistance in administering veterinary care and maintaining facilities and equipment. Applicants must be able to lift 50 lbs. Starting salary \$9.05 per hour plus benefits. Mail or fax resumé **by 1 April 1997** to: Michael D. LaRue, Director, Topeka Zoological Park, 635 S. W. Gage Blvd., Topeka, KS 66606-2066; fax (913) 272-2539.

SUMMER INTERNSHIPS (2)...seeking two student interns for the 1997 summer season. Interns will work in every area of the zoo for ten weeks, and will gain valuable experience in animal care and exhibit-grounds maintenance. Stipend is \$1,000.00 per intern. Internships must be completed between 15 May and 15 September 1997. Zoo will assist in finding affordable housing. Send letter/resumé **by 1 April 1997** to Gary Muir, Animal Supervisor Salisbury Zoological Park, P. O. Box 2979, Salisbury, MD 21802-2979. The Salisbury Zoological Park is a free admission, 12.5-acre facility specializing in exhibiting wildlife from North, Central and South America. For more information, call (410) 548-3188.

ZOOKEEPER...this is a unique opportunity for an individual who is interested in working with exotic captive animals in a public zoo focused as a teaching institution. This individual will primarily be an animal keeper who will be involved with working with high school students in our new Science Focus Specialty High School Program. Duties include all aspects of exotic animal husbandry, including feeding, cleaning, exhibit design and maintenance, and veterinary procedures. He/she will work cooperatively with the education department by directing student projects and activities, while communicating the essence of their job to those students. The preferred applicant is a highly motivated, self-starter individual with exotic animal experience. Good public

speaking skills and flexibility in work day a must. Salary \$6.82/hr plus benefits. Full-time permanent position. Send resumé to Randy Scheer, Folsom Children's Zoo, 1222 S. 27th St., Lincoln, NE 68502. **Position open until filled.**

ZOOKEEPER II...work involves responsibility for the care and maintenance of assigned exhibits of birds, reptiles, amphibians, fish and the areas in which they are exhibited, according to established policies and procedures. Work involves botanical care, record keeping and preparation of diets according to established and approved guidelines. Minimum requirement of two (2) years venomous reptile experience in a zoological facility. Salary \$15,936.00/year. Send letter/resumé **by 31 March 1997** to: Judy Potter, Human Resources, P. O. Box 60, Abilene, TX 79604.

SENIOR ANIMAL KEEPER...the Dayton Museum of Natural History (DMNH) is a premier science museum with a diverse collection of over 100 animals displayed in indoor exhibits. DMNH is a related organization of the American Zoo and Aquarium Association (AZA). Candidates are required to have experience in the care, handling, and feeding of animals in a zoo setting. Will be responsible for daily care of animal collection. Additional responsibilities include purchasing and ordering animal food and supplies, record keeping, supervising part-time and volunteer keepers, exhibit and prep area maintenance, delivering education programs and assisting with interpretation of animal collection. Must have excellent communication skills and the ability to work with a wide variety of people. Basic computer skills are desired. Preference will be given to candidates with a degree in a science related field. Salary \$15,500.00 to \$16,500.00 with benefits. Please send letter, resumé and names of three references **by 28 March 1997** to: Liz Cerny, Curator of Live Animals, Dayton Museum of Natural History, 2600 DeWeese Parkway, Dayton, OH 45414, Fax (937) 275-5811. For more information call (937) 275-7431 ext. 33.

ZOOKEEPER...Reid Park Zoo, Tucson, AZ. Requires high school diploma and at least one year of demonstrated experience in the management of exotic, non-domestic animals. Responsibilities include: complete husbandry of animals and exhibits in assigned area; animal observation; medical treatment; capture and restraint; and public contact. Salary \$19,320.00 to \$25,896.00 plus excellent benefits. Contact City of Tucson Human Resources, 110 E. Pennington, Tucson, AZ 85726-7210 or call (520) 791-4241 **by 31 March 1997**.

INFORMATION PLEASE- Our fennec fox (*Fennecus zerda*) is experiencing loss of fur on the face, legs, and tail. Has anyone seen similar symptoms in a fennec fox? The edges of her ears also have scabs on them. We don't see any excessive scratching on her part. Blood was tested for possible thyroid problems and it came back normal. Samples of fur were tested for fungus and these also came back normal. If anyone has seen this before, please contact Jeanne Walsh at the Newark Museum Mini Zoo, 49 Washington St., Newark, NJ 07101. Phone: (201) 596-6555; Fax (201) 642-0459.

AAZK Membership Application

check here if renewal []

Name _____
Address _____
City _____ State/Province _____ Zip _____

U.S. Members

\$35.00 Professional
Full-time Keepers

\$30.00 Affiliate
Other staff & volunteers

\$30.00 Associate
*Those not connected with
an animal facility*

\$60.00 or up - Individuals
Contributing/U.S.

\$100.00 or up
Institutional/U.S.
*Organizations / Institutions
(requires Board approval)*

International Members
\$50.00 International
*All members outside U.S. &
Canada regardless of category*

Canadian Members

\$40.00 Professional
Full-time Keepers

\$35.00 Affiliate
Other staff & volunteers

\$35.00 Associate
*Those not connected with
an animal facility*

\$60 or up - Individuals
Contributing/Canada

\$100.00 or up
Institutional/Canada
*Organizations / Institutions
(requires Board approval)*

Library Only
\$35.00 Library
*Available only to public
& university libraries*

Zoo Affiliation (if any) _____

Zoo Address _____

Title _____

Work Area _____

My check is enclosed (AAZK, Inc.)

Please charge my credit card

MASTERCARD _____ VISA _____ Card # _____ - _____ - _____

Name on card _____ Expiration date _____

Signature _____

Mail this application to: AAZK Administrative Offices, Topeka Zoo, 635 S. W. Gage Blvd., Topeka, KS 66606-2066. Make checks/money orders payable to AAZK, Inc. Must be in U.S. FUNDS ONLY. Membership includes a subscription to *Animal Keepers' Forum*. The membership card is good for free admission to many zoos and aquariums in the U.S. and Canada.

**American Association
of Zoo Keepers, Inc.
635 S.W. Gage Blvd.
Topeka, KS 66606-2066
U.S.A.**

Address Correction Requested

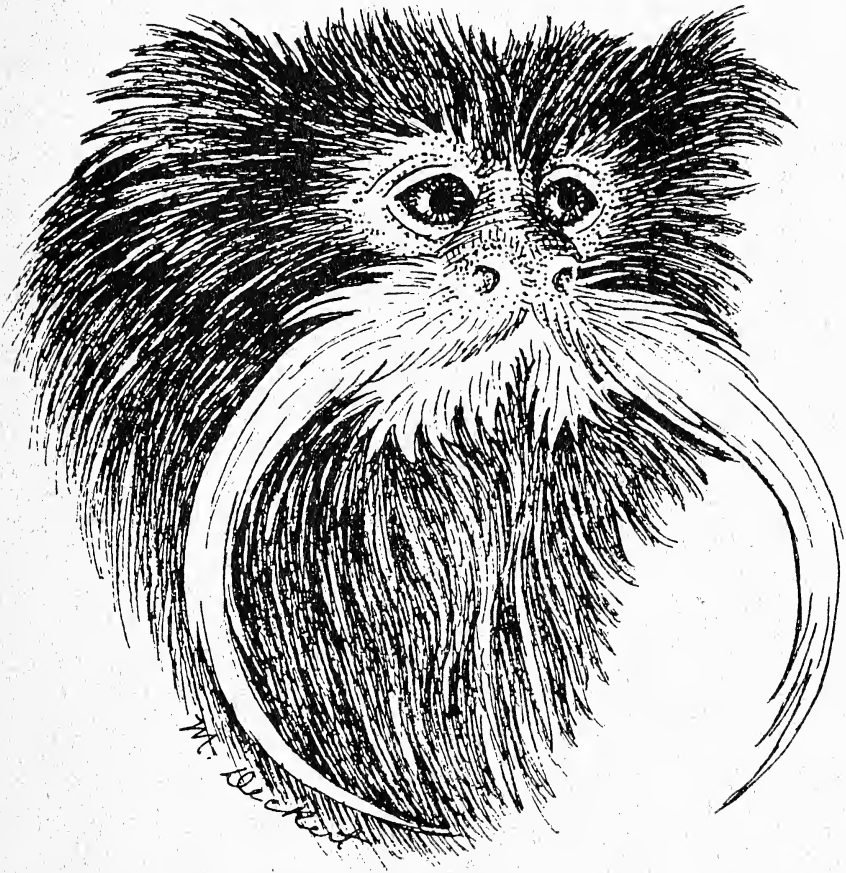
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Professional Animal Care"*

ANIMAL KEEPERS' FORUM



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

APRIL 1997

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AAZK PUBLICATIONS - CONTINUING DATA COLLECTION

Zoo Infant Development Project - Teri Maas-Anger/Maggie Liguori, Philadelphia Zoo (Birds/Nonpasserines); Jennifer Hackshaw, Lowry Park Zoo and Suzanne Chacon, Costa Rica (Birds/passerines); Jeanne Stevens, Newark Museum Mini-Zoo (Reptiles); Linelle Smith, Denver Zoo (Amphibians)

Incubation Notebook Project - Scott Tidmus, Sedgewick County Zoo, Wichita, KS

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About the Cover.....

*This month's cover features the Emperor Tamarin (*Saguinus imperator*) drawn by Mary Deckert, a docent at the Los Angeles Zoo. The most conspicuous member of the subgenus of moustached tamarins, the Emperor Tamarin is represented by two subspecies and is found on the Acre, Purús, and Juruá rivers in the southwest of the Brazilian state Amazon, and possibly also in the East Peruvian border regions. When the first specimens of the rare Emperor Tamarin, which was only discovered in 1907, were prepared in the museums, the taxidermist mistakenly twirled the moustache up in the fashion of Emperor Wilhelm of Germany. For this reason, Goeldi gave it the proud, humorous species name "imperator". Emperor Tamarins are graceful, friendly and playful monkeys. Their behavior and vocalizations are reminiscent of silky marmosets. Thanks, Mary!*

Information for Contributors

Animal Keepers' Forum publishes original papers and news items of interest to the animal keeping profession. Non-members are welcome to submit articles for consideration. Articles should be typed or hand-printed and double-spaced. Articles may be submitted on disk by arrangement with the Editor. All illustrations, graphs, charts and tables should be clearly marked, in final form and should fit in a page size **no greater than 5.5" x 8.5"** (14cm x 22cm). Literature used should be cited in the text (Brown, 1986) and alphabetically in the final bibliography. Avoid footnotes. Include scientific name (as per ISIS) the first time an animal name is used. Thereafter use common name. Use metric system for weights and measurements (standard equivalents may be noted in parenthesis). Use the continental dating system (day-month-year). Times should be listed as per the 24-hour clock (0800, 1630 hrs. etc.). Glossy finish black and white photos **only are accepted**. Color slides should be converted to black and white prints (minimum size 3" x 5" [8cm x 14cm]) before submission. Clearly marked captions should accompany photos. Please list photo credit on back of photo.

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 and FAX contributions of late-breaking news or last-minute insertions are accepted as space allows. However, long articles must be sent by U.S. mail. Phone 1-800-242-4519 (US); 1-800-468-1966 (Canada); FAX (913) 273-1980.

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.

Items in this publication may be reprinted providing credit to this publication is given and a copy of the reprinted material is forwarded to the editor. Reprints of material appearing in this journal may be ordered from the editor. Back issues are available for \$3.00 each.

Scoops & Scuttlebutt



Association Acknowledges Recent Donations

The AAZK Board of Directors and the Administrative Office staff wish to acknowledge the following donations which have been sent in by Chapters and individual AAZK members to support the work of the Association: Utah Chapter AAZK's donation of \$300.00 (for printing of *AKF*); Los Angeles Chapter AAZK's donation of \$200.00 (for general operating budget); San Diego AAZK Chapter's donation of \$300.00 (undesignated); Greater Cleveland Chapter of AAZK's donation of \$1000.00 (general operating budget or as needed); and AAZK Professional member Christine Buckmaster's donation of \$40.00 (unrestricted). Such support from Chapters and members is greatly appreciated and insures the ability of the Association to carry on with its projects and programs. It has been most gratifying to see Chapters meet the challenge initiated by Jeannette Beranger at Roger Williams Park Zoo. Again, many thanks for your generosity and support.

BOD Election Ballots in the Mail

All AAZK Professional members are advised that Board of Director Election materials (including biographical sketches of the candidates, a ballot, and return envelope) have been mailed First Class early this month. Only Professional members may vote to elect Board Members. Voting eligible members need to return their ballot by **1 June 1997**. To count in the election, ballots **must** be return in the envelope provided which is addressed to the CPA in Texas who will tally the results for AAZK, Inc. **Do not** include inquiries, order forms or any other materials in this envelope - only the ballot.

AAZK Zoo Keeper Grant in Research

The American Association of Zoo Keepers (AAZK) has developed the Zoo Keeper Grant in non-invasive research to promote and support keeper and aquarist efforts in behavioral research. The \$750.00 research grant is for the benefit of North American zoological research efforts. It is designed specifically for purchasing equipment, supplies and materials for research projects. The next deadline for applications is **1 March 1998**. AAZK members in good standing should direct their inquiries to: Farshid Mehrdadfar, Chair AAZK Research Grant Committee, Metro Washington Park Zoo, 4001 S. W. Canyon Rd., Portland, OR 97221. Phone: (503) 226-1561. ext. 760; Fax (503) 226-0074; e-mail address: farshid@interserv.com

Historian Correction Note

In the February and March issues of *Animal Keepers' Forum*, the e-mail address for AAZK Historian Mark Levin was printed incorrectly. The correct e-mail address is: FSTZOO@AOL. Com

Seminars on Non-human Primate Chemical Immobilization

Safe-Capture International, Inc. of Mt. Horeb, WI, will be holding two, two-day seminars on "Sedation, Immobilization, and Anesthesia of Non-Human Primates". Guest speakers at the seminars will be Dr. Jan Ramer and Dr. Joanne Paul-Murphy of the Wisconsin Regional Primate Research Center, University of Wisconsin, College of Veterinary Medicine. The first seminar will be held in Orlando, FL from 14-15 May 1997; the second in Madison, WI from 23-24 August 1997.

Topics to be included in the seminars are Humane Capture: How to Minimize Stress, Taming and Training: What's Possible Without Drugs, Remote Drug Delivery Methods: The Latest in Equipment and Technology, Pharmacology for Non-human Primate Immobilization, The Use of Analgesics in Non-human Primates, Species Specific Immobilization Dosage Regimens and Protocols, Anesthetic Monitoring for Captive and Field Procedures, Capture Related Medical Emergencies, and Personnel Safety Protocols.

Each participant will receive a 110-page training manual, including immobilization protocols for over 100 species on non-human primates and certificates will be awarded upon satisfactory completion of the program.

For more information, contact: Dr. Keith Beheler-Amass, Safe-Capture International, Inc., P. O. Box 206, Mt. Horeb, WI 53572. Phone: (608) 767-3071 Fax: (608) 437-5287.



Information Please

We are currently constructing a new series of exhibits to house a variety of African Savannah species and are interested in enrichment features and mechanical devices that can be built-in to the exhibit. Any other ideas dealing with novel food presentation, feeders, toys and perching or substrate ideas would be very much appreciated. The species list is as follows:

Meerkat (*Suricatta suricatta*) Warthogs (*Phacochoerus aethiopicus*)
Spotted Hyenas (*Crocuta crocuta*) Rock Hyrax (*Procapra capensis*)
Vervet Monkeys (*Cercopithecus aethiops*)
Grant's Zebra (*Equus burchelli boehmi*)

Please send responses to: Amy Burgess, Oakland Zoo, 9777 Golf Links Rd., Oakland, CA 94605.

Message from the President

Greetings from the Lone Star State!

There is less than seven months to go till the 1997 AAZK/ZRA National Conference. Y'all will be coming down to one of the most beautiful places in the South. You can sure tell that company is coming around the zoo. There is a lot of sprucing up going on. We are looking forward to seeing you and your friends here in the Bayou City. Elvis and Hoser have started to grow accustomed to this Southern lifestyle.

On to regular business. Our organization annually recognizes individuals, chapters or institutions deserving of one of the five National AAZK Awards. These five awards are the Certificate of Excellence in Exhibit Renovation, the Jean M. Hromadka Excellence in Zoo Keeping Award, the Meritorious Achievement Award, the Lifetime Achievement Award and the Certificate of Merit for Zoo Keeper Education. The criteria for these awards has been published in the March and April 1997 issues of *Animal Keepers' Forum*. Inquiries and nominations should be directed to: Jan McCoy, Awards Committee, Metro Washington Park Zoo, 4001 S. W. Canyon Rd., Portland, OR 97221-2799. Please note the revisions in the qualifications and nominations procedures for the Jean M. Hromadka Excellence in Zoo Keeping Award.

Each year the Board of Directors gives awards in two categories. The Certificates of Appreciation are given to individuals or organizations outside of the American Association of Zoo Keepers, Inc. for deeds on behalf of AAZK and its members. The Certificates of Recognition are given to outstanding AAZK members for their work on behalf of AAZK. Inquiries and nominations for these two award categories should be directed to Awards Committee Board Oversight David Luce, Chaffee Zoo, 4277 W. Princeton, Fresno, CA 93722.

Thank you to all the Chapters that have answered the challenge and made contributions to our Association. Your generous donations are much appreciated. However, we need to continue to support the projects and operations of the Association just as you work hard to support and operate your local Chapters. Be safe and I hope to see you in October.



Ric Urban
AAZK, Inc. President
Houston Zoo, Houston, TX



AAZK Award Nominations Are Now Being Accepted for 1997!

The AAZK Awards Committee is accepting nominations for the **Jean M. Hromadka Excellence in Zoo Keeping (EZ)** and **The AAZK Lifetime Achievement Award (LA)** to be presented at the 1997 AAZK Conference in Houston, TX. The deadline for all award nominations is **1 June 1997**. Information concerning the qualifications, nomination procedure, selection procedure and an explanation of the awards may be obtained by contacting Janet McCoy, Chair, AAZK Awards Committee, Washington Park Zoo, 4001 S.W. Canyon Rd., Portland, OR 97221.

Jean M. Hromadka AAZK Excellence in Zookeeping (EZ) Award - The purpose of the award is to recognize achievement and determination of an individual in the zookeeping field and in fostering professionalism. Zookeeping is a science combining zoology, biology, animal management, behavioral observation and daily record keeping on the collection of species in their care. This is essential knowledge for maintaining a species effectively in captivity. The excellent zookeeper must excel in one or more of these areas, but not be lacking in any of them.

The Excellence in Zookeeping Award was founded by John Siegel, 1974-1975 CHAIR, in 1974. The original name of the award was the Marlin Perkins Award, named after the famed zoologist who started his career as a zookeeper. The name was changed in 1978 to the EZ award. In 1990, the name was changed to the Jean M. Hromadka Excellence in Zookeeping Award in memory of her outstanding contributions to the furtherance of AAZK through committee work and as President. The award is presented at the annual AAZK National Conference.

Qualifications:

1. The nominee **must** be a full-time animal keeper, employed in any North American zoological institution, aquarium or related facility for at least five years.
2. The nominee **must** have been employed at least two years on permanent status at the same zoo, aquarium or related facility.
3. The nominee **must** be nominated by his or her peers who have also been employed at that same zoo, aquarium or related facility. Supporting nominations may be submitted by management personnel from the same institution.

Nomination Procedure:

1. List name, position, institution's name, address, phone and Director, years of service in the field and the recommendation of peers or colleagues.
2. List and **document** commitment to the profession, outstanding achievements, practical/outstanding application of knowledge and experience, and keeper skills, etc. **Verification** of these facts must be signed by the zoo director, curator, or immediate supervisor of the individual being nominated.

3. List any extra activities outside of zoo, aquarium or related facility work: working with conservation groups, youth, wildlife officials, etc.
4. Deadline for nominations is **JUNE 1st** of each year.

Selection Procedure:

The Awards Committee, consisting of five keepers, will independently review each nominee.

LIFETIME ACHIEVEMENT (LA) Award - This award is to be given at the end (retirement) of a keeper's career. The purpose of the award is to recognize outstanding commitment to professionalism as a zoo keeper over a long period of time, and significant contributions to the community.

The Lifetime Achievement Award was established by the 1993 Awards Committee, Janet McCoy, Chair. Rachél Rogers proposed the award to the AAZK Board of Directors. The award is presented at the annual AAZK National Conference.

Qualifications:

1. The nominee **must** be a full-time keeper retiring from a career of zoo keeping and employed in any North American zoological institution, aquarium or related facility.
2. The nominee must have been employed at least twenty years on permanent status at a zoo, aquarium or related facility.
3. The nominee **must** be nominated by **two** of his or her peers who have also been employed at that same zoo, aquarium or related facility. Supporting nominations may be submitted by management personnel from the same institution.

Nomination Procedure:

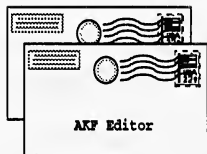
1. List name, position, institution's name, address, phone and Director, years of service in the field and the recommendation of peers or colleagues.
2. List and **document** outstanding achievements: exhibits, breeding, education, project participation, papers, etc. **Verification** of these facts must be signed by the zoo director, curator, or immediate supervisor of the individual being nominated.
3. Describe extra activities outside of zoo, aquarium or related facility work: working with conservation groups, animal related youth groups, rehabilitation wildlife officials, etc.
4. Paragraph of why the nominee fits the criteria.
5. Provide 3 - 5 references.
6. Deadline for nominations is **JUNE 1st** of each year.

Selection Procedure:

The Awards Committee, consisting of five keepers, will independently review each nominee.

The American Association of Zoo Keepers, Inc. (AAZK) is the administering organization of these awards d presented by the AAZK Awards Committee. The character of these awards includes; a plaque, letter of notification to the institution's director and national recognition by professional journals. Such journals include: the American Zoo and Aquarium Association (AZA) and the Canadian Association of Zoological Parks and Aquarium (CAZPA) Newsletters, Animal Keepers' Forum (AAZK), Awards, Honors and Prizes: Volume 1; United States and Canada. The latter is published by Gale Research Company based in Wheaton, MD and found in medium to large sized libraries across the U.S. and Canada.

Award Nomination Submission Deadline is 1 June 1997



Letters to the Editor

Dear Editor,

I just finished reading Mr. Hansen's interesting article on Zoonotic Diseases and Expectant Parents. However, before everyone panics, perhaps, the most common risks for Salmonella and Campylobacter are improper handling of chicken and eggs, so your kitchen at home is equally dangerous! And take caution with Caesar salads and your local fast food restaurants! Also, probably the most common cause of infectious hepatitis is contaminated seafood and again, improper food handling. Another major source of contamination few people ever think or talk about is bathroom fixtures and handles! I catered professionally and proud to say, in five years of work, never made anyone ill, so am very aware of these very common dangers.

Frequent hand washing and washing of surfaces is probably the most important health precaution anyone can take.

Sincerely,

Rena Schilsky
AAZK Member
New York, NY

Coming Events

AZA Central Regional Conference, May 15-18, 1997 - Cleveland, OH. For further information contact Jim English, Cleveland Metroparks Zoo, 3900 Brookside Park Dr., Cleveland, OH 44109 (219) 661-6500.

The New World Primate Symposium - May 18, 1997. To be held in conjunction with the AZA Central Regional. For further information contact Alan Sironen, Cleveland Metroparks Zoo at (216) 661-6500 or Lee Nesler, Pittsburgh Zoo at (412) 665-3651.

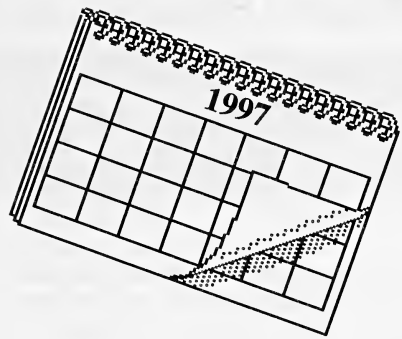
The Bear Essentials: a workshop on exhibiting, behavior and conservation of bears - May 18-19, 1997. Will be held at conclusion of the AZA Central Regional. For further information contact Bear TAG Co-Chair Diana Weinhardt, Houston Zoo, 1513 North MacGregor, Houston, TX 77030.

3rd International Small Felid Workshop May 27-29, 1997 in Las Vegas, NV. Sponsored by the Zoological Society of San Diego and SOS Care, this year's focus will include representatives from range countries and small felid populations on other continents. Presentations will include field studies, enrichment, housing, husbandry, diets, veterinary perspectives, infant nutrition, and much more. For further information and registration packets contact: Pat Quillen, 15453 Woods Valley Rd., Valley Center, CA 92082 Phone: (619) 749-3946; Fax (619) 749-1324.

The Regional Aquatic Workshop - June 12-14, 1997. Hosted by Omaha's Henry Doorly Zoo. For further information contact Kathy Vires, Aquarium Supervisor, Omaha's Henry Doorly Zoo, 3701 South 10th St., Omaha, NE 68107-2200.

The Annual Invertebrates in Captivity Conference - July 31-Aug. 3, 1997. To be held in Tucson, AZ. For further information contact the Southern Arthropod Studies Institute, P. O. Box 5624, Tucson, AZ 85703; phone (6520) 883-3945; fax (520) 883-2578; e-mail: ArthroStud@aol.com.

Association of Avian Veterinarians - Sept. 9-13, 1997 in Reno, NV. To request registration information call AAV at (303)



756-8380 or fax (303) 759-8861 or e-mail (AAVConOfc@aol.com) or mail request to AAV, 2121 So. Oneida St., Ste. 325, Denver, CO 80224.

AZA Annual Conference - September 14-18, 1997 - Albuquerque, NM. For further information contact Terry Axline, Albuquerque Biological Park, 903 Tenth St., S.W., Albuquerque, NM 87102 (505) 764-6200.

AAZK National Conference - October 5-9, 1997 in Houston, TX. Watch the *Forum* for information or contact Christine Smith or Ric Urban at the Houston Zoo, 1513 North MacGregor, Houston, TX 77030; (713) 520-3200.

American Association of Zoo Veterinarians Annual Conference - October 26-30, 1997 in Houston, TX at the Sheraton Astrodome. For conference information contact: Wilbur Armand, VMD, Executive Director/AAZV, 6 North Pennell Rd., Media, PA 19063; Phone (610) 358-9530; Fax (610) 892-4813.



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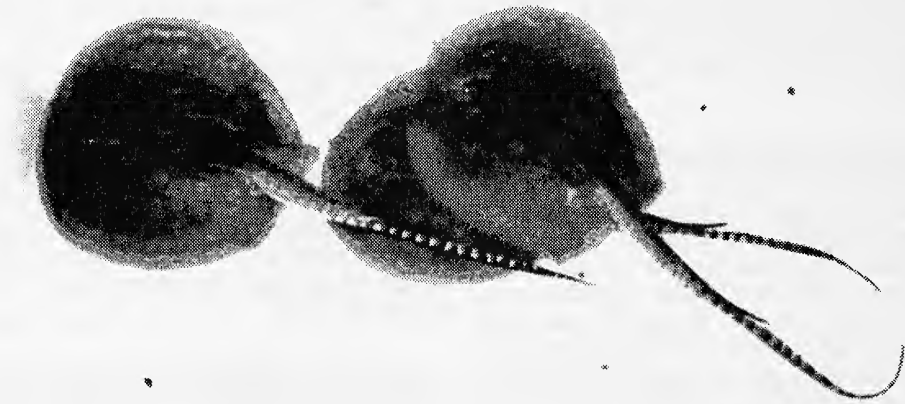
RATS AND MICE

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Notable Hatching at Moody Gardens

On 20 December, 1996, a freshwater stingray pup was discovered in a mixed species exhibit containing a young female ocellated stingray (*Potamotrygon motoro*), and a recently introduced adult male dwarf stingray (*Potamotrygon magdalenae*). Two additional pups were found in the exhibit on 25 December and 26 December. The three pups were removed to a holding tank to monitor feeding behavior and avoid predation in the exhibit.

The pups were weighed and measured on 29 December. The average size and weight was 10.16cm disk width, 23.5cm total length, and 64g (4 in. width, 9.25 in. total length, 2.26 oz.). The color and pattern of all three pups closely resembled that of the dwarf stingray, with an overall brown hue with darker, regular reticulations around the marginal area of the disk and dark reticulated striations on the long, filiform tail.



Potamotrygon magdalenae x P. motoro pups (Photo by Greg Whittaker)

Personal communications (Hemdal, Hiler, Klocek, Mottice, Sweet) revealed the ability of female ocellated stingray to withhold sperm for periods of up to a year prior to fertilization. The circumstances surrounding this reproduction eliminated sperm withholding as a possibility, leaving hybridization as the only explanation.

There was some precedence of hybridization within the genera *Potamotrygon* (Klocek, per. com.), with reported reproduction of ocellated stingray and *Potamotrygon orbignyi* (unknown common name) at the John G. Shedd Aquarium.

Information regarding *Potamotrygon* reproduction and documented hybridization is requested. Please contact: Moody Gardens, Greg Whittaker, Aquarium Supervisor, One Hope Blvd., Galveston, TX 77554. Phone: (800) 582-4673, ext. 259 Fax: (409) 740-4145

References

- Hemdal, Jay. Toledo Zoological Gardens, Toledo, OH. Personal communication.
- Hiler, Ian. Aquarium of the Americas, New Orleans, LA. Personal communication.
- Klocek, Roger, John G. Shedd Aquarium, Chicago, IL, Personal communication.
- Mottice, Rob. Tennessee Aquarium, Chattanooga, TN. Personal communication.
- Sweet, Doug. Belle Isle Zoo Aquarium, Royal Oak, MI. Personal communication.



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1996 Conference Proceedings Final Chance to Order

Conference Proceedings for those individuals who ordered copies were mailed in mid-February. Gratis copies were mailed to authors who submitted their manuscripts for inclusion in this publication. A limited number of copies of the 1996 Conference Proceedings are now available on a first-come, first-served basis. The costs are:

AAZK Member \$25.00

Non Member \$35.00

Postage for U.S. orders is included. Canadian and overseas orders should add \$4.00 for Air Mail postage to Canada and Surface postage elsewhere. Overseas orders wishing Air Mail service should add \$10.00. Make checks payable to AAZK, Inc. We will accept Visa and Mastercard orders with completed form below or phone orders may be placed at 1-800-242-4519 (U. S.) or 1-800-468-1966 (Canada) when using a credit card.

A listing of the papers included in the Proceedings may be found in the December 1996 and January 1997 issues of *Animal Keepers' Forum*.

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After these copies are sold out, individual papers will be available for \$3.00 each

Second Call for Papers

"Conservation is an Attitude" is the theme for the paper sessions and workshops at the 1997 AAZK/ZRA National Conference. Any topic related to the care of captive exotic animals will be considered, however, those that involve new animal care techniques, significant achievements and special projects, technical innovations and fresh approaches toward captive animal management and conservation may be given priority.



24th National AAZK Conference • 1997

The Program Committee is expecting a record number of abstract submissions, so early contact with the Program Committee Chair is critical. Abstracts will be accepted for review **until 15 July 1997**. Abstracts should be limited to one or two paragraphs, should clearly describe the significance of the presentation topic, and should briefly list the results, conclusions or benefits of the work described. Because the abstracts will be printed in the conference program, it is essential that submissions be well-organized and clearly written. Abstracts that are poorly written, that do not contain proper submission information, or do not otherwise meet submission criteria will be returned with a letter rejecting the abstract outright or else suggesting the corrections or alterations required for acceptance.

Upon acceptance of a paper or workshop abstract, a letter of notification will be mailed to the presenter. Guidelines for preparing manuscripts for publication in the 1997 AAZK Conference Proceedings will be supplied to speakers by AAZK Administrative Offices. A correctly formatted manuscript for publication in the Proceedings **must** be submitted to the Program Committee **prior** to the speaker's presentation at the Conference. If such a manuscript is not provided, the speaker will not be able to present his/her paper to the delegates and will be barred from speaking at an AAZK National Conference for a period of three years. There will be **no exceptions**.

Abstracts must include the following information: Name of Presenter and Co-Authors, Zoological Affiliation, Position/Title, Title of Paper/Title of Workshop, Audiovisual Equipment Needs.

Send abstracts to: Stan Mays, Program Chairperson
'97 AAZK/ZRA National Conference
Houston Zoological Gardens
1513 North MacGregor Way
Houston, TX 77030

The Program Committee is eager to assist anyone who has an idea for any kind of presentation: formal paper, workshop, poster presentation, panel discussion, etc. Additional information and advice on the design and development of presentation ideas may be obtained by contacting the Program Committee Chairperson.

Enrichment Notebooks Now Available to Institutions

The AAZK Enrichment Committee, under the direction of Dianna Frisch (now retired keeper/Columbus Zoo) gathered enrichment ideas and information and, with generous underwriting from the Columbus Zoo, put together an Enrichment Ideas Notebook. This Notebook was made available to institutions at the 1996 National AAZK Conference held in Detroit, MI. The remaining inventory of the Enrichment Notebook has been transferred to AAZK Administrative Offices in Topeka, KS.

At the current time, AAZK and the Enrichment Committee would like to continue to make these available to institutions that did not have their representative claim one at Detroit. If your institution is not included on the list below, and you would like to have a copy, do the following: 1) complete the form below and 2) send a check or money order made payable to AAZK, Inc. for \$10.00 (domestic) or \$15.00 Canadian and foreign to cover postage. Send this request and payment to: AAZK, Inc. 635 S.W. Gage Blvd., Topeka, KS 66606-2066. Each institution may receive **ONLY** one notebook at this special price.

Copies to institutions for only the cost of postage will continue **until 1 July 1997**. After that time there will be a fee charged for the Enrichment Notebook and they will also be made available to individuals for purchase.

The following institutions have **already claimed** their copy of the AAZK Enrichment Notebook: African Wildlife Safari, Akron Zoo, Arizona-Sonora Desert Museum, Assiniboine Park Zoo, John Ball Zoo, Belle Isle Zoo, Benchner Park, Bergen County Zoo, Blank Park Zoo, Brookfield Zoo, Brookgreen Gardens, Buffalo Zoo, Caldwell Zoo, Calgary Zoo, Capron Park Zoo, Chaffee Zoo, Chehaw Wild Animal Park, Cleveland Zoo, Clinder Park, Dallas Zoo, Denver Zoo, Detroit Zoo, Disney Animal Kingdom, Ellen Trout Zoo, Franklin Park Zoo, Ft. Wayne Children's Zoo, Great Plains Zoo, Greater Baton Rouge Zoo, Gulf Breeze Zoo, H. D. Mt. Road Menagerie, Honolulu Zoo, Houston Zoo, Independence Oaks Nature Center, Indianapolis Zoo, Jackson Zoo, Jacksonville Zoo, Kansas City Zoo, Lincoln Park Zoo, Lube Foundation, Memphis Zoo & Aquarium, Mesker Park Zoo, Metro Washington Park Zoo, Miami Zoo, Mill Mountain Zoo, Milwaukee County Zoo, Newark Museum Mini Zoo, Niabi Zoo, North Carolina Zoo, Oakland Zoo, Omaha Zoo, Oschner Park Zoo, Philadelphia Zoo, Potawatomi Zoo, Potter Park Zoo, Racine Zoo, Rio Grande Zoo, Riverbanks Zoo, Roger Williams Park Zoo, St. Louis Zoo, San Diego Zoo, San Francisco Zoo, Seneca Park Zoo, Storybook Gardens, Sunset Zoo, Thompson Park Zoo, Toledo Zoo, Topeka Zoo, University of Colorado, Valley Zoo, Woodland Park Zoo and Zoo Aves.

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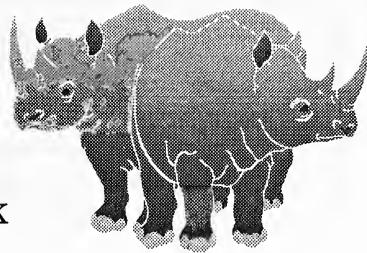
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Person requesting notebook: _____

Title/Position: _____ Date: _____

Bowling For Rhinos Update

--- *Patty Pearthree, National BFR Coordinator
Indianapolis Zoo, Indianapolis, IN*



The top two money raisers each year win a two week trip to Lewa Wildlife Conservancy (LWC). In order to qualify, you must be a National AAZK member in good standing and all your money must be turned in by the **1 September 1997 deadline**.

Each person may win only once. Don't let this opportunity pass you by. It just takes planning and some hard work, but it is well worth it!

Now is the time to start thinking about your 1997 events, form a committee and get rolling! Postcards were mailed to Chapters requesting information on your event date. Please put BFR on your Chapter's next meeting agenda and let me know the date of your event and how many sponsor forms you need. If you did not receive a postcard, **please drop me a line at: Patty Pearthree, P. O. Box 199026, Indianapolis, IN 46219-9026**. If you have questions, please call at (317) 322-8723 or e-mail at: ppear3@aazk.ind.net

AAZK is now assessing a **\$25 registration fee** for each Chapter or institution hosting a BFR event (see Jan. 1997 *AKF* - page 3 for details). This is a fee which must come from your Chapter or organization, **not** from BFR monies. This fee will pay for all materials such as sponsor sheets, postage, international bank transfer fees to Africa, and additional expenses associated with the management of BFR which exceed our event operating budget. Checks should be made payable to AAZK, Inc. and mailed to Patty Pearthree at the address above as soon as possible.

I will be out of the country 22 June to 14 July, so please make sure you have plenty of sponsor forms in hand.

"Bowling For Rhinos Sanctuary" Trip Rules

1. The top two money raisers each year in "Bowling for Rhinos" will each win a two-week trip to Lewa Wildlife Conservancy near Isiolo, Kenya.
2. The two (2) individuals will visit the Sanctuary together and arrange their trip with the assistance of the BFR Coordinator and through the AAZK Administrative Office.
3. The two winners may each bring a guest, **but** the guest must pay their own expenses and be able to lodge in the same room as the winner.
4. The winners' trips are paid for from a fund administered by the Lewa Wildlife Conservancy and AAZK, Inc. These funds are derived from 4% of the yearly BFR monies raised and/or funds contributed to LWC and AAZK, Inc.

The allowance for each plane ticket shall not exceed \$1700 (1997).

5. The winners **must** be paid, national AAZK members at the time of their bowling event.

6. The same person can only win the trip once. This is to encourage more people to try to win, and give an opportunity for more people to visit the Rhino Sanctuary and see the benefit of their hard work.

7. Canadians count their total funds raised in Canadian currency. Therefore, if a Canadian member raises \$5,000 but it only equals \$3,000 in U.S. dollars, the \$5,000 amount counts in the contest.

8. Only money which is turned in to the BFR National Coordinator **by 1 September 1997** will be counted in this year's contest.

South Africa To Lobby For Legal Trade In Rhino Horn

South Africa recently announced that it would ask the Convention on International Trade in Endangered Species (CITES) to allow legal trade in white rhino horn. Cabinet secretary Jakes Gerwel told a news briefing that government officials would make a request at the CITES meeting in Zimbabwe in June.

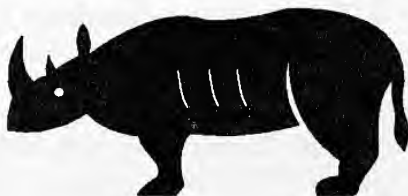
“Cabinet approved that the Department of Environmental Affairs make a submission ... to amend the annotation of the listing of the South African white rhinoceros ...which would allow the establishment of the legal trade in rhino horns,” he said.

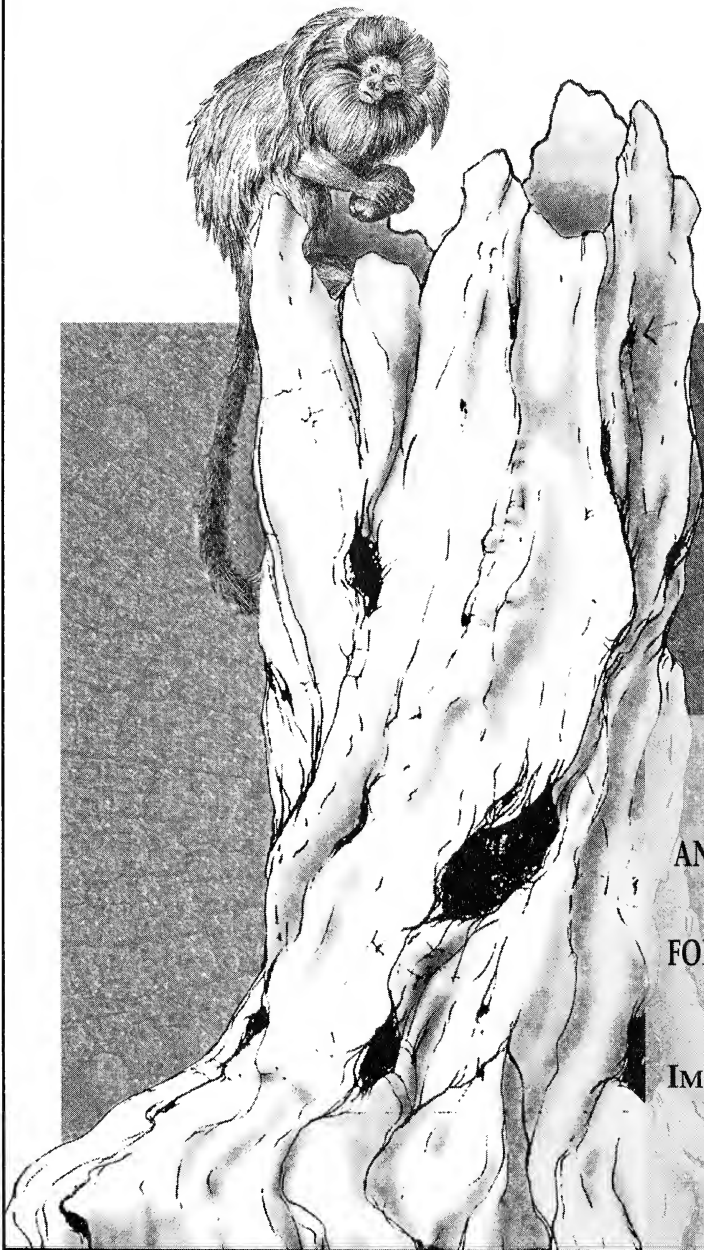
Rhino horn, which reach up to \$55,000 in resale value, are highly valued in Asia for traditional medicines and in Yemen as ornately carved handles for daggers.

Four other southern African countries - Botswana, Malawi, Zimbabwe and Namibia — said in December they would lobby CITES to sell most of their stockpiled ivory to Japan.

South Africa's Gerwel did not comment on elephant products.

Source: Reuters News Service Jan. 22, 1997





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Animal Behavior Concerns & Solutions

A Question and Answer Forum for the Zoo Professional

By Diana Guerrero

Independent Behavior Consultant, Ark Animals of California, San Diego, CA

QUESTION

Is there a specific recommendation you have for teaching an animal to accept a leash and collar and walk on lead?

NOTE: Please remember that all items discussed in this column are suggestions to help assist you in various matters. Due to space constraints it is not possible to go into all the techniques or nuances necessary to address the topics completely.

LEASH TRAINING SUGGESTIONS

Depending on what species you are working with will determine what type of leash and what approach you will use. Training an animal to accept a leash and the restraint on one is important for a variety of reasons. Why?

Teaching an animal to accept leash restraint allows you all more freedom. It makes life much easier to do the normal activities and some of the not so normal ones! If you have to go to the Veterinarian, move the animal safely from one environment or cage to another, desire the animal travel with you, or just want to enrich their life with walks or experiences outside their normal environment then this is a must!

This control is also best introduced at a young age in "short & sweet" sessions. Go too fast and the animal will never be cooperative or will dislike the leash. Once trained it won't be an issue and actually will be pretty well accepted. Primates usually will be kept on a waist chain or belt. Carnivores range from having harnesses (like skunks) to collars. Each has their own peculiar needs but since the question was specific for a felid, that is what will be discussed.

If leash work is started as a kitten or cub, leave the collar on them a lot while you are in attendance. Once they are fairly comfortable with it on, introduce attaching a light chain to it. I prefer to construct my own chains with pieces from a hardware store, but a light chain-type dog leash could work. Leather or fabric is not recommended since it will not last and they will tend to want to chew and play with it.

To construct a "cat chain" you will need:

- passing link chain (links that don't knot up but pass by each other)
2 pieces of 3-foot (small cats) or 2 pieces of 4-foot lengths (big cats)
- one well constructed swivel (especially for the big cats, you don't want one that breaks or will pull apart !)
- 3 French links (this connects the chain to the handle and the swivel)

- 2 double clips or 1 double clip and 1 one-sided clip (I like the double clips since you can replace them easily if the springs wear down or don't close right)
- Steel ring for a hand piece (marine supply stores will have some if your hardware store doesn't)

Once you have constructed your chain you will introduce it by clipping it on the collar. Don't allow them to think that it's a toy, it's not to be played with. Walking them at a young age, which basically consists of letting them walk while you hold the leash and follow them.

Later you will stop once in while and let them feel the pressure at the end of it. If they fight it, distract them and then when they stop, get down and coax them to you. This gives them a positive association with not fighting the leash and often makes them forget or stop fighting it. The reinforcement here can be considered to be relief of pressure and praise.

When they get a little older you will want to stake them out in an enclosed area. You will need to make sure you have a very secure and deep stake since this is a very valuable lesson and you will not want anything to go wrong. Staking out an animal teaches them!

They cannot move against the cat chain. It reinforces the lesson of yielding to the end of the line. Once they understand they must yield to the pressure, they can be guided easily when walking on the lead. When they get bigger (in the case of lions and tigers especially) this psychological lesson is critical!

When walking, if the cat is going in the right direction, stay right with them by their side. Remember, you pick the direction you are walking at this stage. If they begin to go in the wrong direction, stop or take up the slack and hold the line taut.

The only direction that they are allowed a "free rein" is in the correct direction. If a cat balks or lays down, never pull! Stop and wait or crouch and see if you can coax them. If they learn to fight it they may slip right out of the collar or learn to hate it. Some cats will even imitate a felid helicopter on the end of a leash. It may be amusing but it is not fun!

If they balk, sometimes to get them motivated, you can get behind them and encourage them by a little nudge. Sometimes just getting behind them will be enough motivation or you can try lightly touching them on the rump or tail with your toe to prompt them on. Remember to reinforce all these things with vocal praise and commands (not repetitively or they learn to ignore you). If appropriate, use tactile reinforcement when a goal has been reached or when they have made a "good decision." Food is not something you use with wild animals for this behavior. They should do it because it is a normal day to day requirement. Many animals will become possessive or focus their attention only on the food if you use it.

Another thing worth mentioning might be how to "pick them up". This is the term used when you attempt to collect them from a cage or put the lead on them

once they are older and on a stake-out chain. Hold the clasp in one hand (right) with the end (with the ring handle) in the other (left) hand, this other hand (left) is also holding a section of the chain down about a foot or so from the clasp end, where you will hook the clasp to itself to form the collar. Once connected I like to use the extra clip, also already attached on one side of the first clip, as a safety measure. Clip it on so that if one releases the other clip will hold the chain collar intact and prevent escape.

Picking up an animal in a cage is a technique that is a good one to learn. Once you are ready with the chain and clips, have the backup open the door and allow the cat to walk right into the outstretched foot long section between your hands, going across the chest. Then quickly bring your hands together above the head and connect it. When you are in the cage and while they are greeting you is another time this can be done. Remember though, most problems occur in their territory on the entry or exit.

You will have the most control this way by the cat walking into the chain. The head should be facing away from you. Once you get quick and fluid at this, the cat doesn't have a real clue what you've done. They just know that somehow they are instantly on a chain when their cage door is opened.

On a final note, one of the private cat facility directors suggested I cover the role of the back-up with a pick up line or chain. This is a strategy she uses for difficult cats or for chain-breaking an adult. The back-up trainer has an identical chain setup with a clip on the end that can quickly clip onto the collar and center the cat between the back-up and main trainer. This is important if the cat gets over affectionate since it can get the animal under control before the behavior can escalate or develop into full aggression. Hope this helps you with some ideas regarding leash training.

ACKNOWLEDGMENT

Special thanks to Ms. Dawn Simas of "Wild About Cats" for her review, comments and additional suggestions.

Next Month: Orangutan Integration

(About the Author: Since 1978 Diana has been active both in the U. S. and England working with zoos, private collections, an oceanarium, a marine aquarium, and other animal-related organizations involving captive wildlife. She has a broad base of animal experience involving movie & television training, zookeeping, show performances with live animals, education, behavior management, modification and enrichment, rescue and rehabilitation as well as captive breeding and management of endangered species. She currently works as an Animal Behavior Consultant and Trainer for Ark Animals of California working with both exotic and domestic animals. She has authored numerous articles on animal behavior and training. If you have questions for Diana, you may contact her at 1-800-818-7387. NOTE: The Ark Animals's Website has completed the change to Electronic Magazine Format. The "Zine" will feature articles related to captive animal behavior, enrichment, conservation, and similar topics. The publisher welcomes electronically submitted articles (previously published or new work) and event announcements. Deadline is the 10th of the month previous to publishing. Interested parties may contact the publisher at arkabc@ix.netcom.com Site address is <http://>

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- \$ 9.95 \$ 7.95 **America's Neighborhood Bats** by Merlin D. Tuttle. Written by a leading authority, in a clear and easy to understand text, this book provides a wealth of information on bat behavior, biology, range, and species identification. A glossary, list of additional sources, and full-color photographs make this book especially interesting. 96 pgs., b&w and full-color photographs.

Previous books offered may still be available, some with price increases. **To order:** List the books you want with your name and complete mailing address. Include shipping fee of \$2.00 for the first item and \$1.00 for each additional item. Make checks or money orders payable to "AAZK Book Sale" (**US Funds ONLY - no cash or CODs, please**). Postal rates apply to U.S. orders only - call if interested in shipping outside U.S. **Mail to:** AAZK Beardsley Zoo Chapter, attn: Gail Rice, 1875 Noble Ave., Bridgeport, CT 06610-1600. Phone: (203) 576-8126.

ZIDP - Reptiles/Amphibians: An Update

Just a reminder that the Zoo Infant Development Project (ZIDP) is still going on for reptiles and amphibians. Below is a list of the species for which forms have already been received and the institutions from which the form was submitted. As you can see the list has many gaps and we need your help to make this project complete. Please review the list and see if your institution can contribute to this important project. Following this notice are forms for both Reptiles and Amphibians, as well as the Release Form. Feel free to photocopy this pull-out form for your institution's use in submitting data. The addresses for submission of forms are also included in this pull-out.

ZIDP Forms Received for Reptiles

Brandywine Zoo - Yvonne Maruer: Leopard Tortoise (*Geochelone pardalis*); **Minnesota Zoo** - Becky Heller: Black-breasted Leaf Turtle (*Geomyda spengleri*); **Santa Fe Community College** - Kathy Russell: Red Foot Tortoise (*Geochelone carbonaria*); Boa Constrictor (*Boa constrictor constrictor*); Florida Kingsnake (*Lampropeltis getulus floridana*); **Zoo America (Hershey)** - Ann Holzman: Desert Tortoise (*Gopherus agassizii*); Gila Monster (*Heloderma suspectum*); **St. Augustine Alligator Farm** - Lynn Kirkland: San Lucan Speckled Rattlesnake (*Crotalus m. mitchello*); Chinese Alligator (*Alligator sinensis*); **Jungle Larry's Zoological Park** - Rebecca Speer: Solomon's Island Prehensile-tailed Skink (*Corucia zebra*); **Las Vegas Reptile** - Bob Pierson: Desert Tortoise (*Gopherus agassizii*); **Lee Richardson Zoo** - Jeff Bullock: Boa Constrictor (*Boa constrictor constrictor*); **Reid Park Zoo** - Ed Hansen: Leopard Tortoise (*Geochelone pardalis babcocki*); **Turtle Back Zoo** - Allen Foust: Spot-legged Turtle (*Rhinoclemmys punctularia*); Giant Asian Land Turtle (*Heosemys grandis*); Diamond-backed Terrapin (*Malaclemys terrapin*); Snake-eating Turtle (*Cistoclemmys flavomarginata*); **Point Defiance Zoo** - Rebecca Stocker: Emerald Tree Boa (*Corallus caninus*); Gila Monster (*Heloderma suspectum*); Blue-tongued Skink (*Tiliqua gigas*); Desert Rosy Boa (*Lichanura trivirgata gracia*); **Central Florida Zoo** - Mike Welker: Florida Pine Snake (*Pituophis melanoleucus mugitus*); Fer-de-Lance (*Bothrops atrox*); Boa Constrictor (*Boa constrictor constrictor*); Green Mamba (*Dendroaspis angusticeps*); Palm Viper (*Bothrops bilineatus bilineatus x smaragdina*); Eyelash Viper (*Bothrops schlegeli*); Madagascar Day Gecko (*Phelsuma standingi*); **Rotterdam Zoo** - Gerard Visser: Geoffroy's Side-necked Turtle (*Phrynops geoffroanus*); W. Hinge-back Tortoise (*Kinixys belliana nogueyi*); New Guinea Red-bellied Turtle (*Emydura albertisii*); Black Spiny-tailed Lizard (*Uromastix acanthinurus*); Rhinoceros Iguana (*Cyclura cornuta cornuta*); Philippine Sail-finned Lizard (*Hydrosaurus pustulatus*); Fiji Island Banded Iguana (*Brachylophus fasciatus*); Ridge-tailed Monitor (*Varanus acanthurus*); Lace Monitor (*Varanus varius*); African spurred Tortoise (*Geochelone sulcata*); Chuckwalla (*Sauromalus obesus*); Dwarf Dragon Lizard (*Amphibolurus randuni*); Taiwan Beauty Snake (*Elaphe taeniura taeniura*); Macklot's Python (*Liasis mackloti*) **Perth Zoo** - Dean Burford: W. Swamp Tortoise (*Pseudemydura umbrina*) **Gregory Michaels - Private Breeder**: Mediterranean Spur-thigh Tortoise (*Testudo graeca*)

ZIDP Forms Received for Amphibians

Lee Richardson Zoo - Jeff Bullock: White's Tree Frog (*Litoria caerulea*); **Cheyenne Mt. Zoo** - Andrea Bernee: Wyoming Toad (*Bufo hemiophrys baxteri*); **Cape May County Zoo** - Stephen Serwatka: Green and Black Arrow Frog (*Dendrobates auratus*); **Omaha's Henry Doorly Zoo** - Diana Callaway: White's Tree Frog (*Litoria caerulea*); and **Santa Fe Community College Teaching Zoo** - Cathy Russell: Green and Black Arrow Frog (*Dendrobates auratus*)

American Association of Zoo Keepers Zoo Infant Development Project Reptile/Amphibian Data Sheet Guidelines



AZA
AMERICAN ZOO AND AQUARIUM
ASSOCIATION

With the contribution of a variety of institutions' information, the Reptile/Amphibian section of the Zoo Infant Development Project will thoroughly outline all pertinent information required for breeding a wide range of species.

1. Despite the length of the Amphibian Data Sheets, they are both fairly simple to fill out. Please fill in all that you can. Any amount of information you can submit is important.
2. If you have additional information you feel is pertinent, please place it in the Miscellaneous Comment section. If further space is needed, please use additional paper.
3. Within specific categories, please add as much information as you can (i.e. amounts of food actually consumed, etc.)
4. All data is intended for publication - please take note to sign the ZIDDP release form below and return with data sheets.

Please return data information sheets as promptly as possible. This is the first herptile project of this type and your information is critical to its completion!

SEND COMPLETED FORMS TO:

A.A.Z.K. Reptile Infant Development Data Sheet



Date: _____
Submitted By: _____
Position: _____
Institution: _____
Address: _____
Phone: _____

Common Name: _____
Scientific Name: _____

PARENT INFORMATION

Approximate age of sexual maturity: _____
Male/Female ratio during breeding season: _____
Hibernation/Dormancy period provided: _____
Temperature during hibernation/dormancy period: _____
Adult Diet/Supplements: _____

Behavioral Irregularity of female prior to egg laying: _____

ENVIRONMENTAL FACTORS



A.A.Z.K. Amphibian Infant Development Data Sheet

Date: _____

Submitted By: _____

Position: _____

Institution: _____

Address: _____

Phone: _____

Common Name: _____

Scientific Name: _____

REPRODUCTIVE HISTORY

Breeding Season: Fall Winter Spring Summer *(please circle)*

Hibernation/Domancy/Drying Period Provided: Yes No *(please circle)*

Temperature of Hibernation/Domancy/Drying Period: _____

Male/Female Ratio During Breeding Season: _____

Artificial Means Used to Promote Breeding Behavior: Yes No *(please circle)*

If Yes, what means? _____

Breeding Occurred on: Land or Water *(please circle)*

Diet Supplements Fed During Breeding Season or While Gravid: _____

A.A.Z.K. Amphibian Infant Development Data Sheet

Parental Participation or any Unusual Incubation Strategies: _____

Special Needs Concerning Egg Care: _____

Incubation Time (days): _____ Approximate # of Eggs Hatched: _____ # Infertile: _____
Any Fungus on Eggs During Incubation Yes or No (please circle)
If YES, treated with: _____

METAMORPHOSIS

Air Temperature: _____ Environment - Land OR Water (please circle)
Temperature and Depth of Water: _____ Lighting: _____
Appearance of Larval/Tadpole Form: _____
of Individuals per Vivarium: _____
Length of Time for Larval Stage: _____

MISCELLANEOUS COMMENTS

EGG LAYING

Temperature: _____ Lighting: _____ Humidity: _____
Special Plantings or Objects Provided to Lay Eggs On or Under : _____

Approximate # of Eggs Laid: _____ Coloration of Eggs: _____
Eggs Laid: Singly or In a Mass (please circle)
Eggs Placed: Above Water Level or Below Water Level (please circle)
pH: _____ GH: _____ Any other important water chemistry values: _____

INCUBATION

Artificial or Natural (please circle)
Medium/Substrate Used and Depth: _____
Type of Water Circulation/Filtration /Rain System Used: _____

Water Depth: _____ Water Temperature: _____
pH: _____ GH: _____ Any other important water chemistry values: _____
Frequency of Water Change: _____ Partial: _____ Complete: _____
Air Temperature: _____
Lighting: _____



Air Temperature: _____ Water Temperature: _____ Substrate Temperature: _____

INCUBATION

Natural: _____ Average Egg Weight: _____ Clutch Size: _____
Incubation Medium/Egg Placement: _____

Incubation Substrate Ratio: _____
Incubation Temperature: _____ Substrate Temperature: _____
pH: _____ Humidity: _____ Mist Frequency: _____
Incubation Time (days): _____
Hatching Date: _____ # Infertile: _____ # Full Term Dead: _____
Hatchling Weight (avg.): _____ Hatchling length (avg.): _____

DIET

Date of 1st shed or full yolk absorption: _____
Diet/Supplements Offered to Hatchlings: _____

Date of first food intake: _____
Feeding Schedule: _____
Feeding Strategies used: _____

MISC. COMMENTS



P.O. Box 540
Newark, NJ 07101-0540
(201) 596-6555

Denver, CO 80205
(303) 331-5843 (Leave message)

AAZK Zoo Infant Development Project
RELEASE FORM

All information submitted is intended for publication.
I have complied with the guidelines of my institution regarding
publications and have received all necessary approval.

(name of person submitting data - PLEASE PRINT)

Date

signature of person submitting data

Institution



REACTIONS

A Question and Answer Forum for the Zoo Professional on Crisis Management

*By William K. Baker, Jr.
Zoologist - Lufkin, TX*

QUESTION: What is a law enforcement protocol agreement?

LAW ENFORCEMENT PROTOCOL AGREEMENT

A Law Enforcement Protocol Agreement is essentially an agreement between a zoological institution and members of the law enforcement community that defines authority and spheres of influence in a Crisis Management Situation. The purpose of the agreement is to develop a formal understanding that states exactly what actions may be taken by the institution and law enforcement officials in the event of a dangerous animal escape. This agreement can be either written or verbal. For reasons of liability and litigation, I recommend a written legal document. The agreement would typically address two key areas:

1. It should establish at what point law enforcement officers may or may not enter the grounds of a facility in the event of a dangerous animal escape. Traditionally, zoological institutions prefer to deal with animal escape situations themselves. Numerous institutions have developed their own Shoot Teams, Emergency Response Teams (ERT), or Crisis Management Teams (CMT). These programs are often developed in-house or with the assistance of local law enforcement officials. However, some institutions may elect not to pursue this course of action and have elements of the law enforcement community (SWAT, HRU, or HRT) enter the facility and insure that the animal is contained. The key issue is at what point, if at all, may law enforcement enter the facility.
2. It should establish at what point staff members may or may not be allowed to leave the grounds of the facility in pursuit of a dangerous animal. This is relevant when considering that an animal could evade containment and bypass the perimeter of a zoological institution. If law enforcement has access to the facility, then the point is moot. They will simply continue active pursuit until the animal is contained or killed. However, if staff members of the institution are in active pursuit and the animal leaves the grounds, will they be able to continue pursuit? This area will certainly need clarification. Staff members who are acting within

the parameters of their duties on zoo property shouldn't have a problem. But, once they leave the grounds of a facility they may be illegally armed in public. Conversely, licensed peace officers in the performance of assigned duties are allowed to carry firearms in public.

COMMENTS

The use of deadly force in the event of a dangerous animal escape has always been controversial. But, it is infinitely better to plan in advance of the contingency of a dangerous animal escape than after the fact. Personally, I believe that trained zoological professionals are inherently better suited to deal with this situation than law enforcement. This is not to say that the local police are incapable of dealing with the situation. They receive extensive training in criminology and crisis intervention. But, I seriously doubt this was ever covered in their training at the academy. Zoologists receive extensive training in animal management and are familiar with the behavior, physiology, and personalities of the animals in their care. The animal management staff also has the tactical advantage of being familiar with the facility. So, I tend to believe that the facility is better at managing the situation on grounds. If the pursuit leaves the grounds of the facility, then I believe it should be a cooperative effort between law enforcement and staff members. Remember, always maintain good relations with your peace officers and respect the boundaries.

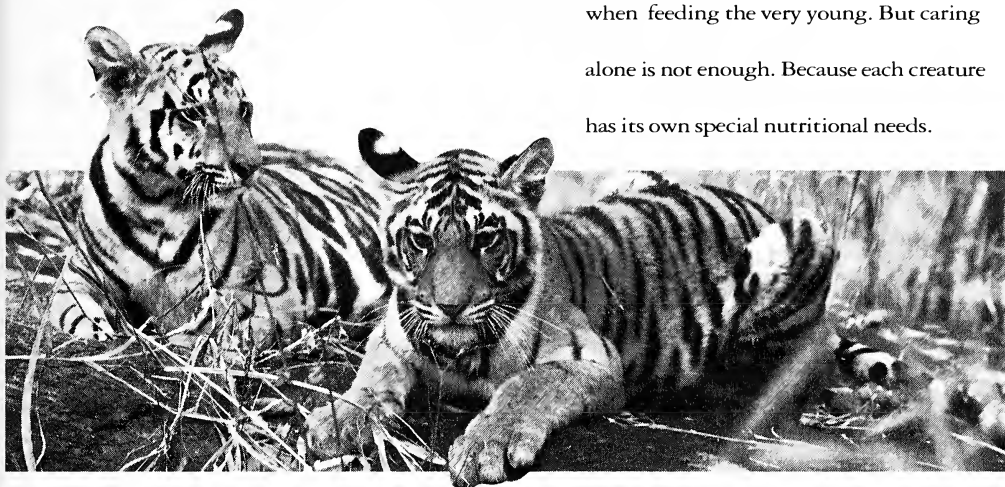
*SWAT - Special Weapons and Tactics; HRU - Hostage Rescue Unit; HART - Hostage Rescue Team.

NEXT MONTH: What is the difference between a standard first aid kit and a first aid/trauma kit?

If you would like to submit a question for this column or have comments on previously published material, please send them to: Reactions/AKF, 635 S. W. Gage Blvd., Topeka, KS 66606-2066.

(About the author: Since 1985 Bill has been active in the fields of science, zoology and wildlife management. His education and experience include a B.S. in wildlife management and post-graduate studies in zoology, Lab and Museum Assistant, Shoot Team leader, ERT Member, Senior Keeper and Large Mammal Keeper at various AZA facilities. His area of research is crisis management in zoological institutions, which draws upon practical experience and training as a Rescue Diver, Hunter Safety Instructor, NRA Firearms Instructor, and Red Cross CPR/First Aid Instructor.)

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*By Kayla Grams, Arizona-Sonora Desert Museum
and Gretchen Ziegler, Sequoia Park Zoo*

“Flintstone Wheel” as an Enrichment

A double-yellow headed Amazon parrot named “Sunshine” is housed at the Houston Zoo clinic due to previous biting incidents. He lives in a parrot cage which measures 28x36 inches. He is aggressive and only allows two people to handle him. We have given him different kinds of enrichment such as commercial parrot toys, newspaper, small boxes, pine cones, bamboo and paper bags which he enjoys.

We decided to make him something different, something that he could play with, interact with, manipulate and eat his diet at the same time so I created a “Flintstone Wheel” which is a round piece of wood about 8” in diameter and 1” thick. The wood needs to be untreated (we used sections from a log). I drilled a hole 1 and 3/8” in the middle and 5 smaller holes 1/2” around the wheel (see diagram). The purpose for the smaller holes is to put wooden sticks through which allows you to stick on different pieces of fruit, vegetables, dip in peanut butter and then roll in seeds.

At first when we introduced the “Flintstone Wheel” in his cage he had not realized that part of his diet was there and did not touch it. Over the next three days he stood on the perch and turned his body upside down and grabbed the fruit with his beak. He also realized that he could move the wheel with his feet back and forth and used his whole body in order to get the fruit. Instead of using the wooden sticks, I cut long pieces of fruit and vegetables and stuck them through the small holes. This works well also.

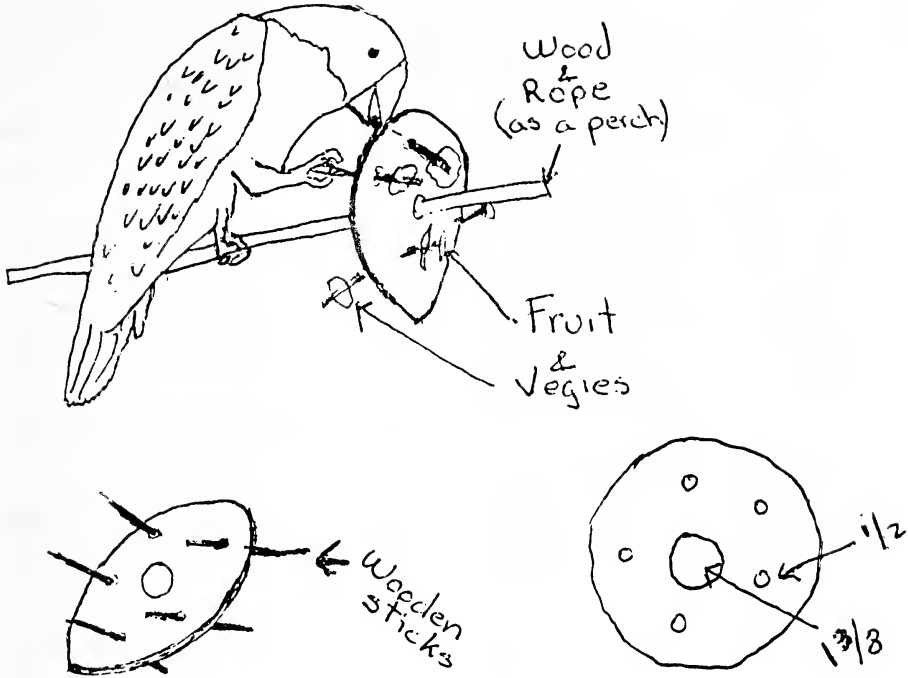
After the success with “Sunshine” we have used this device in different animal sections. The size can be varied to accommodate the animal to be enriched. Since the “Flintstone Wheel” is a naturalistic device we have used it on exhibit for jays, finches, conures, macaws, parrots and small mammals.

Since size and durability of the “Flintstone Wheel” can be varied to enrich, the wheel could be made larger and stronger for use with primates, bears or cats.

Thanks to the Houston Zoo Enrichment Discussion Group for their help.

—Alberto Mendoza, Veterinary Services Group
Houston Zoological Gardens, Houston, TX

"Flintstone Wheel"



Many of you may have noticed over the last few months that our columns have been smaller or even absent a few times. This is primarily do to lack of submissions sent to us - our files have dwindled to almost nothing! We know this column is widely read by most members and, in talking with a few of you here and there, we also know that there are new, successful and very innovative ideas being used every day out at facilities across the country! Sharing these ideas with your colleagues will not only help improve the care of captive animals outside your facility, but will also contribute to your own professional development. Tomorrow when you are planning your enrichment for the day, why not jot it down and mail it off to us? **It's easier than you think.** We are especially looking for ideas that have not been described much in our column, or variations on old ideas. Thanks in advance - we'll be waiting by the mailbox!

(Ideas appearing in this column have not necessarily been tested by the editors for safety considerations. Always think ahead and use good judgement when trying new ideas. Eds.)

AAZK Announces New Professional/Contributing Members

Johnnie Johnson-Gove and Michael A. Seeley, **Philadelphia Zoo (PA)**; Eileen Borland, **Buffalo Zoo (NY)**; John W. Kast, **Erie Zoo**; Martha Brady, **(VA)** (no zoo listed); William Hess, **Duke University Primate Center (NC)**; Bernard Gregory, Todd Maki, Laura Mayo, Debbie Belgio, Kelsey E. Riff, Marcie Diaz, Cilinia R. Powell and Andrea Clay, **Zoo Atlanta (GA)**; Kurt Kreinheder, **Tallahassee Museum of History and Natural Science (FL)**; Eduardo Jesus, **Discovery Island (FL)**; Alicia Davis, **Sea World of Florida (FL)**; Renee S. Van Valkenburgh, **Brevard Zoo (FL)**; Brian Dowling, **Lion Country Safari**; Deborah Lynn Kopper, **Busch Gardens (FL)**; Tania Rivera, **Indianapolis Zoo (IN)**; Stacey Ellis, **Mesker Park Zoo (IN)**; Dawn Fleuchaus, **Racine Zoo (WI)**; Tracey L. Leigh, **Henson Robinson Zoo (IL)**; Mark Bechtel, **Kansas City Zoo (MO)**; Kip E. Smith, **Kipling's Zoological Park (NE)**; George David Greene, **Little Rock Zoo (AR)**; John J. Piazza, **Dallas Zoo (TX)**; Debora Anderson and Missy Couch, **Houston (TX)**; Dan K. Van Zant, Michael A. Pachero and Angelia Tigner, **San Antonio Zoo (TX)**; Kimberly Lykins, **Abilene Zoological Gardens (TX)**; Raquel E. Jimenez, **El Paso Zoo (TX)**; Wendy Gardner, **Cheyenne Mtn. Zoo (CO)**; Davin L. Lopez and Bill Franklin, **Pueblo Zoo (CO)**; Mark Natt, **Utah's Hogle Zoo (UT)**; Jennifer E. Brown, **Albuquerque Biological Park (NM)**; Lanette Irby, **Living Desert Zoo (NM)**; Ron Bernardi, Deb Cano, David J. Howe, Elizabeth M. Didato, Laurie Nikitas and Nadia Sureda, **San Francisco**

Zoo (CA); Kendra Mau, **Honolulu Zoo (HI)**; Margot Monti, **Metro Washington Park Zoo (OR)**; and Steve Schinke, **West Edmonton Mall (Alberta, Canada)**.

Renewing Contributing Members

Jay R. Christie, Director,
Cohanzick Zoo, Bridgeton, NJ

White Oak Conservation Center,
Yulee, FL

June K. Masek, Docent, Cleveland
Metroparks Zoo, Cleveland, OH

Bonnie Jacobs, Keeper,
Lincoln Park Zoo, Chicago, IL

Lynn Peckham, Docent,
Los Angeles Zoo, Los Angeles, CA

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U.S.A.



RAINFOREST RECOLLECTIONS- Part 2 of 3



*By Lisa Fitzgerald, Research Technician
Dallas Zoo, Dallas, TX*

ARRIVAL: EL CHINO

Soon we were the only passengers left on the boat and my ability to remain seated on the hard wooden plank was severely compromised. Just when I thought I might leap out a window into the unseen water we pulled ashore. Last stop was our destination, the home of Jeisen, one of Suzi's skilled guides. A party of eight met us on the muddy shore, three adults, four children and a baby. The reunion was gleeful. As the boat crew unloaded our seemingly endless supplies, we said our farewells to them and met our new hosts. We all took turns carrying the supplies and baggage up the bank and along a narrow path to the stilted house. I was passed on the trail by a six-year-old and a four-year-old carrying loads equivalent to mine. The house was a marvel, an open-sided structure with a palm thatch roof and split bark floors. There were benches built into the side walls covered with the same split bark. Jeisen and his father built the house. A smaller, older version was across the yard, it was the home of Jeisen's parents. A small detached kitchen was reached by walking down a sloping log bridge. I negotiated it carefully while the residents of the home ran across it as though it was a flat, four-lane highway. As we deposited our final loads, steaming bowls of rice and fresh fish were delivered from the kitchen for our consumption.

As the family reclined in hammocks listening to the battery-powered radio and reading the pop-up book of insects that Suzi had brought the children, Linda and I excused ourselves to the toilet. The toilet turned out to be pretty much anywhere away from the path and the house. Visions of nocturnal bushmasters and fer-de-lances attaching themselves to untanned portions of my body flashed through my mind. I did not linger in the moonlight. On the way back to the house I noticed that the upright structures we had passed on the trail were soccer goals - Jeisen had his own football field cut out of the forest.

When we returned to the house, Suzi greeted us with towel in hand and asked if we wanted to go bathe in the river. She explained that gringos and gringas usually bathe at night in order not to blind the locals with our bright white bodies. The sound of joyous bathing rang out from across the river, we added our nervous laughter. I slipped and fell in one of the dugouts I was using as a staging ground. Only four hours from the study site and I nearly cut my head open, luckily I was only bruised and a little stiff the next day. Linda asked Suzi about piranhas, she said that they were not really a problem unless you had a bleeding wound, but that there was always a possibility of electric eels and freshwater rays. We finished our bath quickly and returned to the house to prepare for bed. As I tried to remain awake and be social, the children fell asleep one by one. Soon Jeisen and his wife, Nelly, took the children, extinguished the lantern and retreated to their communal bedroom at the rear of the house. We climbed under our mosquiteros and fell asleep on our thermarest pads. I remember waking up to hear Linda declare that mice or rats

were getting into our supplies, Suzi responded that they wouldn't eat much.

The next morning we loaded a large portion of our supplies into the largest dugout canoe tied to the bank. Jeisen would take the supplies upriver and return for us in four hours. We spent the time playing with the children who had the week off from school, we fed the parakeet chick the family was rearing for sale in the market, we watched the boys fish, longingly read our field guides while the children flipped through the color plates with delight, and walked the trail to town looking for birds. We saw our first aracarís, nunbirds, hummingbirds, and parakeets less than 25 yards from the house. After six hours Jeisen returned, the river was very low and a tree had fallen in the river blocking his return. He had had to paddle frequently and cut a passage through the fallen branches with his machete.



Dugout canoes and low water on the Quebrada Blanco. (Photo by L. Fitzgerald)

INTO THE FOREST

As Jeisen said goodbye to his family, we climbed aboard the dugout, clad in the dreaded nylon pants and rubber boots. Suzi sat at the bow, her job was to search for submerged logs. Linda and I sat in the middle, our job was to bail water, cover the gear in case of rain, and watch for wildlife. Jeisen started the outboard and we quickly left the Tahuayo to head up the Quebrada Blanco - a white water tributary. We hit several logs, but no damage was done. Many times we paddled when the water was too shallow. Occasionally we saw a canoe or a small farm, and the residents would wave to us until we were out of sight. My eyes were glued to the banks as I watched for birds and other wildlife. Once I thought I saw a tapir or capybara as we rounded another bend, but it was only a domestic pig wallowing on the bank. I spotted bicolored hawks and a black hawk, herons flew out of sight as we rounded bends in the river, kingfishers accompanied us on short flights, swallows and

flycatchers dove in and out of our path. Now I felt that we were actually in the rainforest.

I hardly noticed the river ahead because I was watching the banks so intently, but when I did look in front of us I saw a wall of greenery with no obvious flow of water. Jeisen pulled in towards the bank, we had reached the fallen tree. Carefully he nosed the canoe through a freshly cut, narrow tunnel near the base of the fallen trunk. The immensity of the tree was magnified by its horizontal position across the river, it would be a long time before a larger boat than ours could navigate this section of river.

The time passed quickly and soon we saw a solitary figure standing on a high bank above us. It was Marcos, Suzi's second guide who had stayed in camp alone for a week. Marcos helped us ashore and we all unloaded the canoe. Three other figures appeared at the top of the bank and climbed down to carry the gear to the top, these were some local men Suzi had hired to help carry supplies to camp. They had already made one round trip with the previous load of supplies. Jeisen felled some thin trees with a quick slice of his machete. He began stripping the bark in long, narrow segments and then used these strips to secure the gear in the same fashion employed by Carlos in Belen. Each man selected a load and hoisted it upon his back. We grabbed the leftover, light supplies and followed them into the forest.

Suzi said that the hike to camp would take approximately an hour and that we needed to move quickly to avoid being on the trail in the dark. After five minutes I cursed my aerobics teacher for not pushing us hard enough. Climbing over fallen logs, balancing precariously across tree trunks felled over creek beds, stumbling over elevated roots, and trudging through mud at an Olympic walker's pace - this was a gymnastic workout, or at least some kind of military boot camp exercise. As I stumbled across yet another muddy stream bed Suzi mentioned that this was the most traveled trail in camp and the easiest to traverse. I did not have enough breath left to acknowledge her comment.

I was aware of new smells, earthy, musty smells and unfamiliar sounds around me. The shadows were too dark to see anything other than my immediate surroundings and Suzi's back in front of me. I could hear Lindas labored breathing behind me. I looked beyond Suzi once and saw no one ahead of us, the guides were gone. Suzi told us that the men move faster when carrying heavy loads. I stared at her in disbelief.

CAMP

As I climbed over another huge fallen log, I looked up to see blue nylon tarps and to hear the relaxed laughter of the guides. We had reached camp in 45 minutes and the forest was dark. I dropped my load and sat down on a log to catch my breath. Marcos and Jeisen had started dinner in the open air kitchen while the others sat talking, they had reached camp 20 minutes before the gringas. Suzi showed us to our tent and its accompanying pit toilet. We hauled our bags to the tent and made a quick set up for the night. I dug out my tennis shoes and happily hung my boots up to dry. We transferred all edible items to plastic bags in the kitchen, Suzi warned us that insects had eaten through the tents before in order to find the source of enticing scents.

The three local men had rested and were ready to return home, they embraced us warmly and disappeared into the darkness with loud and enthusiastic conversation. Camp was much quieter without them. Suzi offered to show us to the bathing area. We were ready. A creek runs just downhill from camp, it is called La Cuchara or the spoon. The water is the color of weak tea, it is clear and cold. In the morning La Cuchara served as our source of drinking water and later as our dishwashing area. In the evenings the stream provided refreshing and invigorating baths, and a place to wash our daily laundry. A caiman lives in La Cuchara, not far from camp, but Marcos said he had moved because of the low water. The water reached mid thigh if you stood in the stream, there was also a wooden bathing/washing platform built of narrow tree limbs bound together.

When we returned uphill to camp our dinner was ready. The guides prefer to do the cooking, Suzi said, because they dislike gringo cuisine. We performed the clean-up duties in exchange. The meal was excellent: rice, fresh vegetables from Belen, soup, and meat which turned out to be a paca they had purchased from local hunters. I tried the paca, it was a bit too rich and greasy for my taste. We ate some unleavened bread which Suzi and the guides rely on heavily in the field. We brought several large bags of this bread from Iquitos because of its ability to keep for extended periods of time. I found mine to be very dry and almost inedible the first night, I would quickly find it to be highly palatable. The gringas retired to a mosquito-proof tent with cups of tea while Jeisen and Marcos caught up on a weeks worth of news.

As we headed to bed, Suzi told us to sleep as late as we wanted in the morning. We would take tomorrow at a leisurely pace since she also had much work to catch up on after a weeks absence from the forest. As we dozed off we heard the strange cow-like vocalizations of owl monkeys and the soothing sounds of other night creatures. Linda and I awoke eager to hit the trails in search of uakari. As the guides prepared breakfast, Suzi showed us the proper techniques for scrubbing pots and pans in the stream, and the secrets to hauling fresh water up to the water barrels. As we studied our trail maps and data sheets over cups of coffee and tea, we could hear toucans, amazon parrots, and any number of other familiar calls. I looked up that first morning to see a Cuviers toucan fly directly over the camp clearing. Amazons flew over every morning, but I was never quick enough to identify the species. Our mornings at camp became one of my favorite times of day, I saw new species of birds daily: woodcreepers, aracarís, barbets, nunbirds, and woodpeckers.

The breakfast meal was very important, because we would subsist on snacks only until the evening meal. Hot water for tea and coffee was almost always ready when we appeared for dishwashing duty. Sometimes we had a sweet oatmeal or quinoa (an Andean grain) drink to start with, followed by eggs, rice, beans, tuna, fish, or leftovers from the previous night. At first I had a hard time eating tuna for breakfast, but I was converted after the first morning of rehydrated fish. As I walked up the hill with a tub of clean dishes my nostrils were assaulted with the unforgettable smell of the Belen marketplace. I did not wish to be rude, so I politely inquired what we were having for breakfast. The guides proudly lifted pot lids to show me the source of the hideous smell. At Suzis urging I took a small portion of the fish with my rice, she assured me that I would need the protein. Surprisingly, the fish did not taste that bad - as long as you did not inhale while chewing. After choking down my fish I noticed that Suzi had none in her bowl and I asked her why she wasn't eating any. She matter of factly replied that she couldn't stand it and ate peanut butter instead.

FOREST NEOPHYTE

Fifteen minutes before trail time we began the clothing ritual. We each had our own routine. Mine consisted of changing from nylon shorts to nylon pants, exchanging a comfortable cotton t-shirt for a long sleeve polyester blend shirt, and sitting down to begin the all important foot work. First, any blisters or the beginnings of such had to be dressed with moleskin or second skin. Next, a coating of antifungal ointment, petroleum jelly, or talc. Then the socks, I chose polypropylene liners as my first layer because they dried easily. The second layer of socks was either a cotton or a cotton blend tube sock. For the third and final layer I wore either rag wool, or a heavy cotton blend hiking sock. The final preparation was inserting soggy, cushioned boot liners into my one size larger than usual rubber boots. I grabbed a bandanna, a baseball cap, and my waist pack and went to receive my assignment for the day.

At first Linda laughed at my sock ritual, but I had been prepared by John and Cynthia. They warned me that the feet are the first to suffer in the rainforest, and that blisters could keep you in camp for more than a day. Linda found out the hard way, spent a day in camp, and wore three pairs of socks from then on. I actually suffered from only one minor blister, so despite the hassle of extra laundry I was pleased with the result.

I quickly learned the value of rubber boots as we sucked our bodies out of knee high mud in low drainage areas where our crossing logs had disappeared in the mire. I also came to respect my rubber boots when crossing streams, tripping over roots, and listening to tales of snakebite in the forest (Jeisen is a trained medic for the village of El Chino). After I left the forest, Suzi would have a fer de lance attach itself to her boot heel. After three days I cherished my rubber boots and hung them up with care every evening to drain overnight. I promised myself that I would find a special, tacky gift for John to thank him for his sage counsel.



From left - the author, Linda Delay-Shelby, and guides Marcos and Jeisen in camp. Photo by Suzi Leonard)

Our first day on the trail was short, but exciting. While Jeisen and Marcos returned to the river to carry back some carefully hidden supplies, Suzi took Linda and I out for our first excursion. We saw saddle backed and moustached tamarins which Suzi tried to call by kissing the back of her hand the way the guides did. Although they chattered at us curiously, they slowly moved up and away. She was successful in calling a Spix's guan closer though. We heard two guans calling, and could see one ahead perched in the low branches of a tree. Suzi mimicked a call she had heard the guides make and the bird flew to a perch directly over our heads. Over the next 15 days I would witness the guides attempt the same feat without success, it was my best view of the guan. On that first day Suzi showed us many wonderful things in the forest and directed us on how to read the trail markers and the trail map. We would always travel with guides, but in case of emergency we would also need to know how to return to camp on our own. Suzi told us that she did not normally feel comfortable on the trail alone simply because of the risk of injury. When the team splits up, they agree upon known routes so that the others know where to find them.

I cannot neglect to mention the negative aspect of that first day in the forest. There was a standing Dallas Zoo tradition of being sick on the trail that I was obliged to carry on. My first impression was that I was merely tired, then maybe dehydrated or even suffering from heat exhaustion. It didn't seem right. I had raked antelope yards in the glaring Texas sun for years. I fought the feeling for as long as possible, I gulped down water and electrolytes, but at last when we stopped to photograph an ornately entwined vine covered tree stump, I lost my breakfast. Suzi was unconcerned, she said that all the Dallas crew did this sooner or later and that I had probably caught something in Iquitos. We hiked on. I tried to admire my surroundings and, in fact, remember quite a bit from that day: the birds, the dwarfing height of the trees, the leaf cutter ants, and the sound of high pitched, exaggerated wolf whistles echoing through the forest. The source of the whistles was a nondescript robin-sized bird known as the screaming piha. The call of the screaming piha will remain as one of my lasting impressions of the rainforest. Sometimes when I'm raking the Arabian oryx lot on a hot, muggy Dallas morning my mind travels to the forest and I hear the screaming piha as clearly as if it were sitting in the tree above me.

We made it back to camp that first day filled with wonder and awe. I collapsed on the bark covered bench of the kitchen table, sipped on some electrolytes, and lost my stomach fluids again on the way to the tent. Now Suzi was a bit worried - I guess I looked a bit pasty. I bathed and managed to keep down some rice and tea that night. The next morning I made a hurried visit to the latrine and suddenly remembered brushing my teeth with tap water. I was chagrined with my stupidity, but proud of the fact that I had not succumbed to the heat and humidity of the rainforest. Suzi fed me homeopathic cure, recommended by a friend who had lived in the tropics. She said that she preferred it to the usual medications because it treated the problem instead of the symptom. I stayed in camp that second day, I was too weak to hike the minimum ten miles. My job in camp was to rescue the drying laundry in case of rain. I spent the first hour washing dishes and cleaning up camp. I watched birds and lizards for an hour or so, and unpacked my camera for some shots of camp, insects, and plants. After two hours I was deathly bored, it was lonely in camp. They were all having fun on the trail, watching monkeys, recording new birds on their life lists, probably observing mortal combat between

an anaconda and a tapir while a flock of scarlet macaws mobbed a harpy eagle overhead. I went to my tent and read until I fell asleep. In the afternoon I rotated the laundry and wondered at how Marcos could spend an entire week alone in camp.

I was somewhat relieved to hear that they had not located the uakari when they trudged into camp that afternoon, although Linda had quite a few good bird sightings. I buried my jealousy with shame and swore that I would be ready to go in the morning. Although the medicine was working its magic, I was not quite ready for a full day of hiking the next morning. I decided at the last moment to stay back one more morning. It was a repeat of the previous day, although I observed some fascinating woodpecker wars in camp. Marcos and Linda returned early that day, Linda's feet were blistered badly and she needed to recuperate. Marcos asked me if I felt up to going out. I felt nearly 100% and so I ran to my tent to perform the clothing ritual. We hiked only three miles that afternoon, but I was glad to be back in the forest again. I saw a slender snake swimming in a stream, the first of only two snakes I would see on the trip. I had my first and last view of some capuchins and was emotionally revitalized. When we returned to camp, Suzi and Jeisen were there with no reports of uakari.

To be concluded next month.....



Announcing: Zoo Keeper Participation Program

1997 Peruvian Primate-Census - Rio Tapiche Project

In 1997, the red uakari project will be moved further upriver to Rio Tapiche and will be expanded to include a comprehensive census of the 15 primate species in the region. Zoo keeper participation as census surveyors is invited at a fee of \$1000 per month, which will cover food, in-country transportation, accommodations, and guide, plus a small donation to the PPC/RTP. Keeper participants will be responsible for their own airfare and one day's expenses in Iquitos. Selection priorities will go to keepers who are able to commit four consecutive weeks to the project. Contact Scott Carter at the Detroit Zoo, phone (810) 398-0903, ext. 3160; Fax (810) 398-0504; e-mail - Scater@Detroitzoo.org

Legislative Update

*Compiled by Georgeann Johnston
Legislative Advisor
Sacramento, CA
1-800-338-7348*



USFWS Allows Importation of Sport-Hunted Polar Bear Trophies

Hunters killing polar bears for sport in the Northwest Territories will be allowed to import their trophies under a new permitting process announced by the USFWS. The permits will be issued to hunters taking polar bears from approved populations found in the Southern and Northern Beaufort Sea, McClintock Channel, Viscount Melville Sound, and Western Hudson Bay.

Permits may only be obtained after the hunter has received the appropriate licenses under the Marine Mammal Protection Act. The permit application will cost \$25, and if the permit is issued, the hunter will be required to pay an additional \$1,000. The funds will be used for conservation of polar bear populations shared between the U.S. and Russia, pursuant to terms of the Marine Mammal Protection Act.

Source: U.S. Fish & Wildlife Service News Release 18 February 1997

Zimbabwe's National Parks Management Is Target Of Parliamentary Attack

The National Parks Department of Zimbabwe, due to host the summit conference of the Convention on International Trade in Endangered Species (CITES) this June, is under attack by that country's parliament. A parliamentary report, released three months ago, strongly criticized the "inept leadership" of the Department and recommended that environment and Tourism Minister Chen Chimutengwende should be removed from his position. Chimutengwende, in turn, has been very critical of predecessor park managers, centering his attack on the translocation of animals during the drought of 1992-1993.

The parliamentary report exonerates the officials involved in the translocations, describing them as "good people working under very difficult circumstances" and saying that their handling of the drought crisis led to "a major publicity coup for the country." In the midst of the attacks and counterattack, many experienced wildlife care officers have left the department. The lack of staffing has resulted in a termination of radio-collaring of rhinos, exposing them to poaching; fewer anti-poaching patrols; deterioration of roads; and elephants dying of thirst due to a lack of boreholes (man made water collection sites).

When Chimutengwende was appointed in 1995, the licenses of many established

safari operators, hunters and fishing companies were not renewed. One side explains this under the new black empowerment movement in the country while those on the opposite side say many of the new licensees are individuals with political connections.

In December 1996, a panel of CITES representatives found serious problems with Zimbabwe's custody of ivory stocks. In response, CITES is under mounting pressure to relocate its June meeting from Zimbabwe to Israel.

Source: South African Mail and Guardian Newspaper, 31 January 1997

Stellar Sea Lions Given Endangered Status

The U.S. Fish & Wildlife Service has changed the listing of stellar sea lions from "threatened" to "endangered" under the Endangered Species Act. These animals reside in the western Gulf of Alaska and are at a current population level of approximately 44,000. This number is down from the 140,000 sea lions present in the early 1960s.

The primary threat to the stellar sea lions is the commercial fishery industry, which takes many of the small, protein rich fish required by juvenile sea lions. Despite the efforts of lobbyists on behalf of the fishing industry to the contrary, the USFWS chose to adopt the findings of a National Research Council report on the animals, which stated that over fishing is a contributing factor to the sea lion's decline.

Source: Living Oceans News, published by the National Audubon Society, Winter 1996/1997

Federal Government To Regulate Sale Of "Pocket Pets"

Glider squirrels, prairie dogs, jerboa, spiny mice and other exotic and wild animals are protected under the Animal Welfare Act when sold as pets. Now, the U.S. Department of Agriculture is planning to regulate retail dealers who sell these creatures. "We will do our best to ensure that pocket pets receive the best care possible from the people who sell them", said W. Ron DeHaven, a deputy administrator for animal care with the Animal and Plant Health Inspection Service (APHIS), part of the USDA.

The plan is to license as class "B" dealers the retail stores who sell small exotic animals. To acquire the license, the dealer must pass a pre-licensing inspection and are subject to follow-up inspections if complaints are received. A minimum of one inspection every three years is also mandatory.

The Animal Welfare Act requires businesses and individuals to provide animals with care and treatment according to standards developed by APHIS. This includes minimum levels of housing, handling, sanitation, food, water, and

veterinary care. The new regulations will cover animals sold as pets to the general public as well as animals sold at the wholesale level for biomedical research or exhibition purposes.

Source: APHIS Press Release, 24 February 1997

Interior Department Budget Requests Focus On Preserving Public Lands And Natural Resources

The proposed Fiscal Year 1998 budget for the U.S. Department of the Interior is \$7.5 billion. Bruce Babbitt, Secretary of the Interior, stated that "This budget is about restoration, preservation and protection . . . It is a carefully crafted plan that reflects the President's deep and abiding commitment to the American public to preserve our lands and natural resources while protecting our children's economic future."

Highlights of the budget which may be of interest to those involved with animals includes funding of \$136 million to restore the Everglades and "reverse the ecological decline of the South Florida ecosystem," \$71 million for the Forest Plan which tries to balance preserving old growth forests while allowing for timber harvest production, and \$6 for land acquisition grants to states to support Habitat Conservation Plans.

Another portion of the budget will be spent on maintaining and protecting the 374 National Parks, 509 wildlife refuges, and 264 million acres of public lands managed by the Bureau of Land Management. The FY 1998 budget also requests \$1.6 billion for the National Park Service and \$688 million for the Fish and Wildlife Service, which includes \$79 million for the Endangered Species Act program.

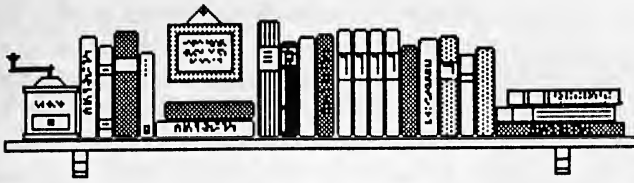
The budget will be reviewed by various House and Senate committees before proceeding to a vote by the full congressional bodies later this year.

Source: Department of the Interior Press Release, 8 March 1997

Clear-cut Proposal Threatens Spirit Bear

The government of British Columbia is planning to clearcut ancient forests on Green Inlet that are home to the kermode or spirit bear. One in ten of the unique race of North American black bears are white. The land proposed to be cut, "is one of a very few coastal estuaries which remain ecologically intact and support a significant population of kermode (spirit) bears, as well as populations of grizzlies and salmon," according to bear biologist, Wayne McCrory of the Valhalla Wilderness Society. A Great Bear Foundation press release urges those concerned to write letters to Premier Glen Clark, the Minister of the Environment, and the Minister of Forests at: Parliament Buildings, Victoria, BC, V8V 1X4, CANADA. Call (406) 586-5533.

Source: GREENlines # 336 3/13/97



Book Review

Wild Ideas

Edited by David Rothenberg
University of Minnesota Press, 1995
11 Third Ave. South, Suite 290
Minneapolis, MN 55401-2520
Softcover, 225 pgs. Price: \$19.95

*Review by Mike Seidman
Keeper, Arizona Trail
Phoenix Zoo, Phoenix AZ*

To those for whom conservation is a relatively straight-forward pursuit — re-cycling, reducing pollution, saving a few species in protected reserves, etc. — this book's preoccupation with "wildness" might seem naive and irrelevant, perhaps even incomprehensible. In light of this, and given restrictions on length, I will try in this review to communicate the spirit of these essays, to which I am sympathetic, rather than give a straight forward account of them.

Wild Ideas, and an increasing number of books like it, comes out of a minor - but very persistent - tradition that, in regards to the role of humans in nature, is in profound opposition to the dominant view of our culture - the view that humans are separate and superior to nature with nature being little more than a collection of resources for our use or pleasure. With one or two exceptions, the assembled authors reject the fantasy of human control of nature, advocating humility instead in the face of powers and mysteries beyond our ken. Wisdom, they believe, lies in accepting ourselves as one species among many, living modestly, emphasizing spiritual rather than economic growth.

Before we can respect the needs of non-humans, however, it may first be necessary to accept our own naturalness, our wildness. The problem is: Wildness is in our genes but not our culture. It is, in fact, the very thing our culture has strived to eliminate from the world - and from the human psyche. Defining it as "untamed human passion and undisciplined conduct" p.29, we have made wildness the enemy of civilization.

The wild for us is, "that which was not - (yet)- cultivated, the dark and dangerous, the unlimited, lurking at the limits, always on the verge of overgrowing the fragile new structures of society" p.118.

Or "...the realm of the savage who is thought to be cognitively distinct from the civilized human" p.196. "What makes us not savage", we have decided, "is our possession of reason, our control over our passions", i.e over the "wildness within" p.196.

And so we have attempted to lop off that "wild" unruly part of ourselves that is attuned to the "more-than-human" world, calling it "Other" as if nature were not integral to what we are. Driving that consumptive frenzy of modern Western culture is the belief that, with our reasoning abilities, we are, at least potentially, outside of the laws of nature, not subject to the limitations of other species. We are smug about our technological

cleverness and believe, even in the face of ecological breakdown, that our ingenuity will save the day. Our goal is to wrest from 'nature' the running of the earth, diverting its energy our way. Species extinction is a corollary of this project: other creatures, after all, use matter and energy that we covet. Our culture is a life-negating culture.

Language, as Oelschlaeger points out, is used to legitimize the pillage. Those in power, he says, have created a language of "Man", "Euroman" to be precise, a language that separates humans from "the environment" and legitimizes our merciless expansion, which is "grinding life beneath its heel across the planet" p.46. The use of the word "environment" in our culture "draws an uncontested boundary between the human and the so-called non-human" p. 45. Nature becomes a stage for Man, who is the lead player. The new talk of 'sustainable development' is more of the same. Euroman's idea of conservation, according to Oelschlaeger, is merely to "ameliorate the ecopathologies engendered" by our way of life.

Although this is not a book about the practical aspects of nature conservation, these essays rest on the assumption that something crucial is missing from the conventional idea of conservation - WILDNESS. We may save a few species in zoos or intensively managed reserves, but what will these animals become in the absence of the wild forces that made them what they are? As for ourselves, when the wild places are gone, we will have lost what matters most, our participation with other species in the dance of life. It's what our genes have primed us for. Pretending we are unconnected to the earth has allowed us to indulge in ruthless exploitation without feeling remorse. We are paying a price however: feeling alone in a hostile or indifferent universe.

This book is about reclaiming our connection to the processes that sustain and nourish us, body and mind. This does not mean going back to some harsh past existence, but acknowledging what we have always been, allowing a part of ourselves to emerge that our Euroman story has forced into retreat.

"Wildness" cannot be defined; it is the enemy of definition. It is experienced as a belonging in the world, where every action fits: "What the trees are breathing out, we animals are breathing in; what we breathe out, the plants are breathing in" p.113.

"Wildness is openness to the infinite possibilities of the eternal present". "The wild is 'refreshing' or re-creating precisely because it is never fixed but always transcends the frame of our thoughts. The unframed is the place where our thoughts and desires can roam freely, joining that which is already unfathomable..."p.124.

Although they are essential, at least temporarily, designated Wilderness Areas are less wild for being framed. The wilderness must be brought home where it can be incorporated through ritual or ceremony, into our idea of the civilized. In the Introduction, David Rothenberg tells us the task of the book is to "expand our understanding of the notion of Wild as attribute, not place". In essence this book is a commentary on Thoreau's famous dictum: "In Wildness is the Preservation of the world."

Chapter News Notes

Greater Cleveland Chapter (Cleveland, OH)

The Greater Cleveland Chapter elected the following officers for 1997:

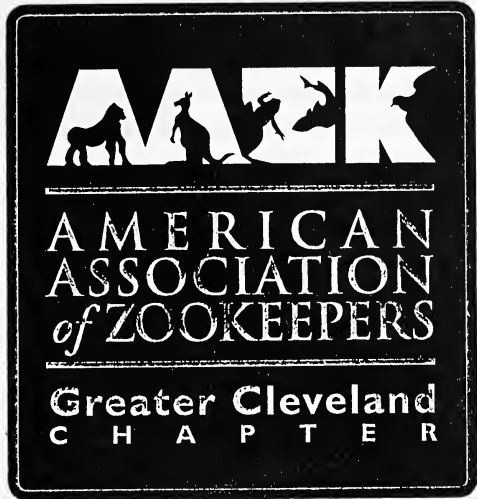
President.....Meghan Kelley
Vice President.....Shane Good
Treasurer.....Claire Costello
Secretary.....Jim Naelitz

Our Chapter is happy to present our new logo (see inset). Special thanks goes out to the Cleveland Zoological Society for picking up the cost of the logo. We also thank the artist, David Meeker, and the Zoological Society's Megan Stalder for all of her assistance. Along with the logo, the Chapter purchased new letterhead.

Our annual "Photos With Santa" raised over \$4000.00 this year. We sent \$1000.00 of this money to National AAZK to be used for operating expenses. We also supported the International Wolf Center, Ngare Sergoi Support Group, and the Ohio to Erie Trail.

We are currently getting ready for our second annual Reverse Raffle/Pig Roast. Last year's event raised over \$600.00. This year we expect to do even better with all proceeds benefitting the International Snow Leopard Trust.

—Shane Good, Vice President



Topeka AAZK Chapter

The Topeka AAZK Chapter elected new officers in December. They are:

President.....Darrin Webb
Vice President.....Martin Godlove
Treasurer.....Michael David
Secretary.....Luanne Webb
Liaison.....Dina Signorelli

As you may have read in the February *AKF*, our Chapter is giving 10% of our proceeds this year to AAZK National. We encourage other Chapters to consider doing the same.

We are currently featuring Bowling for Rhinos in our display showcase in the Animal and Man Building at our zoo, and we are hoping to conserve land in far-away places. We have adopted three acres of rainforest in the Amboro National Park in Bolivia and three acres of coral reef in Palau, Micronesia.

—Dina Signorelli, Liaison

Rio Grande Chapter of AAZK **(Albuquerque, NM)**

Wow! What an exciting year 1996 was for the Rio Grande Chapter of AAZK! We are happy to announce the new officers for 1997:

President.....Shelly Lindsay
Vice President.....Pat Fabian-Chavez
Liaison.....Rhonda Saiers
Sec'y/Treasurer.....Jennifer Brown

Our small but dedicated group held several successful fundraisers and were able to get many projects off the ground. Our zoo-wide aluminum recycling program has been met with enthusiasm from both the staff and the zoo's visitors. We were able to establish a Bi-Annual Area Enrichment Grant that is available to all Biopark employees. The first one was awarded to Claudia Cole for the horticulture department so she could purchase an insecticide mister that would not only save time, but uses less pesticide and will be more effective than conventional sprayers. We felt this was an environmentally sound choice. Our crowning glory for a fledgling Chapter was that we were able to be represented at the AAZK National conference by two keepers and each presented a paper!

Our city is celebrating the opening of the Albuquerque Aquarium, Rio Grande Botanical Gardens (along with the Rio Grande Zoo, the three are collectively known as the Albuquerque Biological Park), and also the first birthday of "Esperanza", the cheetah. Esperanza is celebrated because of her unique parentage - her father was a wild cheetah living in Namibia whose semen was harvested to inseminate captive cheetahs. She is the first

surviving offspring of an endangered species to be produced from frozen semen transported between continents. We are happy to say she is thriving at our zoo!

The new year has us looking towards our first Bowling for Rhinos event, and the hope of raising enough money with other fundraisers to begin supporting at least one local conservation effort (more on that as it develops).

The zoo staff is currently focusing a ton of attention on the upcoming National AZA Conference in September. We hope to see you there!

—*Rhonda Saiers, Liaison*

San Diego AAZK Chapter

Last September we had a swap meet fundraiser. Thanks to all of the keepers and members who donated items and especially the San Diego Zoo which gave us pallets of excess inventory. We raised \$1400.00 from this event. We decided to donate \$500.00 to the Michael Werikhe Trust Fund. (We were sorry to hear about the death of his wife and hope this donation will allow him to continue to help save the rhinos.)

We also donated \$500.00 to Lewa Downs Reserve to help build classrooms for local children, and \$300.00 was given back to National AAZK because none of us would be here without them. Thanks, National.

—*Nicki Boyd, President*

Institutions wishing to advertise employment opportunities are asked to send pertinent data by the 10th of each month to: Opportunity Knocks/AKF, 635 S.W. Gage Blvd., Topeka, KS 66606-2066. Please include closing date for positions available and when setting these dates keep in mind that because of bulk-mail, most readers do not receive the AKF until the middle of the month or later. There is no charge for this service and phone-in or fax listings of positions which become available close to deadline are accepted. Our phone is 1-800-242-4519 (U.S.); 1-800-468-1966 (Canada). Our FAX is (913) 273-1980.

ANIMAL KEEPER-GUIDE...several positions available for SEASONAL employment May - October 1997. Requires high school diploma, paid zoo experience preferred, but volunteer experience acceptable. Good opportunity to gain paid zoo experience. Applicants must have strong, audible voices, neat appearance, good personality, and must work well with co-workers. Non-smokers preferred. Duties include daily animal care and feeding, exhibit cleaning and maintenance, various other maintenance duties, and talking to groups in a tour situation. Will lecture on both non-venomous as well as venomous reptiles. Must have experience in handling NON-VENOMOUS reptiles or a willingness to learn. Salary \$195.00 per week. Living quarters, utilities and uniforms furnished. Send resumé to: Jim Miller, Soco Gardens Zoo, 89 Evans Cove Road, Maggie Valley, NC 28751.

CURATOR...Annual salary range: \$17,744.00 to \$26,616.00 plus excellent employee benefits package. **Acceptable Experience and Training:** completion of high school; at least two years of college level course work in Zoology, Animal Husbandry, Veterinary Medicine or related field; at least two years of experience in the care of exotic animals; Or any equivalent combination of experience and training which provides the required knowledge, skills and abilities. Elephant handling experience is preferred. **Additional Requirements:** must possess or be able to obtain a valid Arkansas Class D (Non-commercial Vehicle) Driver's License before employment and maintain licensure for the duration of employment in this position. **To Apply:** interested individuals must complete and submit the following to the Human Resources Department by the closing date: 1) an original City of Little Rock Employment Application; and 2) a Training and Experience Questionnaire. NOTE: An application, once submitted, may be subject to disclosure as a public record under the Arkansas Freedom of Information Act. **Closing date is Friday, 4 May 1997.** Contact: City of Little Rock, Personnel Department, 500 W. Markham, Little Rock, AR 72201-1428. Phone (501) 371-4590; TDD is (501) 371-4405. EOE.

ZOOKEEPER/Herpetarium...seeking highly motivated, hard-working individual to join a progressive team of Herpetologists/Herpetoculturists working with diversified collection of 700 specimens. Primary focus on conservation, exhibitry and husbandry; knowledge and experience specific to reptiles and amphibians; venomous reptile handling procedures; ability to interact in a team environment; computer knowledge; proficiency in oral and written communication (including public speaking). Recently upgraded, competitive salary with excellent benefits. Resumés and/or application should be **mailed by 9 May 1997** to: Wanda Smallwood, City of Fort Worth Human Resource Dept., 1000 Throckmorton, Fort Worth, TX 76101.

HERPETOLOGY KEEPER...requires working knowledge of care, maintenance and breeding of amphibians and reptiles in captivity. B.S. in zoology or related field and experience with venomous species preferred. Starting salary \$20,488.00 with excellent benefit package. Application **closing date is 30 April 1997**. Submit resumés to: Nancy Foley, Director of Human Resources, The Toledo Zoological Society, P. O. Box 4010, Toledo, OH 43609.

ZOOKEEPER I...the North Carolina Zoological Park is accepting resumés from keepers with pinniped experience to work in the Rocky Coast Habitat with California sea lions, harbor seals, polar bear and Arctic fox. Pinniped training experience, a degree in a biological science, as well as experience at an accredited zoo are preferred. Starting salary is \$16,760.00 increasing to \$17,597.00 upon satisfactory completion of probation, plus benefits. Send resumé and cover letter **by 21 April 1997** to: Human Resources, North Carolina Zoological Park, 4401 Zoo Parkway, Asheboro, NC 27203. Attention: Zookeeper I. Fax: (910) 879-2891.

SENIOR ZOOKEEPER/Bird Department...requires Bachelor's degree in Zoology or related field and three years' professional experience caring for birds in a zoo/aviary setting or combination of college/supervisory experience. A self motivator with demonstrated skills in leadership and team building. Will assist in collection management and planning. Responsible for diverse collection of birds in a mixed species jungle exhibit as well as a 28-unit off-exhibit breeding facility. Will also supervise incubation/handraising and North American Prairie birds. Salary \$21,500.00 to \$30,668.00 plus excellent benefits. Send letter/resumé/references to: Jon Seltz, Curator of Birds, Sedgwick County Zoo, 5555 Zoo Blvd., Wichita, KS 67212.

ANIMAL KEEPER...requires high school diploma and ability to interact with staff and visitors. Bachelor's degree in biology/related field preferred. Responsible for all aspects of daily animal husbandry, exhibit maintenance, observation/enrichment, as well as assisting with education, public relations and support aspects of the zoo's operation. Salary starts at \$10.88/hr. Send letter and resumé **by 15 May 1997** to: Jim Schnormeier, General Curator, Sacramento Zoo, 3930 West Land Park Dr., Sacramento, CA 95822.

The following two (2) positions are available at the Indianapolis Zoo. For either position send cover letter/resumé to: Mary Jane Bennett, Director of Human Resources, 1200 W. Washington St., P. O. Box 22309, Indianapolis, IN 46222-0309.

ANIMAL KEEPER/Animal Encounters...we are seeking an energetic, highly motivated person with experience in presenting animal demonstrations to the public. A bachelor's degree in Life Sciences or zookeeping is preferred. Experience with training animals is favored. Will be involved with the daily care of many domestic and some exotic animals. Other responsibilities include doing daily shows, demonstrations, and training animals for these shows.

SEASONAL KEEPERS/Animal Encounters...we need people who are public oriented, enthusiastic, energetic with an interest and background in animal husbandry. Will help care for domestic and exotic animals and be involved with public performances during the spring and summer season.

AAZK Membership Application

check here if renewal []

Name _____

Address _____

City _____ State/Province _____ Zip _____

U.S. Members

\$35.00 Professional
Full-time Keepers

\$30.00 Affiliate
Other staff & volunteers

\$30.00 Associate
*Those not connected with
an animal facility*

\$60.00 or up - Individuals
Contributing/U.S.

\$100.00 or up
Institutional/U.S.
*Organizations/Institutions
(requires Board approval)*

International Members
\$50.00 International
*All members outside U.S. &
Canada regardless of category*

Canadian Members

\$40.00 Professional
Full-time Keepers

\$35.00 Affiliate
Other staff & volunteers

\$35.00 Associate
*Those not connected with
an animal facility*

\$60 or up - Individuals
Contributing/Canada

\$100.00 or up
Institutional/Canada
*Organizations/Institutions
(requires Board approval)*

Library Only
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ANIMAL KEEPERS' FORUM



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

MAY 1997

Managing Editor: Susan D. Chan • **Associate Editors/Enrichment Options**

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Incubation Notebook Project - Scott Tidmus, Sedgewick County Zoo, Wichita, KS



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About the Cover.....

*This month's cover features the Marshland Nyala (*Tragelaphus angasii*) drawn by Lee Houts of Sacramento, CA. Nyala are large, but slender, narrow-bodied African antelope. Sexually dimorphic, the males are a shaggy grey or dark brown while the females are half the male's size and a ruddy brown in color. Only the males have the white-tipped, lyre-shaped horns. Both sexes have a series of stripes, spots and dramatic markings. The males perform an impressive "lateral display" raising the dorsal and ventral hairs to appear 40% larger to impressionable females or rival males. Nyala live in herds of six to 40 animals; the herd may consist of a harem of females or of bachelor males. After a gestation period of seven months the female gives birth to a single fawn. Thanks, Lee!*

Information for Contributors

Animal Keepers' Forum publishes original papers and news items of interest to the animal keeping profession. Non-members are welcome to submit articles for consideration. Articles should be typed or hand-printed and double-spaced. Articles may be submitted on disk by arrangement with the Editor. All illustrations, graphs, charts and tables should be clearly marked, in final form and should fit in a page size **no greater than 5.5" x 8.5"** (14cm x 22cm). Literature used should be cited in the text (Brown, 1986) and alphabetically in the final bibliography. Avoid footnotes. Include scientific name (as per *ISIS*) the first time an animal name is used. Thereafter use common name. Use metric system for weights and measurements (standard equivalents may be noted in parenthesis). Use the continental dating system (day-month-year). Times should be listed as per the 24-hour clock (0800, 1630 hrs. etc.). Glossy finish black and white photos **only are accepted**. Color slides should be converted to black and white prints (minimum size 3" x 5" [8cm x 14cm]) before submission. Clearly marked captions should accompany photos. Please list photo credit on back of photo.

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 and FAX contributions of late-breaking news or last-minute insertions are accepted as space allows. However, long articles must be sent by U.S. mail. Phone 1-800-242-4519 (US); 1-800-468-1966 (Canada); FAX (913) 273-1980.

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.

Items in this publication may be reprinted providing credit to this publication is given and a copy of the reprinted material is forwarded to the editor. Reprints of material appearing in this journal may be ordered from the editor. Back issues are available for \$3.00 each.

Scoops & Scuttlebutt



AAZK, Inc. Gratefully Acknowledges Recent Chapter Donations and Support

The AAZK Board of Directors and the Administrative Office staff wish to acknowledge the following donations to the Association: Portland Chapter of AAZK for underwriting the costs of postage for mailing of the Operations Manual revisions to AAZK Chapters; Roger Williams Park Chapter's donation of \$250.00 (unrestricted); South Florida AAZK Chapter's donation of \$275.00 (general operating fund); Puget Sound Chapter's donation of 10% of their local proceeds in the amount of \$810.00 (unrestricted); Minnesota Zoo AAZK Chapter's donation of \$100.00 (unrestricted); San Antonio AAZK Chapter's donation of \$50.00 (unrestricted); Atlanta AAZK Chapter's donation of \$50.00 (unrestricted); Indianapolis AAZK Chapter's donation of \$350.00 (publication of *Junior Keepers' Forum*); and AAZK Caldwell Zoo Chapter's donation of \$1350.00 (Junior Zoo Keepers Project).

This continuing support from AAZK Chapters is helping the Association make an ongoing recovery from its financial difficulties. Such support from Chapters is greatly appreciated and insures that the Association will be able to carry on its near 30-year tradition of being "Dedicated to Professional Animal Care".

Great Lakes Regional Council Meeting Set

The Milwaukee County Zoological Gardens will be the site of the 1997 Great Lakes Regional Council Meeting. Hosted by the Milwaukee County Zoo AAZK Chapter, this meeting will draw representatives from surrounding states (both AAZK Chapters and institutional representatives). Meeting dates are July 22 and 23. The purpose of the meeting is to bring together zoo professionals from the region to share husbandry information, Chapter activities, etc. Informational flyers have been sent to Chapters and institutions in the Great Lakes Region. If you would like more information, please contact either Lisa Guglielmi or Clay Ecklund at the Milwaukee County Zoo (414) 771-3040.

Election Reminder

All AAZK Professional members are reminded that ballots for the 1997 Board of Directors election were mailed out First Class last month. The deadline for return of ballots is **1 June 1997**. **DO NOT send your ballots to AAZK Administrative Offices.** They must be returned to the CPA in charge of ballot tallying in the special envelope provided. Ballots incorrectly returned will not be valid. Also, do not return anything but the ballot in this special envelope (no membership renewals, orders, etc.). Thank you for your cooperation.

Message from the Executive Director

The year 2000 is no longer a concept on the horizon. It is challenging us from just around the corner. To some, the change in century signals a brand new beginning, a chance to start over. To others, it just means a prolonged celebration on New Years' Eve. I imagine, the truth lies somewhere in between.

It is that time again. Time for our active Chapters to consider hosting the annual conference, this time unique, because it will be the first conference of the new century. The communication that surrounds conferences is vital to the lifeblood of AAZK. Exchange of ideas and information are what we are all about.

Interested Chapters should contact me about formulating a bid package for presentation to the membership in Houston. This package must contain a letter of support/endorsement from your facility(ies). Take time and formulate an outline that includes specific needs from your zoo. I have previous budgets and examples on file and will share them with you. Nothing makes an administrator more nervous than a concept. Develop a plan, get a core group of keepers on board and present your ideas in writing to your Director.

Conferences are a tremendous amount of work, but this is offset by keepers working together who are proud of their zoos and their profession.

Once again, I am here to help. I look forward to talking with you about hosting the AAZK Conference for the year 2000.



Ed Hansen
AAZK Executive Director
Tucson, AZ



Coming Events

3rd International Small Felid Workshop

May 27-29, 1997 in Las Vegas, NV. Sponsored by the Zoological Society of San Diego and SOS Care, this year's focus will include representatives from range countries and small felid populations on other continents. Presentations will include field studies, enrichment, housing, husbandry, diets, veterinary perspectives, infant nutrition, and much more. For further information and registration packets contact: Pat Quillen, 15453 Woods Valley Rd., Valley Center, CA 92082 Phone: (619) 749-3946; Fax (619) 749-1324.

The Regional Aquatic Workshop

- June 12-14, 1997. Hosted by Omaha's Henry Doorly Zoo. For further information contact Kathy Vires, Aquarium Supervisor, Omaha's Henry Doorly Zoo, 3701 South 10th St., Omaha, NE 68107-2200.

The Annual Invertebrates in Captivity Conference

- July 31-Aug. 3, 1997. To be held in Tucson, AZ. For further information contact the Southern Arthropod Studies Institute, P. O. Box 5624, Tucson, AZ 85703; phone (520) 883-3945; fax (520) 883-2578; e-mail: ArthroStud@aol.com.

Association of Avian Veterinarians

- Sept. 9-13, 1997 in Reno, NV. To request registration information call AAV at (303) 756-8380 or fax (303) 759-8861 or e-mail (AAVConOfc@aol.com) or mail request to AAV, 2121 So. Oneida St., Ste. 325, Denver, CO 80224.

AZA Annual Conference

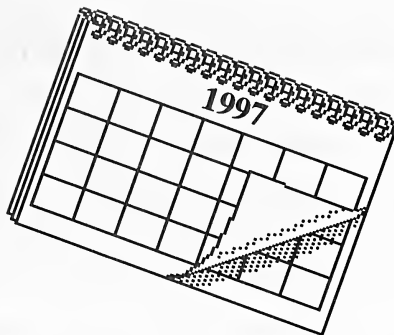
- September 14-18, 1997 - Albuquerque, NM. For further information contact Terry Axline, Albuquerque Biological Park, 903 Tenth St., S.W., Albuquerque, NM 87102 (505) 764-6200.

Annual Conference of the Association of Zoological Horticulture

- September 25-October 1, 1997. For further information contact Gary Outenreach, Horticulture Exhibit Manager, Moody Gardens, 1 Hope Blvd., Galveston, TX 77554 (800) 582-4673, ext. 271.

AAZK National Conference

- October 5-9, 1997 in Houston, TX. Watch the *Forum*



for information or contact Christine Smith or Ric Urban at the Houston Zoo, 1513 North MacGregor, Houston, TX 77030; (713) 520-3200.

Third International Conference on Environmental Enrichment

- October 12-17, 1997 in Orlando, FL. For further information contact Thad Lacinak, Sea World, Inc., 7007 Sea World Dr., Orlando, FL 32821 (407) 363-2651.

American Association of Zoo Veterinarians Annual Conference

- October 26-30, 1997 in Houston, TX at the Sheraton Astrodome. For conference information contact: Wilbur Armand, VMD, Executive Director/AAZV, 6 North Pennell Rd., Media, PA 19063; Phone (610) 358-9530; Fax (610) 892-4813.



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Enrichment Notebooks Now Available to Institutions

The AAZK Enrichment Committee, under the direction of Dianna Frisch (now retired keeper/Columbus Zoo) gathered enrichment ideas and information and, with generous underwriting from the Columbus Zoo, put together an Enrichment Ideas Notebook. This Notebook was made available to institutions at the 1996 National AAZK Conference held in Detroit, MI. The remaining inventory of the Enrichment Notebook has been transferred to AAZK Administrative Offices in Topeka, KS.

At the current time, AAZK and the Enrichment Committee would like to continue to make these available to institutions that did not have their representative claim one at Detroit. If your institution is not included on the list below, and you would like to have a copy, do the following: 1) complete the form below and 2) send a check or money order made payable to AAZK, Inc. for \$10.00 (domestic) or \$15.00 Canadian and foreign to cover postage. Send this request and payment to: AAZK, Inc., 635 S.W. Gage Blvd., Topeka, KS 66606-2066. **Each institution may receive ONLY one notebook at this special price.**

Copies to institutions for only the cost of postage will continue **until 1 July 1997**. After that time there will be a fee charged for the Enrichment Notebook and they will also be made available to individuals for purchase.

The following institutions have **already claimed** their copy of the AAZK Enrichment Notebook: African Wildlife Safari (Pt. Clinton, OH), Akron Zoo, Arizona-Sonora Desert Museum, Assiniboine Park Zoo, John Ball Zoo, Belle Isle Zoo, Benchner Park, Bergen County Zoo, Blank Park Zoo, Brookfield Zoo, Brookgreen Gardens, Buffalo Zoo, Caldwell Zoo, Calgary Zoo, Capron Park Zoo, Chaffee Zoo, Charles Paddock Zoo, Chehaw Wild Animal Park, Cleveland Zoo, Clinder Park, Dallas Zoo, Denver Zoo, Detroit Zoo, Disney Animal Kingdom, Ellen Trout Zoo, Franklin Park Zoo, Ft. Wayne Children's Zoo, Great Plains Zoo, Greater Baton Rouge Zoo, Gulf Breeze Zoo, H. D. Mt. Road Menagerie, Heritage Zoo, Honolulu Zoo, Houston Zoo, Independence Oaks Nature Center, Jackson Zoo, Jacksonville Zoo, Kansas City Zoo, Lincoln Park Zoo, Los Angeles Zoo, Louisville Zoo, Lowry Park Zoo, Lube Foundation, Memphis Zoo & Aquarium, Mesker Park Zoo, Metro Washington Park Zoo, Miami Zoo, Mill Mountain Zoo, Milwaukee County Zoo, Moody Gardens, National Zoo, Newark Museum Mini Zoo, Niabi Zoo, North Carolina Zoo, N.C. Museum of Life & Science, Oakland Zoo, Omaha Zoo, Oschner Park Zoo, Philadelphia Zoo, Potawatomi Zoo, Potter Park Zoo, Prospect Park Wildlife Center, Racine Zoo, Rio Grande Zoo, Riverbanks Zoo, Roger Williams Park Zoo, Rolling Hills Refuge Wildlife Center, Sagnia Children's Zoo, Salisbury Zoo, San Diego Zoo, San Francisco Zoo, Sedgwick County Zoo, Seneca Park Zoo, Silver Springs Wildlife Park, Staten Island Zoo, St. Louis Zoo, Storybook Gardens, Sunset Zoo, The Living Desert, Thompson Park Zoo, Toledo Zoo, Topeka Zoo, University of Colorado, Valley Zoo, Woodland Park Zoo, Zoo Aves.

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Title/Position: _____ Date: _____

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Smith and Karl E. Kallmeyer, **Pueblo Zoo
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Wildlife Rescue & Rehab Center (NM)**;
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David R. Meyer, **Wildlife Safari (OR)**;
David Partington, **Metro Toronto Zoo
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Toxoplasmosis Alert - Wallabies

I am investigating the use of Mepron® (atovaquone) for the treatment of toxoplasmosis in wallabies. At this point, my experience with three Bennett's wallabies (*Macropus rufogriseus*) has been impressive. Diagnoses were confirmed by serial serology performed by Dr. J. P. Dubey (USDA) and Dr. D. Scott Adams (VMRD, Inc.) . The first wallaby was switched to Mepron® 100mg./kg./d (po) after becoming blind and just as she was starting into the first stages of congestive heart failure. Her heart and lungs were clear within 24 hours, and she has gradually recovered a good functional level of vision. She gave birth and had a joey in the pouch four months after beginning atovaquone.

The second wallaby also became blind before starting Mepron® 100mg./kg./d. (po), but had not progressed to heart failure. She has recovered eyesight, has been able to conceive and had a joey in the pouch two months after beginning atovaquone. The third wallaby was started on Mepron® 50mg./kg. B. I. D. (po) as soon as he showed signs of lethargy. He returned to his normal level of activity and behavior in less than one week's time and the Mepron® was decreased to 25mg./kg. B. I. D. (po).

Thus far, in my contact with researchers around the world who are involved with toxoplasmosis research and/or wallaby research, as well as wildlife veterinarians in Great Britain, Australia and Tasmania, I have found no other instances where wallabies were able to recover from toxoplasmosis when it had caused blindness. In my survey of the literature and anecdotal experiences, no other therapy has provided such a profound effect as Mepron®.

I would appreciate knowing of anyone's experiences with treating toxoplasmosis in wallabies, whatever the outcome, as well as whether any zoos may be interesting in investigating the effectiveness of Mepron® to prevent and treat toxoplasmosis.

Heartfelt appreciation is extended to the Glaxo-Wellcome Company for a supply of Mepron®, as well as to many individuals who have contributed wisdom and expertise, including Drs. Michael Rogers, Robert Deeter, J. P. Dubey, and D. Scott Adams.

Please send any information/experiences to: Carolynn Crutchley, M. D., Six North Penryn Road, Manheim, PA 17545; Phone: (717) 665-4255; Fax (717) 665-4283 or (717) 664-1643.



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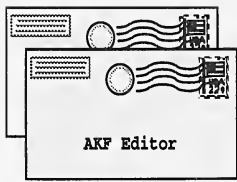
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Letters to the Editor

Dear *AKF* Editor:

Since becoming a keeper I have given birth to three children, so it was with great interest that I read Ed Hansen's article, "Zoonotic Disease Concerns for the Pregnant Zoo Keeper and Expectant Father" (February 1997 *AKF*). Thank you for printing this article. Ed is right that there is very little information out there for zoo keepers who become pregnant regarding the additional risks that our profession poses for pregnancy. His article held some very good information, but I would like to add a few items to it, not all zoonotic, but all risks associated with our jobs.

Anesthetic gases used during immobilizations can be dangerous. Repeated exposure to isoflurane has been shown to increase the incidence of pre-term labor. This is a danger that your OB/GYN will have information on and can therefore advise you. In addition, you may want to talk to a few nurses who have had children, especially if they work in labor and delivery or the operating room, to see how they handled this during their pregnancies. In my case, after discussing it with doctors, nurses and vets, I took part in immobilizations, but only if they were in a well-ventilated area and the mask fit very snugly to prevent escape of gases (which rarely happens with exotics) or the animal was entubated. Obviously, like the risk associated with radiographs, the risk is much greater for vet techs than for most keepers because they assist with procedures more often.

Zookeeping is a very physical job which makes most of us sweat in a most unglamorous manner. Like a lot of keepers, I didn't always take my morning and afternoon breaks with regularity before I got pregnant. However, once you're pregnant you *have* to take those breaks. Sit down for 10-15 minutes, put your feet up and drink something. Dehydration is a serious concern otherwise, especially if it's summer or you are in the south. Most pregnant women become light-headed and dizzy easily, especially during the second trimester, because so much of the blood is being diverted to the placenta. Because of this, it's unwise to just run up the ladder to change that light bulb or fix the mesh that is coming down. Get someone else to do it for you.

Lifting heavy weights is something that every pregnant woman is counseled against. It's sometimes hard to find something to do as a keeper that doesn't involve heavy lifting, but leave the alfalfa bales to someone else. Towards the end of pregnancy, lifting too much can put a woman into labor (although it's hard to find a woman who is 39 weeks pregnant who would consider that a bad thing!).

Most of the animals that we work with have a much better sense of smell than we humans and they notice and react to a pregnant woman's changing hormones and phermones. In my experience, hoofstock seem to like those changes, but felines do not. This is especially important if you go in with your animals for cleaning, feeding, etc. When something large and male suddenly decides that he likes you a lot, this is not necessarily a good thing.

For the diseases Ed discussed, I would like to point out that most of us associate them with cleaning cages. However, we need to be aware that if something may be present in uncooked or undercooked meat, we also need to take precautions when preparing and feeding out meat diets.

My section at The North Carolina Zoo has the facilities for me to shower out before leaving and to launder my uniforms on-site. If you have the facilities to do this, great. If not, changing clothes before you leave for home will help a great deal.

Finally, these concerns don't all suddenly go away when you give birth. If you breastfeed your baby, just about everything known to man can be transmitted through your breast milk. Also, small children put everything in their mouths. That includes your keys, your nametag and the buttons on your shirt. Be sure that your work items are not accessible to your children.

The most important tools you have are information, personal protection equipment, good hygiene and common sense. May you all have children as healthy and beautiful as mine (in my totally unbiased maternal opinion).

Sincerely,

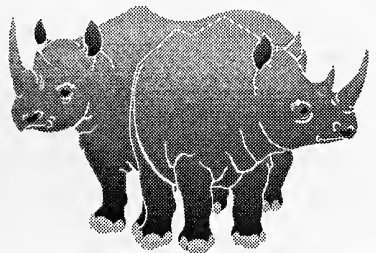
Kris Swartchick, Keeper
North Carolina Zoo, Asheboro, NC

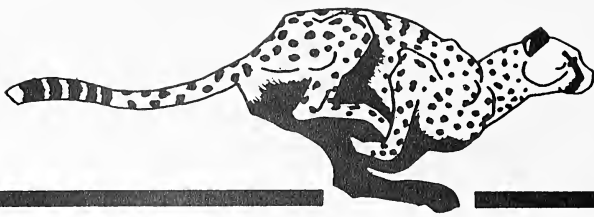
Bowling for Rhinos Update

If you have questions about "Bowling for Rhinos", please contact Patty Pearthree, P. O. Box 199026, Indianapolis, IN 46219-9026; call (317) 322-8723 or e-mail: ppear3@aazk.ind.net. You can also get information on the AAZK Web Page that has recently been updated: <http://aazk.ind.net>. This is the third anniversary for the AAZK Web Page and it has a whole new look (courtesy of Herbie Pearthree) - check it out!

AAZK is now assessing a **\$25.00 registration fee** for each Chapter or institution hosting a BFR event (see Jan. 1997 *AKF*, p. 3 for details). This is a fee which must come from your Chapter or organization, not from BFR monies raised at your event. Checks should be made out to AAZK, Inc. and mailed to Administrative Offices or to Patty Pearthree as soon as possible. This \$25.00 fee helps pay for such items as the \$695.00 printing costs of new BFR sponsor sheets which the Association incurred this year.

I will be out of the country from 22 June until 14 July, so please make sure you have plenty of sponsor forms on hand! Remember, in order to qualify to win the trip to Kenya, you must be a National AAZK member in good standing and all your BFR monies must be turned in to me by the **1 September** deadline.





REACTIONS

A Question and Answer Forum for the Zoo Professional on Crisis Management

*By William K. Baker, Jr.
Zoologist, Lufkin, TX*

QUESTION: What is the difference between a standard first aid kit and a first aid/trauma kit?

FIRST AID KITS

First aid kits come in a variety of types and sizes. This variability is due to numerous factors such as intended use, portability, and cost. The cost of a first aid kit is almost always directly proportionate to the size. Typically, the larger or more specialized the kit is, the more expensive. The four basic types of first aid kits are: unitized first aid kits, bulk first aid kits, first aid cabinets, and specific-purpose first aid kits.

Unitized First Aid Kits

This kit is probably the most commonly used type in the workplace. This is due to low cost, portability, and ease of restocking. It is composed entirely of a series of small color-coded cardboard boxes. These small boxes are referred to as "units". Each one is encased in a clear plastic wrapping to protect the contents and insure sterility. The color-coding provides the user with a quick visual reference to treat a specific type of injury. The unitized first aid kit is designed normally for treating minor injuries and is intended for multiple station placement.

Bulk First Aid Kit

This kit is slightly more advanced. It typically incorporates elements of the unitized kit and bulk packages of the more commonly used items. Examples of bulk packaging would be a variety of adhesive, triangular, and gauze bandages. Also, it will normally include antibiotic and burn ointments. These kits range in size from the fairly small up to an extremely large wall kit that could treat minor injuries on a regular basis without constant restocking.

First Aid Cabinets

These kits tend to be extremely large and are not designed to be portable. This is the type of kit that is normally associated with factories and heavy industry. They are typically filled with a wide variety of bulk packaged medications, adhesive bandages, gauze bandages, tape, splints, eye wash, and burn treatment items. These kits are intended to meet the day-to-day minor needs and also serve to treat a wide variety of more serious injuries. Examples of this would be abrasions, burns and eye injuries.

Specific Purpose First Aid Kits

These kits are designed to incorporate elements from all of the ones previously listed. Size and components depend upon the specific first aid need that the kit is designed to address. Examples of this are: bloodborne pathogen kits, insect sting kits, snake bite kits, and Department of Transportation kits for vehicles.

First Aid/Trauma Kits

This particular first aid kit is highly specialized and is designed to meet the needs of the emergency responder who may have to address any situation. They are very similar to the "crash kits" carried by EMTs. The major difference is that they normally do not include the pharmaceutical supplies of the professional responder. They do allow an individual who has received extensive first aid training to respond effectively to trauma situations such as burns, broken bones, and extensive tissue damage. The kit is designed to be portable and provide the equipment necessary to stabilize the patient until professional help arrives on the scene. These kits would therefore be ideal in a zoological facility to treat serious injuries that a zoo keeper or visitor might incur if injured by an animal. Ideally, they would be placed in key locations of a facility to provide assistance beyond the basic first aid kit.

NEXT MONTH: Our staff members are unable to practice with our firearms on a regular basis due to financial and time constraints. Are there any alternatives?

If you would like to submit a question for this column or have comments on previously published material, please send them to: Reactions/AKF, 635 S. W. Gage Blvd., Topeka, KS 66606-2066.

(About the author: Since 1985 Bill has been active in the fields of science, zoology and wildlife management. His education and experience include a B.S. in wildlife management and post-graduate studies in zoology, Lab and Museum Assistant, Shoot Team leader, ERT Member, Senior Keeper and Large Mammal Keeper at various AZA facilities. His area of research is crisis management in zoological institutions, which draws upon practical experience and training as a Rescue Diver, Hunter Safety Instructor, NRA Firearms Instructor, and Red Cross CPR/First Aid Instructor.)

Animal Behavior Concerns & Solutions

A Question and Answer Forum for the Zoo Professional

By Diana Guerrero, Independent Behavior Consultant,
Ark Animals of California, San Diego, CA

QUESTION

We have a problem between one pair of our orangutans (*Pongo pygmaeus pygmaeus*). These individuals were recently introduced and we are having difficulties with the integration. The male has been at the facility for under a year and is half the age of the female. Your feedback would be appreciated.

Note: Space constraints prevent all details from being included.

BACKGROUND

Upon introduction the male was locked in a confined area adjacent to the female and he panicked. The introduction period was then carried out over a time period of a few weeks. They are separated at night.

The male will approach the female occasionally and make overtures to her. Although she will engage in play (wrestling), she will not allow genital touching. She has solicited him but always breaks into play instead of mating. She does not appear to view him as a mature male.

The male has been observed cowering or standing in a corner facing the wall away from the female; during the time that they spend together he almost always has loose stools. In addition, it appears that he has displayed some annoyance behavior.

Sometime after the integration, the male orangutan stopped eating his primate chow. After numerous strategies were tried, he did begin to eat again. However, during this time the animals were also temporarily separated. Once they were placed together again, his eating pattern remained stable but he resumed exhibiting fearful behavior and again had loose stool.

ANIMAL BACKGROUND

The male orangutan was hand-reared and then turned over to a surrogate mother. He appears to have a "hypersensitive" personality and flip flops from being fine one day and then very depressed or scared the next. No specific conditions or events have been noticed to correlate with the behavior.

Notations from his former caretakers reflect that he was reared with another orangutan infant and later placed within a group. Once placed with the surrogate mother, he mated with her frequently and became very depressed for several months after separation from her. This period of time was described as a deep depression.

Too much spoiling by keeper staff, or the time period of when the male was removed from the nursery and also the surrogate, can be critical to his reactions/responses. If he was removed too early, than the mother-infant bond was forced and could be the cause of some of the problems.

Further background history shows this animal being very cautious and slow to accept change or new things. As he has grown older, he was inadvertently trained ("trained by accident") to engage in some "sulking" behavior by human caretakers who would indulge and spoil him because they were sympathetic and thought they were comforting him. Whenever he engaged in his "mood" he would receive more keeper attention. After his stress interactions with the female, he has solicited grooming from his keeper staff.

The female is very submissive in relation to other animals she has been housed with. It appears that she was mother-reared. It may be that she views this young male as a juvenile or youngster since she has been housed and mated by an older male. She is also very geared toward humans.

OTHER NOTES

Unfortunately, it would appear that the initial introduction was forced, throwing the male into a panic where he could not escape close proximity from the female. Although separated by barriers, his reactions were adverse. This initial trauma has contributed to an uphill battle.

If the introduction is done on the territory of the established animal (the female in this case) related problems can occur if enough time exposure before hand is not an option. Introductions are best done in a limited contact manner where there is separation in the forms of barriers (bars or mesh) and so the animals can acclimate to each other slowly. They should be able to investigate, instigate interactions, or withdraw on their own terms.

Once they are showing active interest in each other, and tolerating intimate touching, then the odds of successful integration are better. Using the cycling pattern of the female can assist you with this, since she will be more receptive to integration with him if she is cycling when they are introduced. He will also be more interested.

There was only slight aggression observed between the two orangutans after introduction. The male did learn to use an object the female feared, to chase her, however the male remained afraid of the female. They were observed mating only once near the beginning of their introduction. This mating occurred all day and when she tired of it, she slugged him and he withdrew and sulked. At that time the female was implanted; she is currently also implanted.

The vocalization heard in his displays could be a submissive sound. If it is closer to a whine, it could be complaint (unsure, annoyance) or discomfort. Without seeing footage of this or the animals in interactions, it is hard for me to assess. It sounds like he could have also been into a low level fear reaction display.

Trends in the cowering behavior can offer some clues but it is suspected that he is just very fearful and insecure. It takes some animals between six months to a year to fully acclimate in a new environment and with new individuals. He needs to be able to have an escape area or an area he can feel secure in.

This animal seems like he needs you to do some strategic short-term work to get him more securely integrated. Knowing what is going on in detail could be helpful in this case. Perhaps some students could come in to help troubleshoot by doing long-term observations to determine what some of the triggers may be.

SUGGESTED CONSIDERATIONS

Give them time. Depending on how long they have been together, and the integration history, it will often take six months to a year for a new animal to emotionally acclimate. If he is hypersensitive, as suspected, it will take a while but will be possible. At the moment do not leave them together on exhibit 24 hours a day; give them the acclimation time and a break from each other so that they do want to see one another and interact in the exhibit.

Desensitize and approximate up the cohabitation. You might consider keeping them together for a couple of days, and then giving them a break before the stress related behavior appears. i.e. one day together, give them a break, then a couple of days together, then a break, then a few more days, then a break....approximating it up so that they develop an interest in the interaction and it is mainly positive. This is not long-term separation, just enough so that they will be glad for the company when let back in.

It would be advantageous to have them in the back area with visual and limited contact through the bars during a "separation." Once he is feeling more comfortable full integration will be easier. This would be a very good strategy if you are pairing it before she cycles....her receptivity would be good to take advantage of.

Stress relief. This will also give the male some time to rest in between and reduce the stress level affecting his eating and toileting habits. Be sure to do this slowly and keep it positive so you have it being pleasurable for all involved. Make it a good experience and relieve the stress before it escalates or you will have more complications further down the road.

Positive reinforcement. You might reward them for mutual toleration by pairing his presence in the exhibit with new toys, and giving preferred food items only when he is there in the exhibit. Training work could be done but due to the design of your ape house and staffing constraints, this may not be an option.

Escape areas. Another thought would be to have a crawl space or escape area to enable him to get out of the exhibit area. Don't know what their size differences are or if that would be possible. The main concern is that you give him the option of escape or before the cycle of behavior begins to decline into a stress scenario.

Behavior Clues. Watch for patterns of low level behavior signals. You will want to curtail interactions before they begin to effect him physiologically. Once the cycle of behavior starts it is harder to stop. At low levels of stress, give them separation and a rest. The whole run of the exhibit and internal areas is good, but you may need to allow for complete separation. Approximate up in time and interactions.

Charting the cycle of the female is a good strategy but you may want to also chart the cycle of behavior patterns. Watch for overtures and note when and where they occur.

Avoid Inadvertent Reinforcement. Use caution and watch for him playing off of keeper bonds or sympathy. Do not indulge him or groom him after stress scenarios.

Next Month: Clouded Leopard

*About the Author: Since 1978 Diana has been active both in the U. S. and England working with zoos, private collections, an oceanarium, a marine aquarium, and other animal-related organizations involving captive wildlife. She has a broad base of animal experience involving movie & television training, zookeeping, show performances with live animals, education, behavior management, modification and enrichment, rescue and rehabilitation as well as captive breeding and management of endangered species. She is currently working as an Animal Behavior Consultant and Trainer with both exotic and domestic animals, she has authored numerous articles on animal behavior and training. If you have questions for Diana, you may contact her at 1-800-818-7387 or via the email listed below. **NOTE:** The Ark Animals' Website has completed the change to Electronic Magazine Format. The "Ezine" features articles related to captive animal behavior, enrichment, conservation, and similar topics. The publisher welcomes electronically submitted articles (previously published or new work). Deadline is the 10th of the month previous to publishing. Interested parties may contact the publisher at E-mail: arkabc@arkanimals.com Website address is <http://www.arkanimals.com>*



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RAINFOREST RECOLLECTIONS- Part 3 of 3



*By Lisa Fitzgerald, Research Technician
Dallas Zoo, Dallas, TX*

ON THE TRAIL AGAIN

For the next 12 days we split into two teams to walk the trails searching for uakari. We hiked between 10-14 miles daily through muddy lowlands, over mossy log bridges, up hills and down hills. We would stop for about 20 minutes for a lunch snack (I would eat one granola bar and give the other to my guide). We filled our water bottles at running streams and drank the water untreated. The guides would scoop a couple of handfuls of water into their mouths while we drank quarts and quarts of water. Suzi had become so acclimated to the forest that she had adopted the guides method of drinking and required much less water than we did. Just as I was amazed by the fact that Jeisen and Marcos did not sweat, I think that they were amazed by the volume of perspiration emanating from our bodies. I timed myself, 10 minutes into the hike I was beginning to sweat; by 30 minutes my back, chest and waist were wet; within an hour most of my body was wet; after three hours I was thoroughly drenched; and after five hours I was pouring liquid from my precious rubber boots and the liquid wasn't stream water. For some strange reason I craved orange soda while I was hiking through the forest. I don't normally drink orange soda, but I would have wrestled with a jaguar if someone had offered me one in exchange.

On our daily hikes we were of course searching for the missing uakari. Suzi had not seen them in three weeks and was beginning to suspect that they had moved to a wetter area. In the absence of uakari, we were also recording other primate sightings with the exception of the well-studied tamarins. We recorded the location and troop size of woolly monkeys, saki monkeys, titi monkeys, squirrel monkeys, and two species of capuchins. I had the pleasure of watching troops large and small while they fed and moved through the trees. I particularly remember a sighting of a titi family climbing up a deadfall out of a clearing, they were close and in the sun. I can vividly recall their tentative movements up the tree as they watched us watching them. Of course, I did not have my camera on the trail that day. Another favorite primate memory is of a solitary male saki monkey crossing overhead and shoving his face through the foliage to stare down at us as we looked up at him.

One afternoon as Linda, Marcos, and I waited in camp for the arrival of Suzi and Jeisen, we realized that they had located the uakari. They were late and the general feeling was one of excitement, not concern. Suzi and Marcos would return when the uakari had selected a sleeping tree sometime near sundown. They would return to camp with the aid of flashlights which we all carried on our daily excursions into the forest. With us in camp at that time were two botanists from UNAP, the University in Iquitos, a UNAP student, and an additional guide, Jeisens brother-in-law, Lino. We ate our dinner with the botanists and looked over the samples they had collected. The botanists were working on a catalogue of Peruvian rainforest plants and fungi. In exchange for the use of Suzis camp, guides, and supplies they

had agreed to identify some of the food items eaten by the uakari. They were a boisterous lot, but interesting to talk with and learn from. Linda and I decided to retire early in preparation for a potential predawn departure to the uakari's sleeping tree. As we tried to fall asleep we were interrupted by Suzi's excited exclamation of "We found them!". The uakari had led Suzi and Jeisen well outside of the study area, but they followed them anyway, creating a new trail in the process. Suzi told us that we would have to make a decision, only one of us would be able to make the hike with her in the morning, Neither of us wanted to exclude the other, so I began to search for a coin. Suzi offered another option, we could forfeit our spot to accommodate the Peruvian student. Linda and I looked at each other and decided that the second option was the best choice. We elected to let the student follow the uakari, it was after all his country and one of his country's natural treasures. We also felt that we had another week in which to locate the uakari again.

The next morning Linda and I hiked the trails of our choice with Lino. Lino's enthusiastic naturalist teachings made the day a pleasure. We sampled rainforest fruits and sap from the leche tree. Lino collected fruits for a dish he promised to make that evening. He also filled his homemade backpack with vines which he said he would use to weave baskets for us. Lino's reputation as an artisan preceded his arrival in camp. We had seen some of his wood carvings, an armadillo and a snake. We were thrilled to be selected as recipients of his talents.

When we returned to camp the uakari team was resting in the shade. They had followed the uakari until noon, when they decided not to venture any further out of the study site. Marcos had made several unsuccessful attempts to dart individuals for radio-collaring. The goal was to select a low perching uakari in order to reduce the height of the fall, but few ideal opportunities arose. Marcos is an excellent marksman, but the movements of the uakari and the myriad of branches and leaves defeated his efforts that day. On the positive side, the student was ecstatic about his days adventures and experiences. Linda and I did not regret our decision in the least.

We never did find the uakari again, but our rainforest experiences were multitudinous and indescribable. Linda likened the rainforest to a treasure hunt, you had to search for the treasure, and you were rewarded with new gems everyday. My experiences were so unlike any other field experiences I had had. So unlike the highly visible wildlife of the South African bush, the climatic opposite of the wide open Namibian desert, quiet beyond belief compared to the Bahaman Islands, and vast beyond comparison to the tropical forests of Tamaulipas, Mexico. The rainforest was daunting, it was mysterious, and at times oppressive. I found it to be claustrophobic and breathed a sigh of relief and stared wantonly upward when we reached clearings of fallen trees. My spirits soared when I entered a riverside chakra (farm) with Suzi one morning - I could see a horizon for the first time in two weeks. The rainforest quieted my mind and my soul, I became more introverted and had to force myself into conversation. My eyes searched constantly through the canopy and on the forest floor, always looking for another gem.

FIFTEEN DAYS OF MEMORIES

The rainforest was to me a collection of private experiences. It is hard to describe my feelings in general, although I can recant isolated observations: examining perfectly camouflaged leaf frogs in the floor litter; struggling to identify a group of

paradise tanagers whose bright colors were amazingly muted in the forest shadows; watching a brilliantly marked, tiny frog hop across a log in front of me; stalking a group of blue and gold macaws for 45 minutes off the trail in order to obtain an unobstructed view; and tracking a parade of leaf cutter ants back to their nest.

My human encounters are easier to describe: examining the halting progress of a dugout under construction in a forest clearing; watching Melchor, one of the botanists, scale trees with his pole saw; delighting in watching the evening progress of Lino's basket weaving; being encouraged across log bridges by Marcos' easy, beautiful smile; impressed by Jeisen's quiet study of English textbooks,; and amused by Suzi's morning crossword puzzles. We worried about snakebites and falling trees. Although we never spotted a venomous snake during our three-week stay, we heard many cracking and moaning trees. One of the vociferous trees was in camp, somewhere near our tent. Linda and I searched daily for signs of breakage in the trees above us. One evening as Suzi, Linda, and I sat in the mosquito-proof shelter drinking our evening tea we heard the unmistakable snap and falling swoosh of a nearby tree. It was close and we all perceived our danger at once. As we collided at the tent door, a la the Three Stooges, we looked backwards to see the fallen limb approximately 25 yards away. We burst into nervous laughter as Marcos and Jeisen giggled uncontrollably at our ineffectual escape. After five minutes we walked over to the limb, we couldn't budge it - it would have killed us if we had been under it. Oddly, I slept better that night convincing myself that the danger from the straining tree was over.

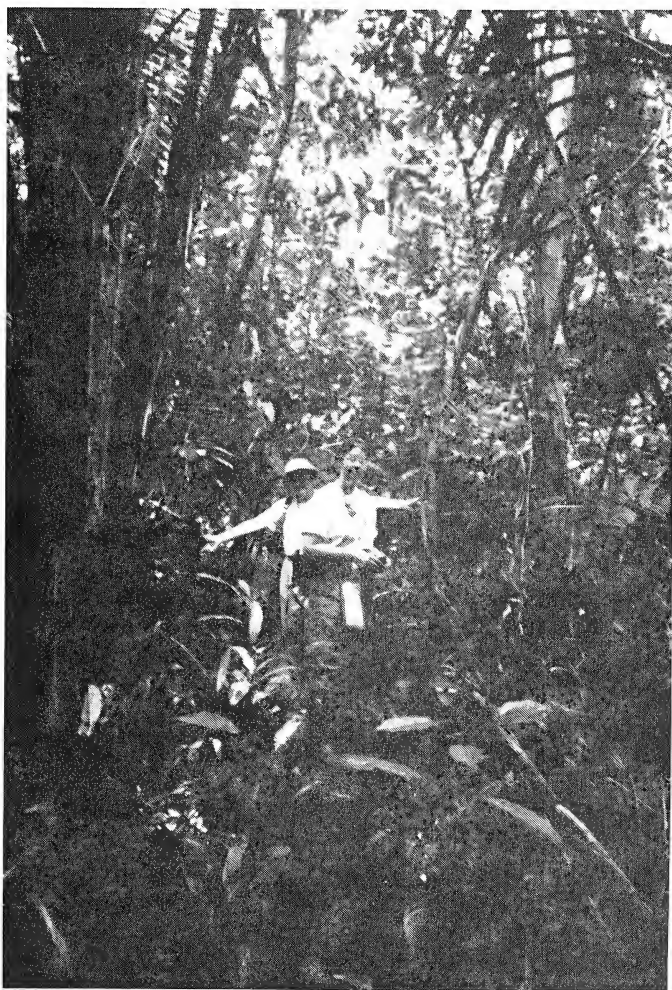
LEAVING THE FOREST

The day had arrived when Linda and I were scheduled to leave. The morning started as usual with dishwashing, breakfast, birdwatching, and crosswords, but the conversation was strained. After breakfast Linda and I returned to our tent, but this time we packed our bags for the river instead of the trail. Suzi was to stay in camp, she had seen too little of the uakari lately. Marcos and Jeisen would take us to El Chino. There were the usual photos and hugs, tears and best wishes were shared. I gave my padded insoles and highly coveted chocolate chip granola bars to Suzi. To the guides I bequeathed my socks, t-shirts, and the remainder of my trail snacks. As we hiked out of camp I turned for one last, longing look. I would miss the peacefulness of the rainforest and the camaraderie of the trail.

We stopped at a house on the river before proceeding to the dugout. The inhabitant shared some bananas with us. I asked him about the ocelot skin on his wall - he had killed the cat nearby. Jeisen surveyed the river, it was dangerously low but he opted for the aquatic route over the alternative eight-mile hike to El Chino. This meant that Marcos could return to camp to search for the uakari with Suzi. We pulled away from shore waving sadly to Marcos. We paddled for the first two hours until we reached Lino's house at the small village of San Pedro. At Lino's house we were warmly welcomed and given a refreshing banana puree which we drank from a communal bowl. I much preferred this liquid to the fermented drink we had passed around earlier at the ocelot hunters house. I was amazed to see that Lino's wife had a pedal-operated Singer® sewing machine, very much like the antique one I had refinished at home. This was the source of Lino's ever-present homemade back pack. I am still not sure how they transported such an ungainly item upriver in a dugout canoe.

After a brief respite at Lino's house, Jeisen shouldered the outboard motor, which had been stored at the house during an emergency dental trip made by Marcos, and headed for the dugout. We were on the river again, cautiously making our way with the occasional use of the paddles. Linda watched for submerged limbs and I bailed water. We were soaked by a ten-minute rainstorm, but it felt good. At one point Jeisen jumped out of the canoe to clear some fallen branches, the canoe escaped his grasp and Linda and I were headed down river on our own. I precariously climbed over the pile of luggage to hit the kill switch on the motor and then Linda and I paddled back to an obviously amused Jeisen. By late afternoon we arrived at Jeisen's home in El Chino. We unloaded the canoe once again with the assistance of his entire family. It was invigorating seeing the family reunion and spending time with the children again. We dined on rice and fresh fish that I swore was chicken until I found the scales and fins.

That night Linda and I repacked our bags, we left what items we could with Nelly. We slept fitfully, the calming sounds of the rainforest night missing in this quiet riverside abode. The next morning we arose early, downed some tea, rice and fish and headed back to the canoe with our luggage once again. Before I left the house I paused to say goodbye to my rubber boots, they were balanced upside down on sticks stuck in the ground - the familiar draining position. They had served me well, those rubber boots, they were a bit scuffed and worn after three weeks in the forest, but they were comforting in their bulkiness. I had grown confident shimmying down mossy log bridges in



The author and Linda Delay-Shelby surrounded by the lush rainforest foilage. (Photo by S, Leonard)

those boots and had relied on them when squelching through deep mud. They were a constant reminder of my rainforest adventures, for they had traveled every inch of the way with me. I left them for Jeisen, I knew that he would need them at some point and would treat them well. As we pulled away from shore I gave my forest green Oakland A's baseball cap to Jeisen's eldest son, Alexander. The cap had traveled with me in Mexico and now Peru, but I wouldn't need it at our next stop, the Andes. Suzi wrote to me after I returned to the U.S., she said that Jeisen reappeared in camp wearing my boots and that Alexander had been sporting a new baseball cap in El Chino.

DOWNRIVER

Although we were officially out of the rainforest now, we still experienced some of the far reaching effects of the forest on our return boat ride to Iquitos. Because the river was so low we had to motor down river to El Chino proper; there floated the familiar blue colectivo. Jeisen and his father, Don Manuel, loaded our equipment onto the boat as we paid our meager fare. Don Manuel was traveling to Iquitos and would be one of the livelier personalities on board. A few other couples and families joined us at the boat's first stop. It was a reverse scenario from our trip upriver, we stopped on both shores to pick up passengers and their market wares. People came on board with live chickens, tortoises, pigs, and parrots. Chickens were tethered in windows above each owner's shoulder, they roosted nervously at first, but soon napped in the sun. My window had a straying chicken, which the owner often had to recall to her window despite its noisy complaints. The pigs were amusing until they started fighting at the rear of the boat where we sat. Don Manuel disciplined them harshly for their argumentative behavior. It was hard to watch. A parakeet perched freely to my left, sometimes on shoulders, sometimes on fingers, sometimes on the luggage. I scratched it until it fell asleep hoping it was traveling to the home of a friend instead of the market in Belen. A capybara carcass was loaded at one stop, its eyes stared blankly from its naked body all the way to town. The yellow-footed tortoises tore at my heart as they dangled from their tethers in the hands of their would-be salesman. The floor of the boat was filled with a fascinating variety of dead and dying fish from the river. We pulled ashore to examine the fish, the boat owner would negotiate a price with the fishermen, and the fish would be meticulously stacked across the floor. Some passengers had to rest their feet on top of the fish, and negotiating a passage to the bow of the boat was nearly impossible. There were redfin catfish, freshwater rays, armored catfish, and a multitude of species unknown to me.

As we progressed slowly toward Iquitos, we continued to take on stalks of bananas, baskets of corn and fruit, and an alarming number of bags of charcoal which were stacked on the roof of the boat. The boat was so full that I questioned our safety. Much to our dismay the boat pulled ashore and three quarters of the passengers disembarked. I asked my neighbor what was happening and she told me that because the river was so low, some of the passengers would have to walk to town. I asked how long it would take them and she said eight hours. Linda and I looked at each other in horror and started to get up. The boat owner smiled and told us no, the gringas would stay with the senior citizens on board. The pilot and driver negotiated the forest of submerged logs in their impressive tandem style, and after an hour of tedious progress we spied our terrestrial passengers on the bank. They had only had to walk 30 to 45 minutes across a bend in the river. Once again, we were all on board dozing in the hot sun among the fruits of the forest.

As soon as we saw Iquitos in the distance we were joined by an entourage of speed boats driven by relatively affluent merchants. The business men and women boarded our plodding boat through the windows and began to survey the contents of the boat. They purchased nearly half the goods on board before we could even see Belen, fish and ears of corn were flung from the windows as the fast boats matched our speed, pigs were swum from boat to boat, and chickens were retethered in their new transports. The pace of business transactions was staggering. I pulled my bags a little closer in fear that they would be bartered.

Soon we came upon another colectivo which was hopelessly stuck in the shallow mud. Men waded out to the boat to assist or steal, I wasn't sure which. We held our breath, but our heroes kept our colectivo on target to Belen. Suzi had told us to watch for Carlos before we reached shore, he would come aside the colectivo in a rented canoe and we would unload ourselves and our luggage through the windows in order to avoid the crush of thieves who meet every boat. We watched and waited and began to discuss Plan B, when Carlos thrust his head in the boat and yelled to us. As we pulled into shore, we cast our luggage out the windows and jumped into the canoe for the short row to shore. Our fellow travelers from El Chino inquired after our safety and association with Carlos, we thanked them for their concern and waved goodbye. I was glad to see that the friendly little parakeet remained on board.

IQUITOS AGAIN

On shore we were accosted by a smell that I will never forget, that of the Belen fish stalls. Carlos hoisted all of our luggage in one load on his back and trudged uphill to the nearest taxi. I gave him some bungee cords I had brought along upon John's advice. I am sure that he sold them, preferring his time-proven method of carrying loads using bark or woven plastic strips from rice bags. He earnestly shook our hands and said goodbye. After a brisk ten-minute ride we were back at La Florentina, we showered for the first time in three weeks and fell asleep under the gentle breeze of ceiling fans.

The next day we relaxed and hand-washed our laundry. We considered a trip to the Iquitos Zoo, but chose to remember the wildlife as we saw it in the rainforest. The city was noisy and hot, we were 20 pounds lighter and unaccustomed to the rich flavors of the restaurant food. As we silently repacked our bags in preparation for our trip to Lima and then to Cusco, our minds fought to remember the nuances and subtleties of the rainforest. As if drugged by a shaman's medicine, we would struggle to remember the rainforest while we conducted our busy Norte Americana lives, but we would never forget.

ADDENDUM

Suzi has relocated her camp, it is now a day's travel from El Chino. Census work is now performed mostly via canoe. The work is still strenuous, but perhaps more rewarding due to easier access to the red uakari.

Additional information about working in the rainforest may be obtained from Dallas Zoo staff members: Dr. Cynthia Bennett, John Fried, Suzy Steele, and Ann Stevens. Detroit Zoo staff members Scott Carter and Michelle Seldon-Koch, can also provide essential details on rainforest survival and field experiences.

Announcing: Zoo Keeper Participation Program

1997 Peruvian Primate-Census - Rio Tapiche Project

In 1997, the red uakari project will be moved further upriver to Rio Tapiche and will be expanded to include a comprehensive census of the 15 primate species in the region. Zoo keeper participation as census surveyors is invited at a fee of \$1000 per month, which will cover food, in-country transportation, accommodations, and guide, plus a small donation to the PPC/RTP. Keeper participants will be responsible for their own airfare and one day's expenses in Iquitos. Selection priorities will go to keepers who are able to commit four consecutive weeks to the project. Contact Scott Carter at the Detroit Zoo, phone (810) 398-0903, ext. 3160; Fax (810) 398-0504; e-mail - Scater@Detroitzoo.org

Junior Zoo Keepers Update



This new membership category of AAZK, Inc. has gotten off to a promising start. As of 1 April, 1997 we have 69 children enrolled and 14 institutional memberships. The feedback has been positive from both the children as well as educators. The zoo community has become involved, endorsing the *Junior Keepers' Forum* as a worthwhile publication and some are incorporating it into their local programs.

Support from our AAZK Chapters has been good as well. Recent donations include \$350.00 from the Indianapolis Chapter and \$1350.00 from the Caldwell Zoo Chapter. Because of generous donations like these from Chapters, we are able to defray publishing costs as we try and recruit new members.

If we are successful this year and our membership base is large enough, we can continue to offer the Junior Zoo Keeper membership category to children next year. Future plans might also include a bi-monthly publication rather than a quarterly one.

Once again, I would like to thank all of the Chapters that have made financial contributions to the *JKF*, and I would like to thank those of you who have been distributing membership fliers. We still need your help spreading the word so...if anyone is interested in contributing to the *JKF*, or needs membership fliers, please contact me at Omaha's Henry Doorly Zoo, 3701 S. 10th St., Omaha, NE 68107.

Diane Callaway, Editor, *Junior Keepers' Forum*

Vice President, AAZK, Inc.

Phone: (402) 733-8401

E-mail: DJMHDZ@aol.com

Legislative Update

Compiled by *Georgeann Johnston*
Legislative Advisor
Sacramento, CA
1-800-338-7348



Endangered Species Act Update, Or, Civics 101

The Endangered Species Act was originally passed by Congress in 1973 and, by its own terms, was set to expire in 1995. In order to continue the ESA in one form or another, it is necessary for Congress to re-enact the law or enact new legislation on a similar topic. During the tenure of the 104th Congress (1995-1996), many bills were introduced which had a bearing on the ESA, from both a positive and negative standpoint. Many of those pieces of legislation died with the expiration of the 104th Congress in December 1996.

The 105th Congress is now in session and will be considering new legislation on the same topics. So, forget any of the bills we discussed here over the past two years — the numbering system and titles of pending legislation has started again from square one.

In the interim, while Congress continues to debate and argue over the need for an ESA and the terms it should or should not contain, President Clinton took the initiative and essentially extended the 1973 ESA while Congress continues to ponder the matter. The U. S. Fish and Wildlife Service, a division of the Department of the Interior, is the agency charged with the enforcement of the ESA, and it continues to list species as either threatened or endangered as well as attempting to enforce rules and regulations for the protection of species covered by the Act.

By way of background, there are currently 1,451 species listed under the ESA; 700 of which are endangered and 200 of which are threatened. Additionally, over 4,000 species are awaiting evaluation to determine if they are entitled to listing. These numbers include both plants and animals. In addition to listing species, the USFWS also designates "critical habitats" — geographic areas which must be maintained in order for a species to survive. Only 25 percent of the listed species have also had critical habitats identified and designated for their survival and recovery.

Below is a quick survey of just some of the bills pending before Congress that have an impact on the ESA or species of interest to readers of this journal. As these bills move through the House and Senate, I will try to keep you updated regarding their progress. Of course, if there is some bill you find interesting now, you can always call me for more information.

H.R. 226: A bill to deem the Florida Panther to be an endangered species under the ESA.

S. 361: A bill to amend the ESA of 1973 to prohibit the sale, importation, or exportation of products labeled as containing endangered species. One primary

target of this bill is products such as “tiger balm” or other tiger or bear products sold as medicines.

H.R. 752: A bill to amend the ESA of 1973 to ensure that persons who suffer or are threatened with injury resulting from a violation of the Act are compensated for their harm. In summary, this is one of the “takings” bills, which would require landowners to be compensated by the federal government if it were discovered that an endangered species lived on their land and that, therefore, the development or use of the land was impinged in some way.

Related Legislation Which Would Impact the ESA:

H.R. 39: A bill to reauthorize the African Elephant Conservation Act.

S. 39: A bill to amend the Marine Mammal Protection Act of 1972 to support the International Dolphin Conservation Program in the Pacific.

H.R. 511: A bill to amend the National Wildlife Refuge System Administration Act of 1966 to improve the management of the National Wildlife Refuge System by placing many national refuges under the control of private parties or organizations that wish to use the land for purposes other than its conservation.

Source: Library of Congress Bill Summary and Status for the 105th Congress available on the World Wide Web; Defenders of Wildlife “How the ESA Works” available at the Defenders Web site; Marine Conservation News, published by the Center for Marine Conservation, Winter 1996

Oh No! Just When You Thought You Understood The ESA, Here Comes The ENHA (Endangered Natural Heritage Act)

The Endangered Natural Heritage Act (ENHA) is an idea still in the making. The National Academy of Sciences has issued a recommendation that a scientific commission should be established to study and identify species and ecosystems at risk of extinction!

An inventory from this proposed National Commission on Species Extinction would help federal and state agencies set priorities and develop multi-species and ecosystem conservation strategies. In essence, the plan calls for a more global or overview look at species extinction problems, rather than the ESA approach of looking at individual species, one at a time, as if they lived in a vacuum.

Numerous organizations interested in environmental issues, including Defenders of Wildlife, the Sierra Club, The Nature Conservancy, and others, are working together to secure funding in Congress for the commission described above. When a specific bill is introduced, this column will let you know. In the meantime, information about the concept of an ENHA and its broader view of species survival can be obtained from the Web site http://www.defenders.org/esal_enh.html or by calling the author of this column for printed information.

Source: Defenders of Wildlife, Endangered Natural Heritage Act publications.

Snow Goose Population Explosion Threatens Arctic Ecosystems

In the 1980s, wildlife biologists and conservationists noted a sharp decline in duck populations and attempted to reverse this by restoring wetlands in key nesting areas. The effect has been such a success that now, instead of too few ducks, the problem is too many snow geese—so many, in fact, that they are causing ecological havoc on their arctic breeding grounds. If the population explosion continues unabated, the number of birds will continue to rise approximately five percent per year.

Scientists studying the situation under a joint agreement between the U. S. and Canadian governments are uncertain of the long-term effects but are concerned that the overabundance could cause a decline in other species that nest in the same arctic region! These include semipalmated sandpipers, red-necked phalaropes, yellow rails, American wigeons, northern shovelers, and a variety of passerines. Paul Schmidt, chief of the U. S. Fish and Wildlife Service's Migratory Bird Management Office and co-chair of the Arctic Goose Joint Venture of the North American Waterfowl Management Plan noted "They break open the turf and uproot plants, especially grasses and sedges, leading to erosion and increased soil salinity. In turn, fewer plants grow and you have a vicious cycle with habitat conditions growing worse each year. The end result is a degradation of the fragile arctic ecosystem. It is an ecosystem in peril."

The scientists have stated that hunting is certainly part of a solution, but the sport is unlikely to solve the problem by itself. Other possible solutions cited in the report include loosening regulations on baiting, electronic calls, and concealment during spring "snow goose only" seasons; expanding late season hunting before March 10; and negotiating a revision to the Migratory Bird Convention with Canada to allow appropriate hunting of migratory birds between March 10 and September 1.

Source: U.S. Fish & Wildlife Service Press Release 1 April 1997

Hunting And Fishing Taxes Provide State Wildlife Agencies With \$439 Million For Fish And Wildlife Projects

Federal excise taxes paid by anglers, hunters, and recreational shooters will be turned over to state fish and wildlife programs for the purpose of supporting fish and wildlife restoration and recreation projects in 1997. The Interior Department's U.S. Fish and Wildlife Service will distribute the funds under the Federal Aid in Sport Fish and Wildlife Restoration programs, helping to pay for thousands of wildlife conservation and recreation projects throughout the United States and its territories.

"This is outstanding news for anyone who cherishes our Nation's natural heritage," Interior Secretary Bruce Babbitt said. "As we mark the 60th anniversary of the Federal Aid program, we can thank hunters, anglers, and recreational shooters who have made it possible for states to have effective fish and wildlife conservation programs. The record amount collected in 1996 under the Federal Aid program will continue this long tradition and help improve conservation in every part of our country."

Nineteen-thirty-seven was the first year that the excise tax was collected and since then, these taxes have helped recover many popular species including white-tailed deer, wood ducks, and wild turkeys. The money is derived from an 11-percent excise tax on sporting arms and ammunition, a 10-percent tax on pistols and revolvers, and an 11-percent tax on certain archery equipment. One-half of the tax on handguns and archery equipment is made available for state hunter education programs.

Projects include acquisition and improvement of wildlife habitat, introduction of wildlife into suitable habitat, research on wildlife problems, surveys and inventories of wildlife, acquisition and development of wildlife-related recreational facilities, and hunter education programs, including construction and operation of public shooting ranges.

Source: U.S. Fish & Wildlife Press Release 1 April 1997

“Wildlife Friendly” Fences Coming To Botswana

The government of Botswana is considering the construction of “wildlife friendly fences” — which control the movement of one species while allowing others to roam free — in the Okavango Delta. The project is still in the planning stages but plans are afoot to construct experimental fences west of the delta to control cattle.

Alternative plans include a “roll-back fence” which can be rolled out of place on occasion to let wildlife pass through; a “bottom-gap” fence which allows smaller “elastizied” fences which would decrease the number of surprise encounters and have a built-in stretch to avoid injuring animals which come in contact with the fencing material.

Source: South African Mail & Guardian Newspaper 21 February 1997

Sugar Plantation Dispute Heats Up In Kasane Forest Reserve

The Kasane Forest Reserve is home to hundreds of elephants in Botswana. Now, Hulletts Sugar Company of South Africa is proposing construction of a sugar plantation and reports are that despite objections from the Departments of Forestry and Agriculture, the President of Botswana is looking favorably at the project.

The plantation and mill will employ 4,000 people and would be built on both the Nambian and Botswana sides of the Chobe River. A feasibility study is being undertaken by Hulletts and the World Bank, with a projected completion date in September.

Vigorous opposition to the plan has come from the Chobe Wildlife Trust that say the plantation would have to be fenced, eliminating the ability of elephants to reach the river for water. Additionally, the elephants and buffalo would be drawn to the sugar cane as a diet substitute for their natural browse, increasing the risk of adverse human-elephant interactions.

Other environmental groups oppose the project on the basis that large sugar plantations require great deals of water and that the Chobe River cannot support

the demand and continue to supply people, farms, and wildlife downstream. Another concern is the dumping of fertilizer into the waterways, leading to increased pollution and problems downstream of the project.

Source: South African Mail & Guardian Newspaper 14 February 1997

Rhino-Tiger Conservation Projects Receive U. S. Grants

A total of 14 projects will receive over \$250,000 from The Rhinoceros and Tiger Conservation Act of 1994 grants administered by the U. S. Fish and Wildlife Service. The funds appropriated by the federal government must be matched by private donations to be effective. Congress appropriated \$200,000 for the grants in 1996 and another \$400,000 in 1997, but the first projects approved for receipt of money were not notified until March 1997.

Highlights of the projects which will receive funding include purchase of equipment and supplies to support the Friends of Conservation of Naikarra/Laleta Community Rhino Scout Program in Kenya, a rhino population monitoring program in South Africa, and another aerial monitoring program of northern white rhinos in Zaire.

With respect to tigers, funding has been approved for investigation into poaching and illegal trade of tigers in India, a community education program at Way Kambas National Park in Indonesia, and funds for a workshop on tiger field assessment to be put on by the University of Minnesota.

Much of the money appropriated by Congress for conservation of these species has yet to be allocated. People or organizations interested in presenting proposals for funding can obtain further information about the grants by calling Patricia Fisher, USFWS, (202) 208-5634.

Source: U.S. Fish & Wildlife Service Press Release 13 March 1997

Pygmy Owl Granted Endangered Status

The Cactus Ferruginous Pygmy-Owl, which is found primarily in Arizona, Texas and portions of Northern Mexico, has been granted endangered species status by the U. S. Fish and Wildlife Service. This bird is one of four subspecies of the ferruginous pygmy-owl which range throughout the American southwest down through Mexico to Central America.

The habitat of the owl, primarily fairly dense woody thickets or woodlands with trees and/or cacti large enough to provide nesting cavities, is being decimated, particularly in Arizona, thus spearheading the effort to list this bird on the Endangered Species List.

An extensive report concerning the owl and its ecology are contained in the notice of "Determination of Endangered Status" issued by the USFWS and published in the Federal Register 10 March 1997 (vol. 62, #46).

Source: Federal Register 10 March 1997



By Kayla Grams, Arizona-Sonora Desert Museum
and Gretchen Ziegler, Sequoia Park Zoo

RAPTORS - The Animal Behavioral Management Division at the Jacksonville Zoo works with a variety of animals. Conditioning programs enrich their lives (and ours!) on a daily basis. We are fortunate enough to have a good variety of raptors to work with. Some of the birds have permanent injuries, others are fully flighted. They all have unique personalities and really enjoy new stimuli in their exhibits. I would like to share some of the enrichment items they enjoy.

Browse in all sizes (i.e.: bamboo, palmetto fronds, banana plant leaves and stalks, etc.)

Large dried leaves

Cardboard egg cartons

Boxes

Cardboard apple holders

Pieces of wood small enough for the raptor to carry

Suspended bottle to jump at - Andean Condor (*Vulture gryphus*) only

Whole coconuts

Different types of cut fruit

Sugar cane stalks

Pumpkin - whole or big pieces

The barred owl (*Strix varia*) will shred banana leaves the minute they are put in her exhibit. All these raptors wear jesses, so we keep a close eye out for anyone getting tangled up. Some enjoy having their food hidden in a box, as it gives them a chance to "attack" their food. The black vulture (*Coragyps atratus*) started eating the cardboard that was given to him, so we came up with an excellent alternative for hiding his food. We call it the "bird-of-prey burrito" - food rolled up tight in a banana leaf.

Raptors are intelligent animals. Their natural inborn behaviors should always

be taken into consideration. Because of these behaviors, they are very alert and curious when new items are presented to them. We hope some of these ideas will give you a chance to observe your own raptors displaying their amazing abilities to capture, attack, and explore new objects.

--Animal Behavior Management Division, Jacksonville Zoo, Jacksonville, FL
Sandy Peck - Animal Behavioral Management Coordinator
Jayne Tardona - Animal Encounter Trainer
Laine Burr - Animal Encounter Trainer

(Ideas appearing in this column have not necessarily been tested by the editors for safety considerations. Always think ahead and use good judgement when trying new ideas. Eds.)

NOTE: For those of you familiar with *The Shape of Enrichment* newsletter published by Valerie Hare and Karen Worley out of San Diego, we wanted to make you aware of their e-mail address and their Website address. They are listed below:

E-mail: shape@enrichment.org

Website: www.enrichment.org

You can find information about *SHAPE* on the Website or submit material and/or questions to Karen and Valerie via their e-mail address. Check it out!

The Shape of Enrichment is published quarterly. Subscriptions are \$12.00 per calendar year, payable in U. S. funds only, drawn on a U. S. bank. The \$12.00 fee includes postage, both domestic and foreign air mail. Mid-year subscriptions are prorated. Back issues are available for \$3.00 each. Send all subscription requests, article submissions, letters, comments and questions to: 1650 Minden Dr., San Diego, CA 92111-7124.

New Publication Available: A new journal devoted entirely to herpetological conservation has recently made its debut. Entitled Amphibian & Reptile Conservation, this international peer-reviewed scientific journal is published in magazine format and contains color photos, general interest articles and scientific contributions. It also focuses on publishing timely information about the conservation of amphibians and reptiles worldwide in the form of feature articles, reviews, reports, commentaries, book reviews and news bits. Subscription rates are \$18 (U. S.) and \$25 (foreign) for four quarterly issues. For information contact Amphibian and Reptiles Conservation, 2255 N. University Parkway, Ste. 15, Provo, UT 84604-7506 or E-mail the editor, Craig Hassapakis, at ARC@byu.edu.

You can also view the ARC website at

<http://www.byu.edu/~arcon/>



Indicating Ovulation in Cinereous Vultures

(*Aegypius monachus*)

By

Mary Jo Willis, Area Supervisor - Birds, Denver Zoo, Denver, CO
and

Karen Grzybowski, Area Supervisor - Aquatic & Reptile Center,
Milwaukee County Zoo, Milwaukee, WI

Introduction

Native to Europe and Asia, Cinereous vultures (*Aegypius monachus*) are listed as "Threatened" Appendix II by CITES. Wild populations are experiencing significant declines while the status of the captive population is unstable. The captive North American population consists of an aging potential founder stock of 21 individuals ranging from 21-36 years of age, and a F-1 generation of 25 individuals from 1-10 years of age (Diebold, 1994). The vultures in the F-1 generation have all been hand-reared with the exception of one parent-reared bird at the Riverbanks Zoo in 1994. Considering the ages of the potential founders, that the majority of the F-1 generation has been hand-reared, and that hand-rearing has been shown to impair reproductive success (Myers, et. al., 1988), this study was undertaken to provide information useful in increasing reproductive success.

Successful artificial insemination is one of the tools that could be used to increase reproduction in captive populations. If ovulation can be determined, the success rate of artificial inseminations could be increased (Czaja et; al., 1974). Non-invasive techniques for determining ovulation are preferred. Excretory steroids in birds have been used for sex determination (Czekala and Lasley, 1977). This study analyzed the fecal samples of female Cincereous vultures for excretory hormones and correlated these hormones with reproductive behaviors.

Materials and Methods

Three pairs of Cincereous vultures were studied during the 1994 breeding season. Two pairs were from the Milwaukee County Zoo and the third pair was from the Riverbanks Zoo. Fecal samples from the females were collected every third day during the breeding season, 1 February through 30 April, 1994. Sample analysis was performed by CRES (Center for Reproduction of Endangered Species) using radioimmunoassay to determine the levels of estrogen, progesterone, and androgens. Time-lapse video recording permitted the analysis

of reproductive behaviors of the two pairs at the Milwaukee County Zoo during this same period. A total of 1,890 hours of tape were reviewed. Reproductive behaviors were tallied on a daily basis. Results were analyzed utilizing Statview SE and Cricket Graph.

To facilitate discussion of the results, the Cinereous vultures will be noted as follows (Note that all the birds in the study were wild-caught, thus their ages are estimated.) Pair A, from the Milwaukee County Zoo, consisted of a 16-year-old male and a 29-year-old female. In 1985 this female was diagnosed with degenerative joint disease, traumatic osteomyelitis, and possible sepsis in the left metatarsal (hock) joint. These medical complications may have prevented the female from achieving proper positioning for successful copulation to occur. Pair B, also from the Milwaukee County Zoo, consisted of a new pairing of a 24-year-old male and a 23-year-old female. Pair C was from the Riverbanks Zoo. Both the male and female of Pair C were 21 years of age.

Results

During the 1994 breeding season, Pair A did not produce an egg. Pair B laid an infertile egg. Pair C laid a fertile egg and successfully parent-reared the chick.

The excretory hormones analyzed were estrogen, progesterone, and androgens (Figures 1, 2 and 3). The mean estrogen level for female A was 73 Ng/gm. Female B's estrogen ranged from 36 Ng/gm to 342 Ng/gm and peaked twice. The first peak occurred at 12 days prior to egg laying and the second peak occurred at six days prior to egg laying. The estrogen levels for female C ranged from 52 to 383 Ng/gm with a major peak at 19 days prior to laying.

Progesterone levels for the Pair A female ranged between 20-30 Ng/gm for the study. These levels ranged between 3-49 Ng/gm for Pair B female. Her level rose to 47 Ng/gm, six days prior to egg laying, then dropped to 11 Ng/gm on the day of lay. The progesterone level of female B again climbed to 49 Ng/gm 36 days after egg laying. The female C showed levels ranging between 14-107 Ng/gm with three major peaks. The first peak of 89 Ng/gm occurred at seven days prior to egg laying. The second peak of 101 Ng/gm was at nine days post lay. The third peak occurred on day 36 post-lay at 107 Ng/gm.

Androgen levels for female A averaged 34 Ng/gm, but reached a low of 7 Ng/gm on 21 March 1994 and a high of 73 Ng/gm on 3 March 1994. Female B's androgen levels ranged from 0-56 Ng/gm. Two peaks, both of 45 Ng/gm, occurred at 24 and six days prior to egg laying. For female C, levels ranged between 14-94 Ng/gm with two main peaks. The first peak was 84 Ng/gm at six days prior to egg laying. The second peak occurred 36 days after lay at 94 Ng/gm.

The reproductive behaviors recorded were nest building, nest maintenance, attempted mounts, mounts, attempted copulations, copulations, and female negative adjusts. Pair A (Figures 4 & 5) includes the female with the bad hock. This female only nest built once during the study. Her nest maintenance activity

occurred for 11 days of the study, with a maximum of two occurrences per day. Male A began nest building on 8 February and continued through the end of April. No mounting or copulatory behaviors occurred during the study.

Both the male and female of pair B demonstrated nest building and nest maintenance behaviors (see Figures 6 & 7). Nest maintenance by male B peaked at 36 occurrences per day nine days prior to the egg being laid. Female B showed a peak in this behavior for 35 occurrences 25 days prior to egg laying. As for nest building, the male peaked twice at 23 occurrences per day 20 days prior to lay and at 22 occurrences four and five days post lay. The female peaked in nest building 19 days prior to lay at 24 occurrences. Pair B's nest building and nest maintenance behaviors followed the same curve until two days before the egg was laid. At this time the female showed an abrupt decrease in these behaviors. The female began laying in the nest for brief periods (20-60 minutes) four days prior to lay.

Pair B demonstrated mounting and copulatory behaviors. Both attempted mounts and successful mounts peaked at about one month prior to egg laying and again at one week post egg laying. (The egg was removed to an incubator the day it was laid. It was not replaced with a dummy egg to encourage double clutching.) Copulatory behaviors included attempted and incomplete copulations began 34 days before the egg was laid and continued until six days after the egg was laid (Figure 8). Complete copulations were infrequent. These behaviors were clustered around 32-34 days prior to the lay date. Single complete copulations also occurred on days 11 and four prior to egg laying. After the egg was laid, there were numerous complete copulations, peaking at four occurrences per day at four days post egg laying.

Reproductive behaviors were not recorded for Pair C. Only one time-lapse VCR (belonging to the Milwaukee County Zoo) was available during the study.

Discussion

The analysis of excretory hormones demonstrated that there is potential to non-invasively determine ovulation in female Cinereous vultures. For the two egg laying females in the study, estrogen levels peaked prior to laying. Female B peaked at days 12 and six prior to lay. Female C peaked at eighteen days prior to lay. Estrogen is expected to rise in birds prior to egg laying (Wingfield, 1984). It is reported to cause oviduct growth and alter the calcium metabolism (Burke, 1993). All levels of estrogen, progesterone, and androgens are expected to fall during laying (Burke, 1993). For the egg laying females in this study, levels fell as expected.

Although the sample size of the study group was small, inferences might be made from the reproductive behavior of Pair B. The female of this pair decreased her nest building and maintenance behaviors ten days prior to egg laying. This change in behavior could serve as a cue to ovulation. In addition, this female began laying in the nest four days before the egg was laid. This timing could serve as another indicator of ovulation.

The results of this pilot study are promising. Continuation and expansion of this research is being funded through a grant from the Conservation Endowment Fund (CEF) and will include a larger sample size and additional investigators. The investigators believe that non-invasive techniques can be used to predict ovulation which in turn will aid in successful artificial insemination.

Acknowledgements

Funding for this project was provided by a \$750.00 grant from the American Association of Zoo Keepers, Inc. (AAZK, Inc.) to which the researchers are extremely grateful. Many thanks to the Milwaukee County Zoo for the use of their facilities and purchase of the time-lapse video equipment. Sincere gratitude is extended to Riverbanks Zoo and their aviary staff, who collected numerous samples for the project. We would also like to thank Dr. Nancy Czekala of CRES for her continued interest and support while processing numerous fecal samples for this study. For graciously reviewing the drafts of this paper, thanks go out to Craig Berg and Kim Smith of the Milwaukee County Zoo. Finally, we would like to thank Dr. Nancy Harvey of CRES for her mentorship and patient guidance through the behavioral component of the study.

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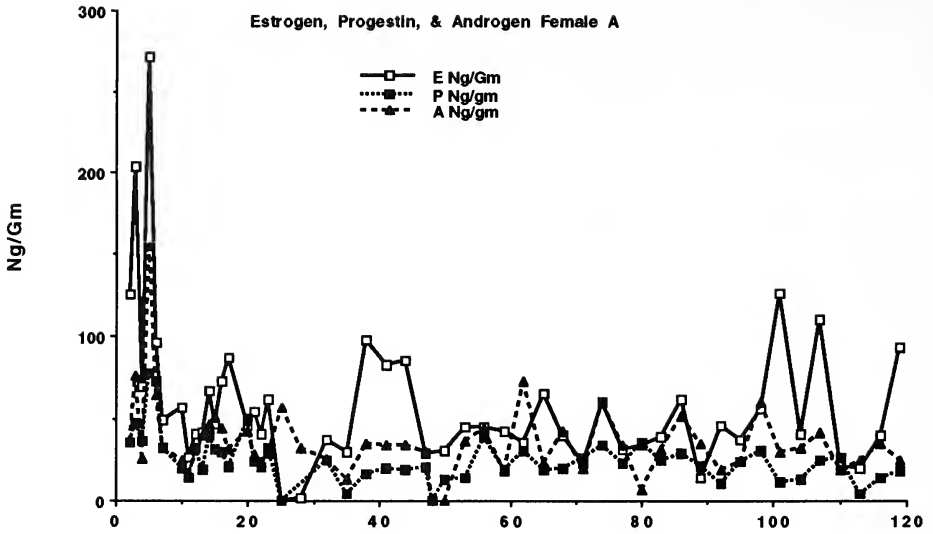


FIGURE 1

No egg was laid by this female. The horizontal axis represents hormone levels from 1 January 1994 to 30 April 1994.

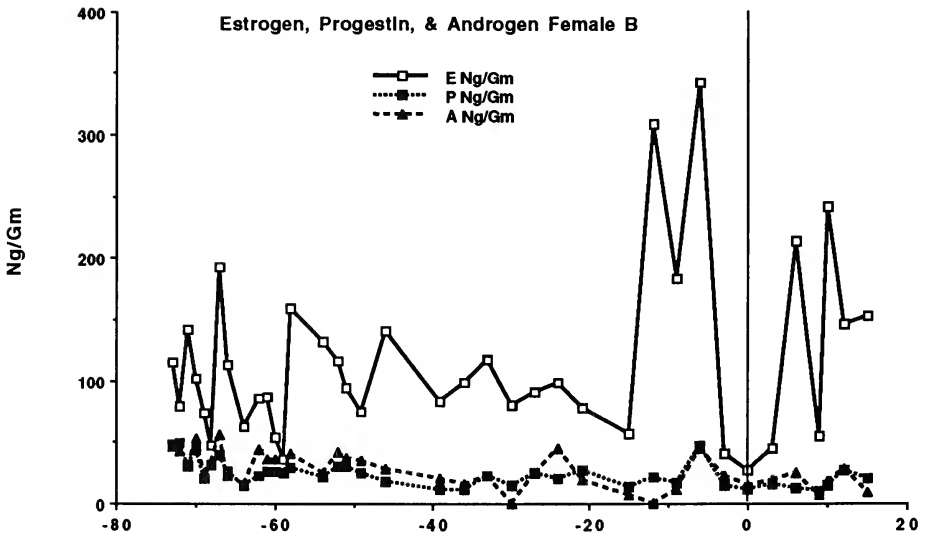


FIGURE 2

Horizontal axis represents hormone levels before and after egg was laid.

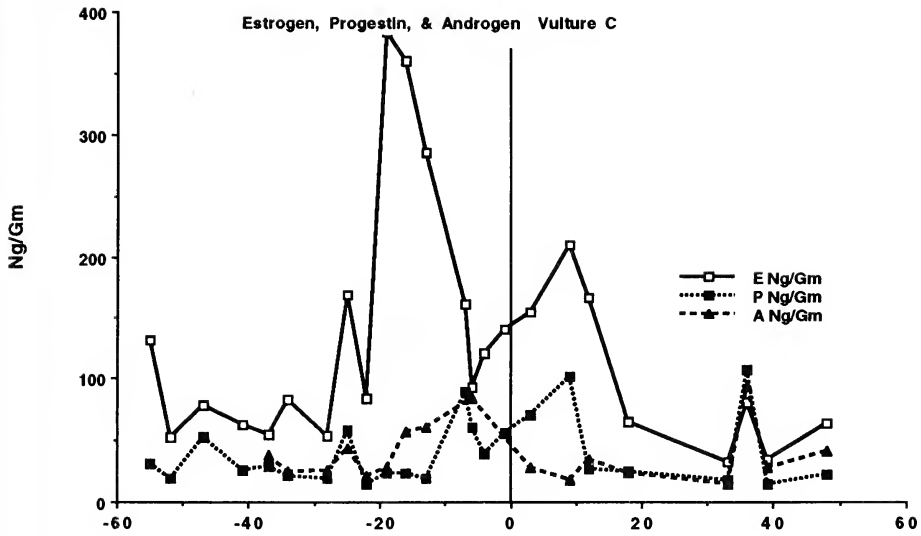


FIGURE 3

Horizontal axis represents hormone levels before and after egg was laid.

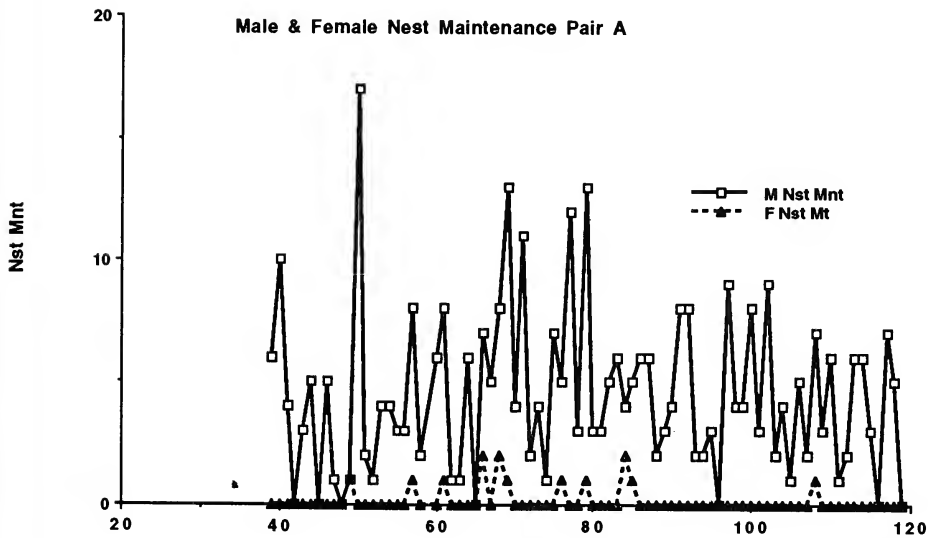


FIGURE 4

Number of occurrences per day from 1 Feb 1994 to 30 April 1994.

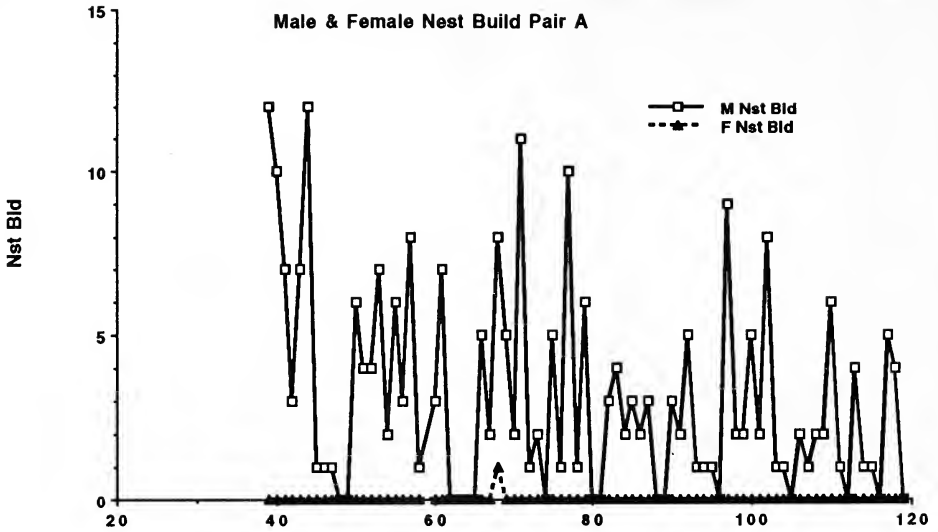


FIGURE 5

Number of occurrences per day from 1 Feb 1994 to 30 April 1994.

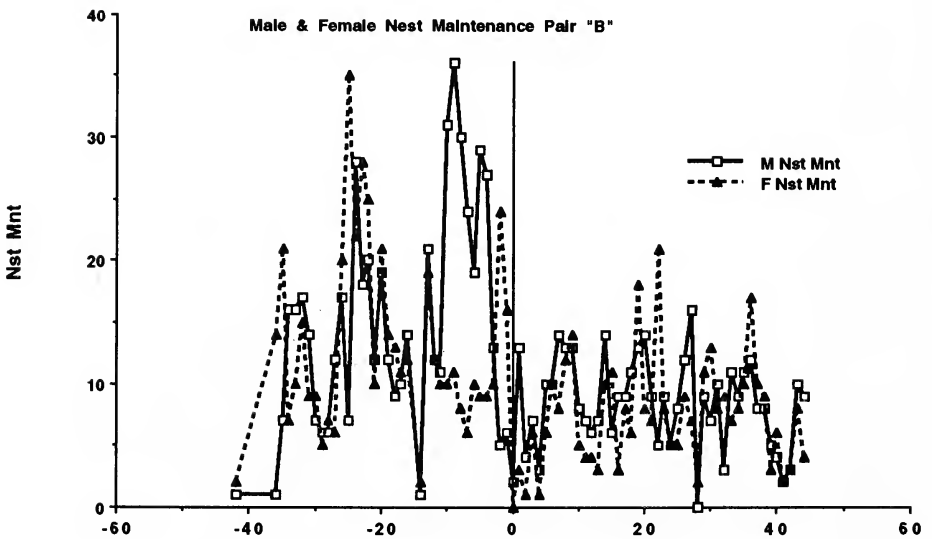


FIGURE 6

Number of occurrences per day before and after egg was laid.

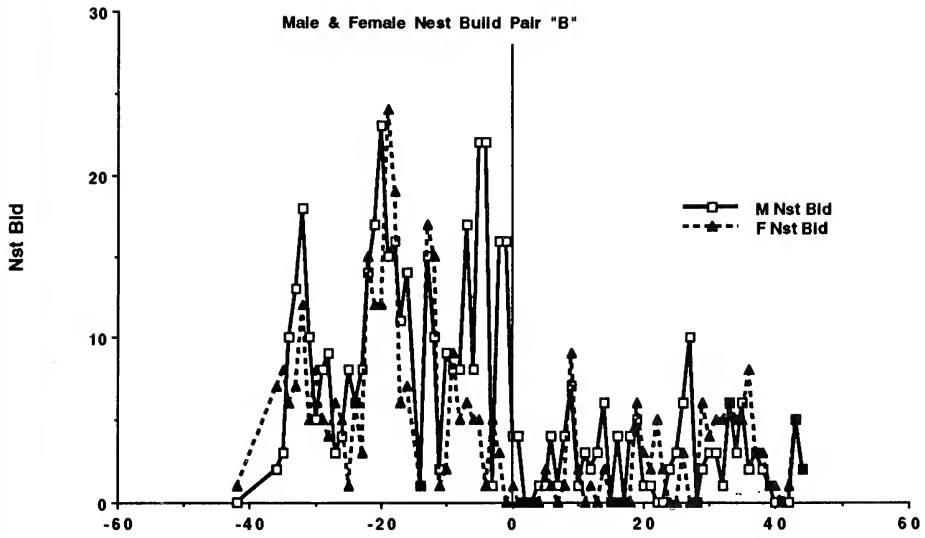


FIGURE 7

Number of occurrences per day before and after egg was laid.

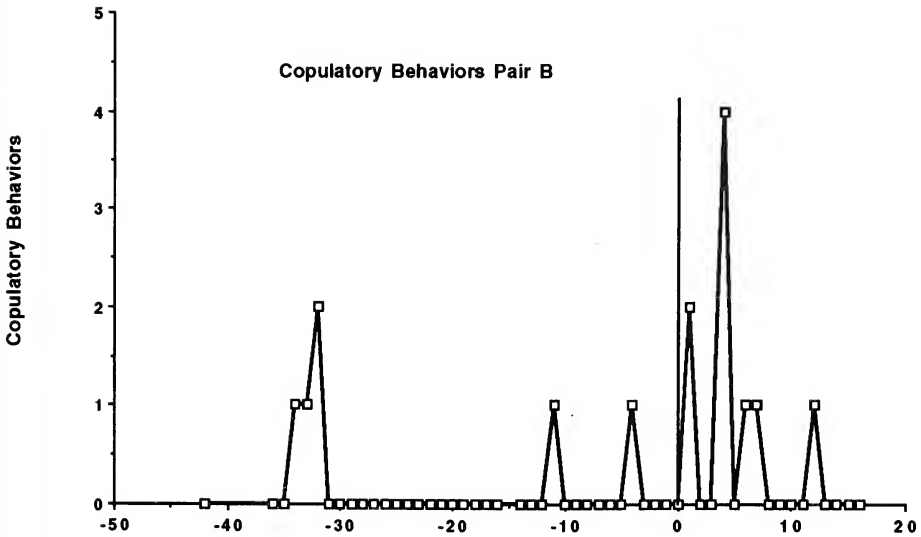
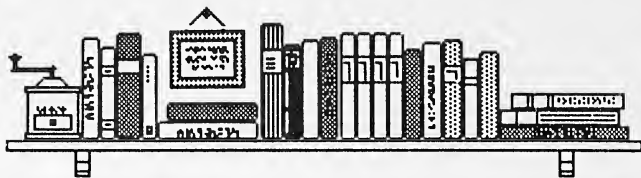


FIGURE 8

Number of occurrences per day before and after egg was laid.



Book Review

The Life and Lore of the Elephant

By Robert Delort, M.S., Ph.D.
Harry N. Abrams, Inc., 1992
100 Fifth Avenue, New York, NY 10011
English translation copyright 1992
Paperback, 191 pgs. Price: \$12.95

*Review by Penny L. Cram, Keeper
Kansas City Zoo, Kansas City, MO*

The Life and Lore of the Elephant contains an immense amount of historical information. The book's main focus covers the role of the elephant in mankind's life. This is not only accomplished with the text, but visually as well. Each page contains a descriptive photo, illustration or piece of artwork to aid in demonstrating this.

The first section covers basic natural history including evolutionary concepts, social structure, physical attributes, dietary requirements, reproduction, and natural predators. It contrasts the woolly mammoth, Asian and African elephants. These distinctions focus on their physical differences. The elephant's relationship to mankind from early humans hunting mammoths to the elephant's habitat being altered through farming practices also begins to be examined in this chapter.

The second chapter discusses the differences in attitude toward elephants between Asia and Africa. It examines the question of "Why, since the dawn of time, has Asia preferred its elephants alive, while Africa preferred its dead." What led to the Asian elephant becoming much more used in a working relationship with man? The theories presented examined Asia being more densely populated by humans thus increasing contact and use. The significance in religion and the use in war were also discussed. It states that these factors did not occur to the same degree in Africa where Africans found use for the elephant in its meat, hide, and ivory, while still respecting it as "a symbol of longevity, strength, wisdom, and justice."

Ancient use of the elephant by western civilizations is covered through many detailed accounts of its use in war and then in the Roman arenas. Descriptions and written accounts of use in war by Alexander the Great (331 B.C.E.), Pyrrhus (280 B.C.E.), the Punic Wars (310 B.C.E.), etc. were given as well as their limitations and disadvantages. Modern use covers the evolution of the elephant from being a curiosity, to becoming a stage performer which was a prelude to circuses and zoos.

"From Sport to Slaughter" describes how Asians developed techniques for hunting, capturing, training, and working elephants. This leads to a description of how these techniques flowed from Asia into Africa, and were subsequently used to significantly decrease the populations for sport and the ivory trade. The author comments on the declining populations of both species of elephant and how they might be managed for survival.

The last part of the book is a unique and interesting section containing actual documents from scientists such as Katharine Payne, to "My Lord The Elephant" by Rudyard Kipling (1902), and even actual accounts from explorers, hunters, and warriors.

This book should be viewed as a historical guide rather than for its scientific value.

While basic natural history is covered, the book really excels in giving a living history of Asian and African elephants. At first glance the text seems overwhelmed by the illustrations and artwork. They are used effectively though to help give a sense of how the elephant's relationship with mankind developed.

Reptile Keepers' Handbook

By Susan M. Barnard
Kreiger Publishing Co.

P. O. Box 9542, Melbourne, FL 32902-9542
Hardcover, 252 pgs. 119 B & W illus., 2 color

*Review by Ken Naugher, Zookeeper I
Montgomery Zoo, Montgomery, AL*

This is an excellent overview of every major area concerning reptile husbandry, including venomous animals. Written from many years of experience, it is a unique book since it was written for the inexperienced reptile keeper by a fellow zookeeper. In fact, this book would be an excellent textbook for a structured zookeeper training program. Also, it can be used as a handy reference since over half the book is appendices. These cover food composition in detail, zoogeography, maintenance of insect colonies, preferred foods, measurement conversion factors and therapeutics used with reptiles. It also contains an extensive glossary and bibliography.

Presented in a quick and easy to find format, this book is an excellent compilation of information which one would otherwise need to search dozens of references to locate. An appendix on poisonous and dangerous plants with cause and effect was particularly appreciated. Many tried and true solutions are presented to frequently encountered problems. This book should go a long way to save many animals from inadvertent errors in captive husbandry. I would highly recommend this book to the novice zookeeper and hobbyist. However, an advanced herpetoculturist might also find themselves reaching for this book quite often as a reference tool.

The Birds of North America: Life Histories for the 21st Century Vol. 4

Editors: Alan F. Poole and Frank B. Gill

The Academy of Natural Sciences, Philadelphia, PA
and The American Ornithologists' Union, Washington, DC

*Review by Ric Urban, Zoo Keeper / Bird Department
Houston Zoological Gardens, Houston, TX*

Wow! Ornithological facts at your fingertips. The Birds of North America series will enhance any amateur birder's library or be a great reference for a zoological library. Birds of North America is a work in progress. Upon its completion it will be 18 volumes in total, encompassing over 700 species. Each account is written by an expert with that particular species. The accounts are very complete, covering distinguishing characteristics, distribution, systematics, migration, habitat, food habits/diet, sounds, behavior, breeding, demography and populations, conservation and management, appearance, measurements and, finally, priorities for future research. All of this in 28 pages or less per account. Color distribution maps and photos are easy to understand. This is a wonderful series and will answer many questions without searching for a dedicated textbook.

The only negative aspect of this series is the price. At this time the entire collection is priced at over \$3000. If you chose to purchase each volume as they were published, it would cost over \$200 a volume. And this price will probably continue to rise. Space may be another hindrance. The complete set is projected to occupy approximately six linear feet of shelf space. However, it is an excellent piece of work.

Chapter News Notes

Kansas City AAZK Chapter

The Kansas City AAZK Chapter would like to announce its new officers for 1997:

President.....Jacque Blessington
Vice-President.....Heidi Fisher
Secretary.....Tina Owens
Treasurer.....Wendy Shaffstall
Chapter Liaison.....Penny Cram

We have also recently contributed two probes to the Addo Elephant National Park in Africa which will further conservation efforts there for both the elephants and rhinos. This is the park from which the Kansas City Zoological Gardens acquired a female black rhino this past year. This female has joined our two males here for breeding purposes.

We are gearing up for our 10th Annual Bowling for Rhinos fundraiser this month (on the 17th) and would like to encourage and challenge everyone to participate!

—Penny L. Cramm, Chapter Liaison

The Honolulu AAZK Chapter

Things are up and running at the Honolulu AAZK Chapter this year. The 1997 officers are:

President.....Greg Hamilton
Vice President.....Mary Rosolowich
Secretary.....LeeAnn Anderson
Treasurer.....Linda Meier

This year's general meetings will be highlighted by an interesting selection of guest speakers. The first lecturer was Theresa Cabrera, a graduate student at the University of Hawaii who is studying the Hawaiian Hoary Bat. Other guest speakers will be featured on a monthly basis.

Our first fundraiser took place on zoo grounds during a benefit concert. Keepers and volunteers sold hot dogs, soda and

chocolate bars to help raise funds to purchase a female Palm Cockatoo for our lone male "Palmer". Anyone who knows of a good match and is interested in helping us find his "soul mate" should contact Bird Specialist James Mejeur at the Honolulu Zoo.

The Honolulu Zoo's Fun Run ("The Crocodile Crawl") will be the site of fundraiser #2 where we will continue to sell food items to hungry runners once they've completed their race.

Bowling for Rhinos '97 has been set for July 19th at Pali Lanes in Kailua. Our goal this year is to raise at least \$3500 for Lewa Wildlife Conservancy (formerly Ngare Seroi) to beat 1995's total of \$3000.

There's lots of energy and enthusiasm at the Honolulu Zoo this year and we look forward to getting as involved as we can with our fellow animal professionals and enthusiasts.

The Honolulu Chapter sends its warmest aloha to all of you!

—LeeAnn Anderson, Secretary

Jacksonville Zoo AAZK Chapter

The Jacksonville Zoological Gardens Chapter of AAZK would like to extend our thanks to a recent guest speaker we had at our local March meeting.

Dana LaBlanc, animal supervisor/Lubee Foundation, Inc. (a frequent contributor to *AKF*) traveled to our zoo to do a presentation for our Chapter meeting. The slide show and talk were on various enrichment techniques and research being done with bats at Lubee. Along with his talk, Dana set up a poster presentation (from the 1996 AAZK Conference), numerous enrichment items, and some beautiful paintings concerning bats. If all of that wasn't enough, he also brought along - what else - a bat!

I'm sure from reading Dana's articles you realize what a wonderful treat this was for

our Chapter. John Seyjagat, Lubee's Director, and four staff members accompanied Dana to the meeting. The Lubee Foundation staff traveled over an hour to come to our zoo and our Chapter would like to extend a very big thank you to everyone at Lubee, and especially Dana.

—*Laine E. Burr, Vice Pres / Treasurer*

Roger Williams Park Zoo AAZK

Greetings from Providence, RI! The members of our Chapter would like to present AAZK, Inc. with a donation of \$250.00. We hope that our support will help to reduce the recent financial strain that AAZK, Inc. has been experiencing. AAZK Chapters across the country work to promote education and conservation and our Chapter feels that it is essential that our national organization remains strong and continues to grow.

The RWPZ Chapter recently elected the following officers for 1997:

President.....Paul Guidetti
Vice President.....Becky Guidetti
Treasurer.....Andrew Arkway
Sec'y/Liaison.....Jonathan Shine

The RWPZ Chapter has acquired a new computer which has been made available specifically for keeper use. This acquisition will enable keepers to continue with research and data collection and we are hoping to create a RWPZ homepage on the Internet.

Our Chapter has also recently provided funding for several keeper projects promoting conservation and education. Two of our keepers traveled to the Cockscomb Basin Wildlife Sanctuary in Belize in order to take part in a project involving the reintroduction of Black Howler monkeys. Another keeper traveled to Australia to work with the Australian Koala Foundation, an organization dedicated to the preservation of koalas and their habitat.

—*Jonathan Shine, Secretary / Liaison*

Milwaukee County Zoo AAZK

The Milwaukee County Zoo AAZK Chapter has elected its officers for 1997. They are:

President.....Lisa Guglielmi
Vice President.....Tracey Dolphin
Secretary.....Karen Navarre
Treasurer.....Susan Simon
Chapter Liaison.....Laurie Talakowski

The Milwaukee County Zoo AAZK Chapter will be hosting the 1997 Great Lakes Regional Conference this summer on 22-23 July.

—*Laurie Talakowski, Chapter Liaison*

Philadelphia Chapter of AAZK

Greetings from the Philadelphia Chapter of AAZK. We recently held our yearly elections and our new officers are:

President.....Ken Pelletier
Vice president....Cheryl Ladota
Treasurer.....Maria Schwalbe
Chapter Liaison.....Adam Cheek

—*Adam Cheek, Chapter Liaison*

Suncoast AAZK Chapter

The Suncoast Chapter's March meeting focused on bat conservation. We held a raffle and raised \$208 for Scott and Kristy Heinrich's Sulawasi Flying Fox Conservation Project. The raffle included bat boxes, T-shirts and jewelry. Our key speakers were John Seyjagat and some of his keepers from The Lubee Foundation. They also brought some flying foxes for everyone to get an close-up view. Thank you to everyone involved.

We are currently preparing for our Bowling for Rhinos event. This year we are combining efforts with the Central Florida Chapter and looking forward to a great turnout. We also joined them in April for their "Fling at the Springs", a camp-out and tour of Silver Springs. Thanks for the invitation.

--*Kevin R. Shelton, Chapter Liaison*

Health Management of Black Rhinoceros and White Rhinoceros Through Conditioning and Positive Reinforcement

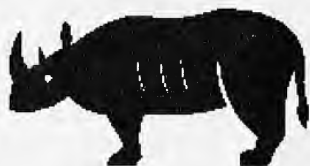
By Scott Citino, DVM and
Lonnie McCaskill, Lead Keeper
White Oak Conservation Center, Yulee, FL

The health management of captive rhinos is often difficult and challenging. Simple medical procedures, such as blood collection, often require tranquilization or immobilization to accomplish. A sick rhino is often a diagnostic nightmare since even simple diagnostic procedures may require placing an already compromised animal at risk through chemical restraint.

Through positive reinforcement, keeper staff have been successful in conditioning several black rhinos (*Diceros bicornis minor*) and white rhinos (*Ceratotherium simum simum*) at White Oaks Conservation Center to submit to blood collection, tuberculin testing, vaccination, treatment of minor injuries, and other minor medical procedures without the use of chemical or mechanical restraint. One female black rhino allows milk to be collected. Keepers achieve this by using preferred food items and tactile contact to gain the trust and confidence of the rhino. During conditioning, keepers feed small amounts of alfalfa or browse while simultaneously touching the rhino in areas where the blood is collected (i.e., leg or ear). More than one keeper participates in the conditioning process to prevent the rhino from becoming nervous or uncomfortable around unfamiliar people or groups of people. As a result of this conditioning process, the rhino responds positively to keeper and veterinary staff, making simple veterinary procedures less stressful for both animal and staff.

The black rhino suffers from numerous health problems in captivity, so preventive health screening is especially important for this species. The conditioning process allows veterinary staff to routinely collect blood samples to assess health and to detect problems early on. The ability to collect bio-samples non-invasively from our rhinos will continue to allow important research to be accomplished in the areas of rhino nutrition, blood cell physiology, stress physiology, reproductive physiology, pharmacology, anesthesia, and health assessment.

—reprinted from *Karatasi*, the Conservation Newsletter of White Oak Conservation Center



INFORMATION PLEASE

This summer I hope to produce a book focusing on zoo design and planning. I would greatly appreciate hearing from keepers about specific zoo exhibits they consider to be exceptionally good or bad. Photographs and descriptions of the salient points would be most useful. Your comments can center on any aspect of the exhibit—whether it be aesthetics, safety, education, health, whatever. I am very interested in trying to present the keeper's perspective. Thank you. Please send information to: David Hancocks, Executive Director, Arizona-Sonora Desert Museum, 2021 N. Kinney Rd., Tucson, AZ 85743-8918.

This year Trailside Museums and Wildlife Center is celebrating its 70th Anniversary. As we approach this milestone year, a masterplan is being implemented. In addition, we hope to revise zoo policies and that is the thrust of this information request. First on our agenda is the very serious matter of animal bites. Any information you are willing to share with us will be strictly confidential. However, in order to formulate a productive policy we need to accumulate as much data as possible. Subject matter could include any of the following: your facility's policy in general; personal bite experience; rabies inoculation of animals; pre and post-rabies shots for people; employee bite vs. patron; are interns and other volunteers given pre-exposure shots; and legal issues or information.

We hope this renaissance year results in the most beneficial policy update for us. We greatly appreciate your time and help and I thank you in advance for any information you are willing to share with us. Please mail information to: Jennifer Verstraete, Trailside Museums and Wildlife Center, Palisades Interstate Park, Bear Mountain, NY 10911; or FAX (201) 962-0622; or e-mail: RSVPI@AOL.com

HELP! One of the chinchillas used in our Education Program is pulling out or chewing off his hair in large patches. He has been used in the Education Program for seven years and has never had this problem before. We have tried several types of enrichments, but nothing seems to stop the destructive habit. Does anyone have any experience or suggestions to deal with this perplexing habit? Please send any information to: Cindy Leeson, Houston Zoological Gardens, Children's Zoo, 1513 North MacGregor, Houston, TX 77030.

Utah's Hogle Zoo is planning to display permanent signs explaining to our public our environmental enrichment program. We are seeking any input from other zoos that have displayed similar signs. Information including graphics, reaction from the public, and wording used would be helpful. Photos would also be appreciated. Please send info to: Enrichment Committee, Utah's Hogle Zoo, 2600 Sunnyside Ave., Salt Lake City, UT 84108.

Institutions wishing to advertise employment opportunities are asked to send pertinent data by the 10th of each month to: Opportunity Knocks/AKF, 635 S.W. Gage Blvd., Topeka, KS 66606-2066. Please include closing date for positions available and when setting these dates keep in mind that because of bulk-mail, most readers do not receive the AKF until the middle of the month or later. There is no charge for this service and phone-in or fax listings of positions which become available close to deadline are accepted. Our phone is 1-800-242-4519 (U.S.); 1-800-468-1966 (Canada). Our FAX is (913) 273-1980.

ANIMAL CURATOR...need related degree from a four-year college or eight years zoo experience, with five years supervisory experience. Responsible for management of all aspects of Animal Care Department. **Closing date 30 May 1997.** Submit resumé to: Akron Zoological Park, Attn: Patricia Simmons, President & CEO, 500 Edgewood Ave., Akron, OH 44307-2199.

COLLECTION MANAGER...oversees smooth operation of day-to-day departmental personnel and collection management. Manages departmental personnel and ensures departmental compliance with established policies and procedures; advances mission of zoo through leading, coordinating and contributing to conservation programs, develops and delivers educational programs in collaboration with Program Dept.; coordinates and arranges all animal transactions including shipments; manages departmental facilities and equipment; monitors departmental budget; and participates in senior animal management staff duties. Must have seven years professional animal management experience, three of which must have been in a supervisory capacity. Preferred experience in husbandry and nutrition; education program development. Bachelor's degree required. Must be available to work all necessary hours, including weekends, holidays, special events and all shifts. Available to attend training sessions and conferences as needed. Please send resumé to: Human Resources Department ColMgr, Lincoln Park Zoo, P. O. Box 14903, Chicago, IL 60614; FAX: (312) 742-2299. No phone calls please. **Closing date is 10 June 1997.** To learn more about this job visit website at <http://www.lpzpp.com>. EOE.

ASSISTANT ELEPHANT TRAINER...this position requires at least two years experience working free contact with both adult and young elephants. A degree in Zoology or Animal Science is preferred. Applicant must have good speaking skills and experience presenting animal demonstrations. Salary: \$11.25 per hour. Contact Don Bloomer, Entertainment Department, Nugget Hotel/Casino, P. O. Box 797, Sparks, NV 89432, or phone 1-800-648-1177 ext. 3316.

INTERNSHIP...The Kentucky Reptile Zoo (formerly Miami Valley Serpentarium) is seeking a student intern for the 1997 Fall season. The zoo is an educational exhibit, reptile breeding and venom research facility located near Kentucky's Red River Gorge and Natural Bridge State Park. The intern will assist in the captive maintenance of the zoo's reptile collection, collect admissions to the exhibit, give interpretive talks and interact with the public, will assist with educational outreach programs and perform other duties as assigned. In addition, intern will be responsible for the completion of at least one research project in the field of herpetology. The intern will **not be involved** in the handling of any venomous reptiles. Desirable qualifications include a willingness to handle snakes and other reptiles on a daily basis, ability to communicate effectively with people, good writing skills, orientation to details and self-motivation. Students majoring in biological or natural sciences are preferred. Former interns have arranged for academic credit with their colleges and universities. Benefits include experience with the most

extensive and diverse collection of snakes in the area, housing, and \$55.00/week to cover expenses. Personal transportation is recommended. Starting dates are flexible, but a minimum commitment of three months (Sept. - Nov.) is required. To apply send cover letter and resumé to: Maria Lundin, Coordinator, Kentucky Reptile Zoo, 1275 Natural Bridge Rd., Slade, KY 40376. **Deadline for applications is 1 June 1997.**

The following four (4) positions are available at the Houston Zoo. For any of the following send letter/resumé to: Richard "Red" Bayer, Assistant General Manager, Houston Zoo, 1513 N. MacGregor, Houston, TX 77030.

BIRD CURATOR...requires Bachelor's Degree in Biology, Zoology or related field; minimum of three years professional experience in a supervisory capacity in a zoo/aviary setting with a wide variety of birds; expertise in ornithology/aviculture; strong management/organizational/interpersonal skills; knowledge of conservation programs and research methods. Duties include coordination and management of a staff of three supervisors, 13 keepers, a collection of nearly 650 birds (mostly soft-billed), associated facilities, employee evaluation and development, and husbandry/conservation/research programs. Will evaluate and implement bird section collection plan, policies, procedures, and conservation/research review. Salary: mid-30's, excellent benefits.

ELEPHANT KEEPER...requires high school diploma or equivalent and minimum of one year experience in the care and training of elephants. Must be willing to work in a protected contact program. Duties include working with the elephant management team as well as feeding, cleaning, maintaining exhibits, medicating, keeping records and reports and other related duties. Salary: \$9.26/hr., excellent benefits.

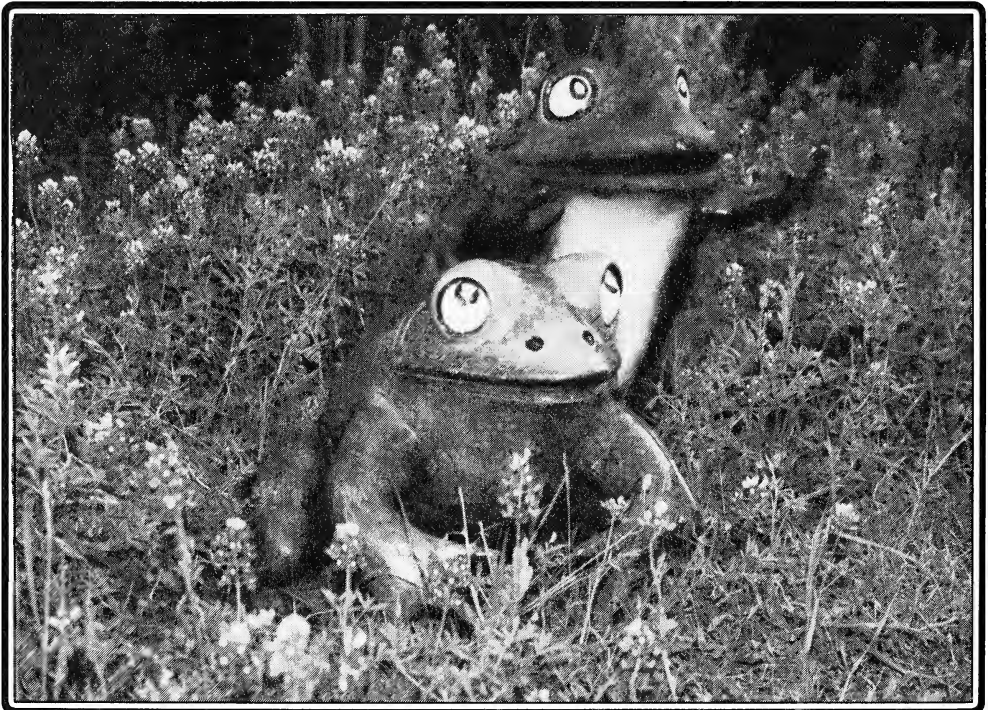
SENIOR KEEPER/HERPETOLOGY...requires Associate Degree in Biology, Zoology or related field; minimum of two years experience in the care of a variety of reptiles and amphibians; expertise in herpetology/batrachology; strong organizational/interpersonal skills. Duties include supervision of four keepers as well as cleaning, feeding, maintaining exhibits, medicating, record keeping, materials/supplies procurement, participation in education/outreach programs, and related duties. Salary: \$11.25/hr, excellent benefits.

HERPETOLOGY KEEPER...requires high school diploma or equivalent; minimum one year experience in the care of reptiles/amphibians. Duties include feeding, cleaning, maintaining exhibits, medicating, keeping records and reports and related duties. Salary: \$9.26/hr, excellent benefits.

ZOOKEEPER/Sequoia Park/Eureka, CA...requires responsible and motivated individual with one year's professional experience in similar work. A combination of additional experience and related college level education is typically preferred. Will work all areas of a small zoo. Ideal candidate will be able to work both independently and as part of a team, have a broad background of animal and visitor care, have a personal interest in enrichment applications, and an interest to participate in professional activities and development. Salary \$1602.00 - \$1,950.00/mo. Application packets and a complete job announcement may be obtained from City of Eureka Human Resources Department, Room 102, 531 K Street, Eureka, CA 95501; (707) 441-4134. **Final filing date is 2 June 1997.** EOE/AA.

ASSISTANT VOLUNTEER COORDINATOR...assists with zoo/aquarium volunteer management. Supervises Reptile Discovery Center volunteer program, including puppet theater youth volunteers, and Scout herpetology programs. Develops collaborative programs with other community agencies. Grant writing experience preferred. Contact: Volunteer Services Manager, Dallas Zoo, 650 South R. L. Thornton Freeway, Dallas, TX 75203, (214) 943-3110; FAX (214) 943-7846.

ANIMAL KEEPER...two-year degree preferred plus one year of full-time experience in care and maintenance of wild and/or domestic animals. Duties include all aspects of care of the animal collection; working with the public and volunteers. Weekend/holiday work required. Entry level salary: \$16,364.00 annually. Send resumé to: Superintendent of Human Resources, Peoria Park District, Glen Oak Zoo, 2218 N. Prospect, Peoria, IL 61603. The Peoria Park District hires without regard to race, religion, sex, age, national origin, ancestry or disability. All qualified individuals are encouraged to apply. EOE.



"You'all come smell the flowers in Texas!" Elvis and Hoser check out the countryside in preparation for the 1997 AAZK Conference in Houston.

AAZK Membership Application

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Mail this application to: AAZK Administrative Offices, Topeka Zoo, 635 S. W. Gage Blvd., Topeka, KS 66606-2066. Make checks/money orders payable to AAZK, Inc. Must be in U.S. FUNDS ONLY. Membership includes a subscription to *Animal Keepers' Forum*. The membership card is good for free admission to many zoos and aquariums in the U.S. and Canada.

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JUNE 1997
Vol. 24, No. 6

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AAZK PUBLICATIONS - CONTINUING DATA COLLECTION

Zoo Infant Development Project - Teri Maas-Anger/Maggie Liguori, Philadelphia Zoo (Birds/Nonpasserines); Jennifer Hackshaw, Lowry Park Zoo and Suzanne Chacon, Costa Rica (Birds/passerines); Jeanne Stevens, Newark Museum Mini-Zoo (Reptiles); Linelle Smith, Denver Zoo (Amphibians)

Incubation Notebook Project - Scott Tidmus, Sedgewick County Zoo, Wichita, KS



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About the Cover....

*This month's cover features Caesar, a western lowland gorilla (*Gorilla gorilla gorilla*) that resides at the Los Angeles Zoo. He is unique in that he was the first gorilla to be delivered by cesarean section. Caesar, who turns 20 this month, is a truly magnificent specimen weighing a solid 250 kg (550 lbs.). In February 1997, he underwent surgery to remove a large tumor from his salivary glands, and was back on exhibit within weeks. Unlike chimpanzees (*Pan troglodytes*), gorillas, for all their great size and formidable canines, are strictly vegetarians, consuming large quantities of fruits, vegetables and plant matter. For all the Hollywood-inspired fear instilled in many people about these animals, the three gorilla species (western and eastern lowland and mountain) are very peaceful creatures whose future still hangs in the balance. This month's artist is Dean Simonson, Gorilla Tropics Keeper at the San Diego Zoo. Thanks, Dean!*

Information for Contributors

Animal Keepers' Forum publishes original papers and news items of interest to the animal keeping profession. Non-members are welcome to submit articles for consideration. Articles should be typed or hand-printed and double-spaced. Articles may be submitted on disk by arrangement with the Editor. All illustrations, graphs, charts and tables should be clearly marked, in final form and should fit in a page size **no greater than 5.5" x 8.5"** (14cm x 22cm). Literature used should be cited in the text (Brown, 1986) and alphabetically in the final bibliography. Avoid footnotes. Include scientific name (as per *ISIS*) the first time an animal name is used. Thereafter use common name. Use metric system for weights and measurements (standard equivalents may be noted in parenthesis). Use the continental dating system (day-month-year). Times should be listed as per the 24-hour clock (0800, 1630 hrs. etc.). Glossy finish black and white photos **only are accepted**. Color slides should be converted to black and white prints (minimum size 3" x 5" [8cm x 14cm]) before submission. Clearly marked captions should accompany photos. Please list photo credit on back of photo.

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 and FAX contributions of late-breaking news or last-minute insertions are accepted as space allows. However, long articles must be sent by U.S. mail. Phone 1-800-242-4519 (US); 1-800-468-1966 (Canada); FAX (913) 273-1980.

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.

Items in this publication may be reprinted providing credit to this publication is given and a copy of the reprinted material is forwarded to the editor. Reprints of material appearing in this journal may be ordered from the editor. Back issues are available for \$3.00 each.

Scoops & Scuttlebutt



Chapters Continue to Show Support for AAZK

The following AAZK Chapters have recently sent donations to the Association in support of its programs and projects:

The Wildlife Safari AAZK Chapter in Winston, OR sold cloth recycling bags and sent the proceeds of \$57.00 to the AAZK general operating fund; the San Diego AAZK Chapter donated \$100.00 in support of the Junior Zoo Keeper Project; and the Dallas AAZK Chapter answered the February challenge to raise money for AAZK with a donation of \$375.00 for unrestricted use by the Association. The Topeka Chapter, in the February *AK,F* challenged all Chapters to donate 10% of their fundraising efforts to the national Association. Topeka continues to donate 10% of the proceeds from their Twirl-a-Coin®.

The AAZK Board of Directors and the Administrative Office staff sincerely appreciate the generous show of support for AAZK. Every donation, regardless of size, helps AAZK to continue its programs in keeper education, research and conservation.

Research Grants Committee Members Announced

It is with great pleasure that we announce the following individuals as members of the AAZK Research Grants Committee:

- Dr. David Shepherdson, Research Coordinator, Metro Washington Park Zoo, Portland, OR
- Susan Margulis, Dept. of Conservation Biology, Brookfield Zoo, Brookfield, IL
- Lonnie McCaskill, Lead Mammal Keeper, White Oak Conservation Center, Yulee, FL
- Shane Good, Animal Keeper, Cleveland Metroparks Zoo, Cleveland, OH

These individuals will join Committee Chair Fashid Mehrdadfar in reviewing the applications submitted for consideration for the two \$750 Grants in Zoology which AAZK provides annually for keeper-initiated, non-invasive research in zoos.

EMA and AZH Appoint Liaisons to AAZK

Marie Galloway, elephant keeper at the National Zoological Park in Washington, DC has been named as the Elephant Managers Association's liaison to AAZK, Inc. Virginia Wall, Curator of Horticulture at the North Carolina Zoological Park in Asheboro, NC has been named liaison to AAZK from the Association of Zoo Horticulturists.

AAZK maintains liaisons with a number of other zoo-related organizations in an effort to improve communication and information exchange among these groups. Current liaisons are from Zoo Registrars Association, Association of Zoo and Aquarium Docents, Canadian Association of Zoological Parks and Aquariums, International Marine Animal Trainers Association and the Association of Latin Zoological Parks and Aquariums.

ADT Forms Available for Animal Shipments

Animal Data Transfer Forms (ADT Forms) for use whenever an animal is shipped to a new institution are available free as a professional courtesy from AAZK, Inc. These forms help provide vital information on an animal's medical, dietary and reproductive history to the receiving institution's staff and veterinarian. We hope you will encourage the use of ADT forms at your facility whenever an animal is shipped. To order a supply of ADT Forms, contact Bernie Feldman, Burnet Park Zoo, One Conservation Place, Syracuse, NY 13204.

E-Mail Group About Tapirs Announced

The Tapir Preservation Fund's President Sheryl Todd (Member IUCN/SSC Tapir Specialist Group) has let us know that an E-mail group about tapirs has been formed. The group is open to anyone seriously interested in or working with tapirs. To date it includes keepers, directors, curators, veterinarians, field ecologists, registrars and other interested observers. For information or to sign up, please send e-mail to: tapir@tapirback.com

You may also wish to check out The Tapir Gallery web site at: <http://www.tapirback.com.tapirgal/>

Zoo Items Sought for Auction to Aid Kobe Earthquake Victims

ZooDEL (Zoo Design & Education Lab) is planning an auction of zoo-related memorabilia (T-shirts, key chains, patches, pins, stickers, posters, etc.) to raise money for a relief fund for the many people affected by the Kobe earthquake last year. If you or your facility would like to help out in this endeavor, any items you wish to donate should be sent to ZooDEL, 2-15 Nagate, 1-chome, Nada-ku, Kobe 257 Japan. Please send them to the attention of Y. Yonetani.

The Aquarium in Kobe, which amazingly suffered only lesser damage in the earthquake is celebrating its 10th anniversary this summer. As part of the celebration, the Aquarium wants to mount a display of Aquariums of the World. To accomplish this they are seeking posters, guidebooks and other items from aquariums around the world to be a part of this display. If your aquarium would like to donate an item to be a part of this exhibition, you may send it to the address above to the attention of the City Aquarium Director.

Message from the President

Greetings from the Lone Star State!

The American Association of Zoo Keepers has reached a crossroads in the maturation of our organization. Today's zoo keeper is looking for professional development and training that will enhance his or her professional career.

As zoo professionals we are getting involved within our own institutions in the development of collection planing. This involvement may even result in stepping up into active participation in an AZA Taxon Advisory Group (TAG) or a Faunal Interest Group (FIG) representing your institution.

Opportunities are on the horizon. In April I attended the American Zoo and Aquarium Association (AZA) Western Regional Conference in Phoenix. I want to personally thank the zoo keepers and docents of The Phoenix Zoo for their wonderful hospitality. The theme of this conference was "Advancing Our Mission Through Partnership". TAG Committees have been recruiting specialists for their management teams with veterinarians, nutritionists, managers and even zoo keepers as advisors. A Zoo Keeper Advisor can provide perspective in developing husbandry manuals as species achieve SSP status. AAZK members can provide the partnership AZA is striving for by participating in these management programs. Zoo Keeper participation can enhance the development of conservation, education and research programs. AAZK can also provide information and updates to the membership promoting special programs each group may have in the *Animal Keepers' Forum*. There are many special groups out there. Contact the Committee Chairs and ask them how you can get involved.

In March, our Association initiated an Institutional membership campaign. I would like to thank the following institutions for supporting AAZK and their keeper staffs by becoming Institutional Members:

Earthwatch Expeditions, Inc., Roger Williams Park Zoo, Six Flags Great Adventure (NJ), Seneca Park Zoo, Brandywine Zoo, St. Augustine Alligator Farm, Discovery Island, Columbus Zoological Park, Fort Wayne Children's Zoo, Racine Zoological Society, St. Paul's Como Zoo, Lake Superior Zoological Gardens, Brookfield Zoo, St. Louis Zoological Park, Purina Mills, Inc., Folsom Children's Zoo, Audubon Park & Zoological Gardens, San Antonio Zoological Society, Sea World of Texas, Denver Zoological Gardens, The Phoenix Zoo, Wildlife World Zoo, Inc., Reid Park Zoo, Zoological Society of San Diego and the Happy Hollow Zoo. This is a great way for your institution to support AAZK. Your zoo or institution should be on this list.

Next, I would like to salute the AAZK Chapters and individual AAZK members who have contributed money to their Association. Your contributions have been great. The challenges by Jeanette Beranger (Roger Williams Park Zoo, Providence, RI) in December and the Topeka AAZK Chapter in February has

reaped many responses. We continue to need and appreciate this type of support to carry on AAZK's projects and programs.

AAZK is an organization of strong and dedicated individuals. This is your professional organization and what you do can make a difference.

Remember that the Houston Conference is just around the corner (Oct. 5-9). Get your time off requests in now. Conference registration materials and hotel information may be found in the March 1997 issue of *AKF* or you may contact Administrative Offices. We want to see you on the beach.

Ric Urban, AAZK President
Houston Zoological Gardens



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A Project Of The Mammal Department Of
The San Diego Wild Animal Park

The Mammal Department of the San Diego Wild Animal Park has considerable expertise in the husbandry, immobilization, hand-raising, and shipment of over 100 species of mammals in their collection.

A Web Site has been developed by the Mammal Department, geared toward animal care professionals. The site is designed to share their experience in the husbandry and management of the collection. It is hoped that the sharing of this information will promote conservation, build closer relationships with colleagues, and raise the standards by which animals are kept in captivity.

This ambitious project has developed the following areas:

Immobilization Guide - detailed procedures for immobilizing over 80 species.

Fact Sheets - including a digital image, range, habitat, captive history, captive and wild status, and studbook, SSP and TAG status.

Featured Species - a more in-depth view of the issues concerning a particular species.

Hand-raising - milk formula replacers, feeding schedules and protocols.

Notable Births - a detailed look at the birth of a significant individual.

Conservation - programs from AZA and ZSSD

Vet Rounds - a discussion of interesting medical cases and procedures by our veterinary staff.

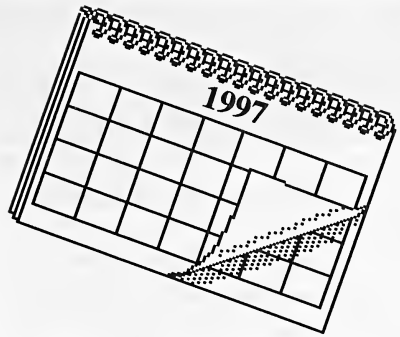
Links to Other Web Sites - including a brief review.

Forum - an electronic bulletin board for posting information, questions and responses.

Come join us at www.wildanimals.org and share your animal expertise.

—submitted by David Merner, San Diego Wild Animal Park, Escondido, CA

Coming Events



The Annual Invertebrates in Captivity Conference - July 31-Aug. 3, 1997. To be held in Tucson, AZ. For further information contact the Southern Arthropod Studies Institute, P. O. Box 5624, Tucson, AZ 85703; phone (520) 883-3945; fax (520) 883-2578; e-mail: ArthroStud@aol.com.

Association of Avian Veterinarians - Sept. 9-13, 1997 in Reno, NV. To request registration information call AAV at (303) 756-8380 or fax (303) 759-8861 or e-mail (AAVConOfc@aol.com) or mail request to AAV, 2121 So. Oneida St., Ste. 325, Denver, CO 80224.

AZA Annual Conference - September 14-18, 1997 - Albuquerque, NM. For further information contact Terry Axline, Albuquerque Biological Park, 903 Tenth St., S.W., Albuquerque, NM 87102 (505) 764-6200.

Annual Conference of the Association of Zoological Horticulture - September 25-October 1, 1997. For further information contact Gary Outenreach, Horticulture Exhibit Manager, Moody Gardens, 1 Hope Blvd., Galveston, TX 77554 (800) 582-4673, ext. 271.

Association of Zoo Veterinary Technicians - September 27-October 2, 1997, Asheboro, NC. Hosted by the North Carolina Zoological Park. For conference or membership information contact: Jenni Jenkins, LVT, AZVT Secretary, National Aquarium in Baltimore, Pier 3, 501 E. Pratt St., Baltimore, MD 21202, (410) 659-4256.

AAZK National Conference - October 5-9, 1997 in Houston, TX. Watch the *Forum* for information or contact Christine Smith or Ric Urban at the Houston Zoo, 1513 North MacGregor, Houston, TX 77030; (713) 520-3200.

Third International Conference on Environmental Enrichment - October 12-17, 1997 in Orlando, FL. For further information contact Thad Lacinak, Sea World, Inc., 7007 Sea World Dr., Orlando, FL 32821 (407) 363-2651.

American Association of Zoo Veterinarians Annual Conference - October 26-30, 1997 in Houston, TX at the Sheraton Astrodome. For conference information contact: Wilbur Armand, VMD, Executive Director/AAZV, 6 North Pennell Rd., Media, PA 19063; Phone (610) 358-9530; Fax (610) 892-4813.

The 25th Annual Conference of the International Marine Animal Trainers Association - October 26-31, 1997 in Baltimore, MD. Hosted by the National Aquarium in Baltimore. For further information, contact Tim Sullivan, Brookfield Zoo, Seven Seas, 3300 Golf Road, Brookfield, IL 60513; (708) 485-0263, ext. 464, fax: (708) 485-3532; e-mail: tsulli@manta.nosc.mil.



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Renewing Contributing Members

Jean A. Marson,
Detroit Zoological Institute, Detroit, MI

Linda York, Indio, CA

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Powell, OH
Lake Superior Zoological Gardens,
Duluth, MN

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St. Louis Zoological Park,
St. Louis, MO

Audubon Park & Zoological Garden,
New Orleans, LA

Zoological Society of San Diego,
San Diego, CA

Renewing Institutional Members

Fort Wayne Children's Zoo,
Fort Wayne, IN

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Final Call for Papers

"Conservation is an Attitude" is the theme for the paper sessions and workshops at the 1997 AAZK/ZRA National Conference. Any topic related to the care of captive exotic animals will be considered, however, those that involve new animal care techniques, significant achievements and special projects, technical innovations and fresh approaches toward captive animal management and conservation may be given priority.



The Program Committee is expecting a record number of abstract submissions, so early contact with the Program Committee Chair is critical. Abstracts will be accepted for review **until 15 July 1997**. Abstracts should be limited to one or two paragraphs, should clearly describe the significance of the presentation topic, and should briefly list the results, conclusions or benefits of the work described. Because the abstracts will be printed in the conference program, it is essential that submissions be well-organized and clearly written. Abstracts that are poorly written, that do not contain proper submission information, or do not otherwise meet submission criteria will be returned with a letter rejecting the abstract outright or else suggesting the corrections or alterations required for acceptance.

Upon acceptance of a paper or workshop abstract, a letter of notification will be mailed to the presenter. Guidelines for preparing manuscripts for publication in the 1997 AAZK Conference Proceedings will be supplied to speakers by AAZK Administrative Offices. A correctly formatted manuscript for publication in the Proceedings **must** be submitted to the Program Committee **prior** to the speaker's presentation at the Conference. If such a manuscript is not provided, the speaker will not be able to present his/her paper to the delegates and will be barred from speaking at an AAZK National Conference for a period of three years. There will be **no exceptions**.

Abstracts must include the following information: Name of Presenter and Co-Authors, Zoological Affiliation, Position/Title, Title of Paper/Title of Workshop, Audiovisual Equipment Needs.

Send abstracts to: Stan Mays, Program Chairperson
'97 AAZK/ZRA National Conference
Houston Zoological Gardens
1513 North MacGregor Way
Houston, TX 77030

The Program Committee is eager to assist anyone who has an idea for any kind of presentation: formal paper, workshop, poster presentation, panel discussion, etc. Additional information and advice on the design and development of presentation ideas may be obtained by contacting the Program Committee Chairperson.

Animal Behavior Concerns & Solutions

A Question and Answer Forum for the Zoo Professional

By Diana Guerrero, Independent Behavior Consultant,
Ark Animals of California, San Diego, CA

QUESTION

Our facility has obtained a male clouded leopard (*Neofelis nebulosa*). We have not been able to establish a rapport with him or have him adapt as we had hoped. Do you have any suggestions?

BACKGROUND

This animal is housed at an animal rescue facility. This animal's caging is located in the center of the compound and is surrounded by other felids and other enclosures. The animal was housed at this facility for approximately six months with no real progress in adaptation or acclimation.

ANIMAL BACKGROUND

This particular animal is approximately seven years of age. In the past he was housed with another male and used for captive studies on this species. He is genetically over represented in the captive gene pool. The institution that had previously housed him conducted electro- ejaculation sessions with him daily for three weeks at a time. During this time he was also tranquilized.

Upon arrival at his new facility this animal failed to eat for several days and would attack anyone who approached his cage. He showed a lack of activity and interest in his surroundings and caretakers beyond the initial introduction. At six months he still showed signs of being uncomfortable and a lack of activity.

NOTES

This species is highly sensitive and secretive. Breeding activity histories in captivity are dismal and little is know about them. They require specialized handling and housing; hence they are not ideal animals for public exhibition especially since they are so highly sensitive and stress easily.

Keeping an animal history for this species would be highly recommended. If they can be reared with another animal it will cut down on their stress considerably. Proper housing, limited exposure during exhibition (if it is done) and seclusion will also help reduce stress.

Care with mixing male and female animals is needed since many deaths have occurred through mating and related activities. Early age introductions are thought to be beneficial to the animals for later breeding; these need strict monitoring and limited access over time to prevent breeding deaths and related deaths.

Allow this species to integrate at their own pace. Although they are extremely sensitive and secretive, they can be highly intelligent and affectionate when a trust bond is formed; they are known to chuff at caretakers when established and secure.

This particular animal receives a widely varied diet. Since the species is primarily nocturnal, it is recommended that they are fed at night. Except for cow leg bones, enrichment items have failed to interest this animal.

SUGGESTED CONSIDERATIONS

Clouded leopards are mainly nocturnal animals. They also tend to be a bit more arboreal than other cats. Due to their special needs the following recommendations were made.

Cover three of the four sides of the habitat. This allows the animal to remain more secure. Cloudeds do not like open space as a general rule.

Relocate the animal. Place him into an area that is removed from the center of the compound and activities.

Allow for an extended adjustment period. This animal has a history of negative interactions with people and will need a longer period of time to adjust and develop a trust bond with caretakers. Remove the animal from public exhibition and allow extra time for adjustment.

Provide alternative areas for hiding or escape. This species is highly secretive and would prefer enclosed areas to hide in. Provide a good den box and perhaps alternate areas to hide in.

Provide height and climbing areas. Due to the arboreal nature of this species, use height in conjunction with width and depth of new exhibitry or housing. Place shelves and logs up in the exhibit and also suspend some with ropes.

Feed at night. Since this animal is mainly nocturnal this would be common sense but may require special efforts on the part of the institution housing the animal.

Introduce enrichment items at night. Don't give up on this. Introduce small whole animals in the diet (chicks, rats, mice, rabbits), introduce scents on new items (hunting scents would be good to try), rope toys, bowling or Boomer Balls®, and various textures and types of wood logs, plants (non-toxic), and related items.

OTHER NOTES

After initial recommendations were implemented, this animal has made good progress and now has shown signs of being more secure. He becomes playful at night and allows some interactions with his caretaker. Total time at the facility (as of this writing) is 12 months.

This facility may have the opportunity to acquire the male companion to this animal. If so, they will have the opportunity to utilize the established animal bonds to stimulate more security and activity. It would be anticipated that the new animal's introduction will be more swiftly accomplished because of this.

ACKNOWLEDGMENTS

Special thanks to Penny Andrews for her input and assistance on this species and case

NEXT MONTH: Evaluation Tips

About the Author: Since 1978 Diana has been active both in the U. S. and England working with zoos, private collections, an oceanarium, a marine aquarium, and other animal-related organizations involving captive wildlife. She has a broad base of animal experience involving movie & television training, zookeeping, show performances with live animals, education, behavior management, modification and enrichment, rescue and rehabilitation as well as captive breeding and management of endangered species. She is currently working as an Animal Behavior Consultant and Trainer with both exotic and domestic animals, she has authored numerous articles on animal behavior and training. If you have questions for Diana, you may contact her at 1-800-818-7387 or via the email listed below. NOTE: The Ark Animals' Website has completed the change to Electronic Magazine Format. The "Ezine" features articles related to captive animal behavior, enrichment, conservation, and similar topics. The publisher welcomes electronically submitted articles (previously published or new work). Deadline is the 10th of the month previous to publishing. Interested parties may contact the publisher at E-mail: arkabc@arkanimals.com Website address is <http://www.arkanimals.com>

Information Please

I am interested in breeding the following species in our new African Savannah wing. The species are: Meerkat (*Suricatta suricatta*); Gunther's dik-dik (*Medoqua Guntheri Smithi*) and Leopard tortoise (*Geochelone pardalis*). If anyone has had any success or has any insight on this subject, please send your responses to: Marleny P. Claro, Staten Island Zoo, 614 Broadway, Staten Island, NY10310.

Our three-banded armadillos () in the Education Center have sores on their backs. Scraping and blood analysis comes up negative. If anyone has had this problem, could you please contact me? Also, I would like to know if there are any full-time keepers who have gone to a "Docent Training Program" and are either "Weekend Docents" or "Weekday Docents". Please contact me at: Mrs. Maria Browning, San Antonio Zoo/Children's Zoo, 3903 N. St. Mary's St., San Antonio, TX 78212.

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VIDEO CATEGORY: Send a 20-minute action VHS videotape of an animal or group playing with one of our products, together with the facility's permission to use the tape for advertising purposes.

FIRST PRIZE - LARGE ANIMALS: One Polar N'Ice Cube OR One Planet Ball OR Three Jungle Balls, plus two Stall Balls for hoofstock. **RUNNERS-UP - Large Animals:** One Jungle Ball OR Three Small Bobbins OR 10-inch Challenger Balls, plus one Stall Ball.

FIRST PRIZE - SMALL ANIMALS, REPTILES, BIRDS: 24 Hide-N-Seek Logs OR 12 Ferret/Small Animal Balls, plus 12 Small 4 1/2-inch Balls. **RUNNERS-UP - Small Animals, Reptiles, Birds:** 12 Logs OR six Ferret/Small Animal Balls, plus six Small 4 1/2-inch Balls.

PHOTO CATEGORY: Send a color action photo, 5" x 7" or larger of an animal or group playing with any of our products, together with the facility's permission to use the photo for advertising purposes.

FIRST PRIZE - LARGE ANIMALS: Choice of any two Jungle Balls or Large Bobbin, plus two Stall Balls. **RUNNERS-UP - Large Animal:** Choice of two Small Bobbins OR 10-inch Challenger Balls, plus one Stall Ball.

FIRST PRIZE - SMALL ANIMAL, REPTILES, BIRDS: Choice of 12 Maze Logs or six Ferret/Small Animal Balls, plus six Small 4 1/2-inch Balls plus one Stall Ball. **RUNNERS-UP - Small Animal, Reptiles, Birds:** Choice of four Logs or two Ferret/Small Animal Balls, plus three Small 4 1/2-inch Balls plus one Stall Ball.

To qualify entries **MUST** be received by 30 August 1997.

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\$40.00 \$32.00 Grizzlies in the Wild By Kennan Ward.
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REACTIONS

A Question and Answer Forum for the Zoo Professional on Crisis Management

By William K. Baker, Jr., Zoologist
Lufkin, TX

QUESTION: Our staff members are unable to practice with our firearms at the range on a regular basis due to financial and time constraints. Are there any alternatives?

COMMENTS

I'll be the first to admit that getting to the firing range for a regular practice can be difficult. The time constraints of working at a zoological institution are often trying when attempting to schedule activities off-grounds. This could be due to daily animal management duties, veterinary procedures, special projects, staffing shortages, and unforeseen animal emergencies. In short, the daily duties and realities of the job; and there's nothing wrong with that either - animal management should come first in a zoological institution. It's a given that if the Shoot Team goes to the range, they will be off-grounds for half a day. Also, not all of the shooters will be able to go to the range at the same time. Even if all of the team members are available, it would be irresponsible to take the whole team to the range and leave the facility without the capability of responding to a crisis.

The shooters must also contend with the financial restraints of practicing at the range. Simply put, it's expensive to shoot on a regular basis. As a competitive shooter I quickly learned that ammunition is not cheap; and, like so many others I switched to reloading to defray the cost of competition. However, this is not an option for responders in a Crisis Management situation. The reason for this can be summed up in one word - liability. No one should place themselves in a situation where they might be questioned about the quality of their ammunition if a malfunction occurs. This leaves factory ammunition as the only viable alternative.

Ideally, you should practice with the exact same type of ammunition that is intended for the crisis situation. Unfortunately this means using premium or safari class ammunition for large caliber weapons and that can be expensive. Also, it's important to not forget the associated costs of shooting maintenance, such as cleaning supplies, special tools, and gunsmithing for major repairs.

ALTERNATIVES

1. Consider using ammunition from the standard line of an ammunition manufacturer for target practice, instead of the more expensive premium or safari class ammunition. This should provide shooting dynamics similar to the more expensive ammunition while saving money. However, this is contingent on keeping the ammunition characteristics the same (caliber, bullet weight, design and manufacturer).
2. Consider the possibility of approaching your zoological society to help underwrite or defray the costs of equipment and ammunition. Also, consider talking to the manager of your local gun shop; he may be willing to order your ammunition for wholesale cost plus shipping and forgo the normal consumer mark-up.
3. Consider scheduling your practice trips to the range on the afternoons of full staff days. This should cut down on scheduling conflicts and allow staff members involved in the practice session to complete the majority of their duties in the morning.
4. Consider purchasing air rifles for practice on-grounds away from animal management areas. Air rifles are very quiet and operate at reduced ranges making them ideal for practice in a small area. Also, they require a shooter to use all of the same skills that are used with a firearm. Air rifles are not "just for kids" anymore, many are very accurate and quite powerful. Numerous companies now offer air rifles that are reasonably priced, easy to maintain, and very affordable to shoot. The U. S. Olympic Shooting Team uses the Marksman 1790 Biathlon Trainer Air Rifle for training purposes.

Next Month: *What precautions should staff members take in advance of a dangerous animal transfer or shipment?*

If you would like to submit a question for this column or have comments on previously published material, please send them to: Reactions/AKF, 635 S. W. Gage Blvd., Topeka, KS 66606-2066.

(About the author: Since 1985 Bill has been active in the fields of science, zoology and wildlife management. His education and experience include a B.S. in wildlife management and post-graduate studies in zoology, Lab and Museum Assistant, Shoot Team leader, ERT Member, Senior Keeper and Large Mammal Keeper at various AZA facilities. His area of research is crisis management in zoological institutions, which draws upon practical experience and training as a Rescue Diver, Hunter Safety Instructor, NRA Firearms Instructor, and Red Cross CPR/First Aid Instructor.)

Getting to Know the IOC: AAZK's Work Abroad

By

Jeannette Beranger, IOC Coordinator
Roger Williams Park Zoo, Providence, RI

Recently the AAZK has reorganized and redefined the International Outreach Committee (IOC). I'd like to take this opportunity to inform the membership of our activities and goals. The following is a breakdown of the Committee and its members:

The International Outreach Committee

Chair - Jeannette Beranger

Purpose - To promote the themes and objectives of the American Association of Zoo Keepers, Inc., on an international level, to foreign zoos and conservation organizations in need of our assistance. This Committee will strive to lend aid in the form of written information, work materials, or physical help to improve the quality and professionalism of the work being accomplished by the institution requesting AAZK's assistance.

The IOC is made up of the following sub-committees:

M.A.R. C. (Making A Realistic Contribution)

Chair, Kathy Kelly, Silver Springs, MD

Objective - To collect and circulate written materials to those in need of the information.

Purpose - This committee primarily works as a service to foreign zoological institutions by providing written materials, at their request, for use at their institutions. The Committee's resources are donated items (textbooks, magazines, articles, etc.) that are shipped to the foreign institution using funds contributed by outside sources or by AAZK when possible.

Responsibilities - 1.) To solicit the donations of pertinent written materials for distribution internationally to legitimate zoological institutions, conservation organizations, libraries, etc. upon their request. 2.) The Committee Chair will also be responsible for finding the funds or means to ship these materials and get them into the proper hands once distributed. 3.) The Committee Chair will be responsible for keeping AAZK informed of all activities and is required to submit reports as requested to the IOC Chair and the AAZK Board of Directors.

International Assistance

Co-chairs - Jeannette Beranger, Roger Williams Park Zoo and Martha Turnbull, Denver Zoological Gardens

Objective - To develop and oversee projects which may require physical assistance at the work site.

Purpose - The International Assistance Committee (IAC) serves as a resource for

foreign zoological institutions and conservation organizations to locate and organize professional hands-on aid for their facilities. Such aid can be in the form of training workshops, building or repair of exhibits, field research, or any other forms of work where a keeper's professional expertise may be of value. The Committee's projects are primarily self-funded by the volunteers who will be working on the projects. At times there may be assistance by outside contributors.

Responsibilities - 1.) Upon request for aid, the IAC will be responsible for investigating the legitimacy of the institution and to submit application for partnership or endorsement to the AAZK Board of Directors for approval on the project. 2.) To locate qualified individuals to work on projects approved by the IOC and the AAZK Board. 3.) To organize the work project to best suit the needs of the institution requesting the aid. 4.) To help locate funding as needed for the project. 5.) To fill out and submit all necessary reports of activities to the IOC Chair and the AAZK Board of Directors.

Materials Assistance

Chair - Lynda Roberts, Riverbanks Zoo

Objective - To collect and circulate tools and small materials needed to improve working conditions within foreign zoos and conservation organizations.

Purpose - This Committee will endeavor to collect and circulate work materials and tools requested by foreign zoos and conservation organizations. These materials will come from donations to the project. Examples of requests to be handled are tools, uniforms, medical supplies, capture equipment, etc.

Responsibilities - 1.) The Committee is primarily self-funded and is responsible for getting approval through the IOC and the AAZK Board of Directors before proceeding with projects. 2.) When approached with a request, it is the Committee Chair's duty to investigate the legitimacy of the institution asking for aid. 3.) The Committee will be responsible for collecting donations and seeing that all materials arrive in the proper hands once they are dispersed. 4.) The Committee Chair is responsible for reporting all activities to the IOC Chair so that they may be included in the official reports to the AAZK Board of Directors.

To better ensure the success of projects, we have spent the last year developing relationships with a number of organizations that have agreed to work with us cooperatively in activities abroad. During the national meeting of the Fauna Interest Groups, the IOC was introduced and discussed. The FIG's were all in agreement that keepers could become a valuable resource to their projects. Since these groups have experts whose job is to coordinate efforts in their respective regions, we become part of a larger team of responsible and effective conservationists in many regions of the world.

Another exciting relationship is with Earthwatch®. This is a non-profit organization that supports research work around the world by connecting scientists with people who want an adventure instead of a vacation. When you join an Earthwatch® expedition, you are teamed with field researchers and you become a working member of the crew for 1-2 weeks. They have many exciting destinations, many of which involve an animal species that you may work with in your zoo. We are officially a cooperating institution which means that AAZK members are offered

several benefits and for each AAZK member who goes on a trip, Earthwatch® will donate \$150.00 to the Association. We are working to develop a fellowship program that will pay for the costs of the trip for keepers who can't afford to go on field expeditions as such.

Mexican Keeper Workshop Planned

Finally, I'd like to mention a training workshop that our International Assistance sub-committee is putting together at the request of the Mexican Zoological Association (AZCARM). We are working jointly with AZCARM and the Zoo Conservation Outreach Group (ZCOG) to set up classes in basic zoo husbandry to be taught to keepers by keepers. The Roger Williams Park Zoo AAZK Chapter has taken up the task of putting together a slide presentation to go with the workshop. We hope to develop a curriculum that is simple to understand. With the slide show we can reach any keeper in any country even if there are low literacy levels.

The workshop will be held at the Morelia Zoo in Mexico for three days in August. Representative keepers from each zoo in Mexico will attend. We will be sending three keepers from the Denver Zoo, Houston Zoo and Tennessee Aquarium. Although most of the expenses are covered, we are still looking for someone to sponsor some of the air fare. If any Chapter is interested in participating in this project, please contact the IOC for details. This project represents our first major effort to reach keepers outside of this country and serves as a chance to promote professionalism in areas of the world that may not recognize the zoo keeper as a vital part of the zoo word and of conservation efforts.

We've got a lot of work ahead of us. In the following months you will be reading updates on the activities of the IOC's sub-committees - M.A.R.K. and Material Assistance. We hope to involve more keepers in future projects. We will keep you updated regularly on our activities through the *Forum*. For further information you may contact the IOC any time and perhaps we can help you help others abroad in the many possible conservation projects that need you.



Conditioning of a Greater One Horned Rhino (*Rhinoceros unicornis*) to Accept Foot Treatment Without Anesthetic

By

Veronica Watkins and Jim Gregory

Keepers at Whipsnade Wild Animal Park

Whipsnade, Dunstable, Beds. LU6 2LF United Kingdom

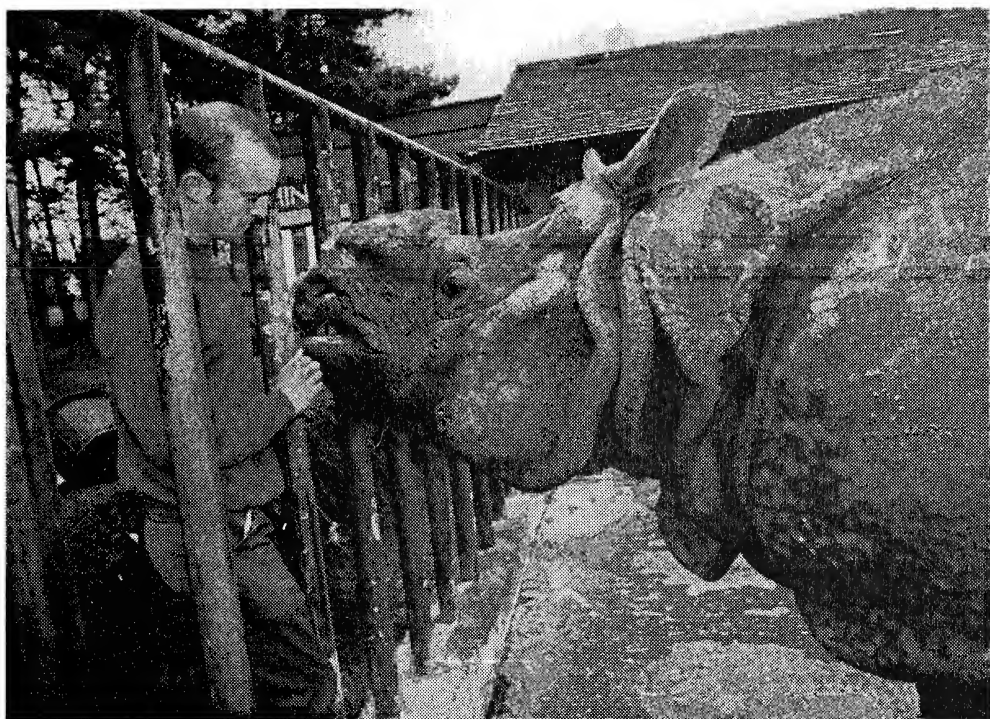
This is a paper which documents the problems and successes of conditioning the behavior of Kumar, a 24-year-old greater one-horned rhino to allow his persistent foot problems to be treated; with approximate guidelines as to how long each newly taught behavior took.

While at Whipsnade, where Kumar has been since 1973, the solution to his foot problems has been to anesthetize him and remove a six-inch long and two-inch thick chunk of his back central toenails with an electric saw. At the same time, the accumulations of dead skin between his nails and on the soles of his feet were also removed. These particular foot problems affect a number of male greater one-horned rhinos in European and North American zoos. The foot problem was caused by excessive growth of the toenails on the back feet. The prolonged stresses caused by these excessively long nails led to infections on the pads of his back feet and between his toes - and his reluctance to put weight on the infected foot.

To deal with these problems Kumar had been anesthetized up to four times a year. In September 1995, Bardia, a six-year-old son of Kumar, died under anesthesia while undergoing foot treatment. This tragedy, combined with Kumar's advancing age, necessitated finding an alternative solution to dealing with his foot problems.

During the day Kumar is kept in a concrete yard with housing. The front yard is surrounded by vertical bars set in concrete at 10-inch (25.4 cm) intervals. At night Kumar has access to a large grass paddock. The rhinos at Whipsnade are fed concentrates and hay twice daily, at 0830 hrs. and 1700 hrs., as well as fruit and vegetables when available. Kumar's training sessions take place between 1200 hrs. and 1300 hrs. five days a week. They gradually increased in duration from five to 40 minutes in length.

It has taken approximately 12 months of hard work and patience to achieve a successful footcare program. Hopefully this program will continue and prevent another tragedy such as Bardia's death from occurring at Whipsnade in the future.



Author Jim Gregory with Kumar at Whipsnade Zoo. Patient conditioning has allowed the staff to do foot work on the rhino without the use of anesthesia. (photos provided by the authors)

The Beginning - Jan. - April 1996

This initial period was a testing ground for assessing effective training methods and setting realistic achievement targets.

Our first goal was acclimating Kumar to keepers being present in the area between his bars and the stand-off barrier - an area of about one meter (3 ft.). We achieved this in a couple of days as Kumar has always accepted keepers in this area, especially if they had food and he would readily take food offered to him by hand.

After Kumar had become comfortable with us working near him, we started working on forging a link between Kumar receiving fruit/vegetables and good behavior. Initially, every time Kumar targeted to the trainer's hand a whistle would be blown and Kumar would be fed. The whistle was used as it could provide a consistent sound regardless of which trainer was working Kumar rather than relying on the peculiarities of different keepers' voices.

Originally we had assumed that the main motivation for Kumar to participate

in these training sessions was the food rewards. However, after three weeks, it became clear that although the bucket of chopped fruit/vegetables undoubtedly constituted a major initial incentive for his involvement in training sessions, Kumar's willingness to work for purely verbal praise led to the whistle being replaced by a repertoire of encouraging phrases.

At this stage Kumar would only receive a food reward when he had targeted to the trainer's hand. This allowed us to maneuver Kumar into three positions against the bars of the enclosure which gave us access to both sides of his body and enabled us to safely reach his back feet by leaning through the bars. If Kumar failed to achieve the position near enough to the bars, he would be returned to the previous position and asked to target again. Only when he achieved the requested position would he be fed.

Once Kumar had targeted correctly his ears would be rigorously handled and held to desensitize them for any future hand injections or venipuncture procedures. The ears were chosen upon advice from the vet.

A Helping Hand

On 29 January things started to get moving - literally. Through consultation with other keepers and experimentation, we found that by scratching the web of skin at the top of his back leg underneath the flap, Kumar would lift and extend his scratched leg backwards - exposing the sole of his foot. To reinforce this behavior, every time his foot was raised he would be rewarded with fruit/vegetable by one keeper and showered with praise by the other keeper. Kumar would then be turned around and the same process was repeated on the other leg.

Between mid-March and early April we introduced the verbal command "foot". This command was given while his leg was being scratched. In a bid to bypass the scratching, we began to work on just giving the verbal command with no physical contact. At not point did he show any inclination to cooperate to purely verbal commands and often became frustrated during these sessions. By mid-April the combination of scratching then slapping his leg and then calling for his foot was successfully reintroduced to persuade Kumar to lift his back feet. By the end of March Kumar was lifting his back feet on a daily basis in his training sessions, but we still had the problem of supporting his foot once it was raised to allow us to treat the infections.

Snow Time

With snow on the ground during a lot of January and February and bitterly cold daytime temperatures, Kumar would spend a lot of time sleeping indoors underneath his heater. At the beginning of the training sessions on 13 Feb. we found Kumar lying indoors with his head pointing away from the only entrance/exit to his indoor quarters. With his head away from the door, it allows keepers to leave safely if Kumar gets up suddenly. Two keepers then entered Kumar's

enclosure constantly talking to him. Kumar quite happily accepted our presence as we had been led to believe by other keepers. As one keeper stroked his rear leg with a soft brush and kept an eye on his head movement (which we used as the best indicator of his intention to get to his feet), the other keeper would examine the infections on his feet, wash them in an antiseptic solution and then start to file his toenails using a 30cm (11.8 inch) elephant rasp.

Between mid-February and the beginning of April, Kumar was lying in the appropriate position to allow filing only six times. In these six sessions we achieved more material results than we had done in the other 57 days of training.

Spring in His Step April - July

After the initial frustrations of his earlier training, Kumar progressed by leaps and bounds in these three months.

Due to the restricted opportunities we had had to file Kumar's overgrown toenails (only six times when he had been lying indoors), we began working on ways of filing his feet while he was standing up. The first method we tried was filing his foot with the rasp while he was standing in his front yard, but this never worked successfully as the grating sound of the rasp against the concrete caused Kumar to continuously move his foot.

On 18 April we started working on methods of raising Kumar's foot off the concrete floor in his front yard to allow filing. We started by cutting a 5cm (2 inch) thick piece of wood to the approximate width and length of Kumar's foot. This block of wood was placed underneath his feet every time they were raised. Once the foot had been lifted, the wood was kept pressed against the sole until his foot was returned to the floor and he was standing on the wooden block. Using the block allowed us to lift his foot off the concrete floor, provide a steady platform upon which to file, and allowed us to gain greater access to the underside of his toenail. At this stage any time that Kumar has his leg raised or his foot was on the wood block he would receive a food reward and verbal praise. Two weeks after the wooden block was introduced Kumar was still refusing to put any weight on the block and would move his feet off the block as soon as he stood on it.

On 12 May we tried again, this time we covered the wooden block in cotton wool and secured it with masking tape. Within days of making this change, using the same reward system as before, Kumar was standing on the block and allowing us to file his nails on a daily basis.

Originally the duration of the filing was largely erratic as Kumar would move his foot after a short period of time on the block. In order to control his foot movement once on the block we introduced the verbal command "hold". By giving this command and holding the nail still as we filed, Kumar would leave his foot on the board until we had finished filing up to a maximum of five minutes per foot. By the end of May filing his overgrown toenails became a daily activity whether Kumar was standing or lying down.

Now that Kumar was lifting his feet on a daily basis, we could assess the extent of the problems on his back feet, i.e. the lateral tears in his pads and the necrotic tissue growth behind and between the toenails. Although Kumar would lift his feet it was too short a time to allow us to apply any treatment onto the soles of his feet. So on 9 May we started working on supporting Kumar's legs once they had been raised. As soon as Kumar had lifted his foot, one keeper would slide through the bars and support Kumar's raised leg between his hands approximately 50cm (20 inches) of the ground. Initially it was a physical impossibility to support his foot once it was raised, but as he became used to having his feet handled he would transfer his weight to the other feet which allowed the keeper to bring his foot up to a more easily observable height. With the end of June approaching Kumar's back feet could be raised and supported at each training session. This allowed us to give his soles a daily antiseptic rinse and apply antiseptic cream to the most infected areas.

While Kumar's foot was being supported, the second keeper would reward Kumar with fruit/vegetables as well as praise until his foot was lowered. If Kumar appeared to become agitated or restless by suddenly raising his head or ignoring his food during the training session, a quiet word from the keeper feeding Kumar allowed the second keeper to release his leg and leave the enclosure.

To assess the effectiveness of various foot treatments the vet started visiting Kumar regularly and inspecting the condition of his soles of his back feet once raised. This was one of the most satisfying achievements of his training. Due to the many times Kumar had undergone "knock-downs" he had always been wary of the presence of any vet near to him. Now after seven months of work, Kumar would remain stationary as the vet examined, felt and prodded the sole of his raised foot.

The only change we made to his regime in this period was the withdrawal of fruit/vegetables from Kumar's morning feed. The fruit/vegetable supply for the Indian rhinos at Whipsnade is irregular and a pattern soon emerged whereby Kumar's willingness to work in his training sessions was far greater when he had received no fruit or vegetables with his morning concentrates.

Problems

Although we would carefully regulate our activities during Kumar's training sessions, we had less control over external factors. The first of these problems was a predictable one: the onset of oestrus of the female rhino in the adjacent pen. For a period of approximately five days every two months Kumar would become very agitated and very little if any training was done.

The second problem was far more unpredictable: the action of surrounding visitors. Kumar's training takes place at lunchtime, due to the need for two staff members to be available. As a result, especially in the summer months, his training sessions coincides with a large visitor presence around his enclosure.

The actions of visitors, such as shouting and putting children onto the stand-off fence during the training sessions, caused the most violent reactions during Kumar's training. This was illustrated on 30 March and then on 1 July when Kumar became agitated by the shouts of nearby visitors and spun around towards the keeper working behind him. On both occasions neither keeper was hurt and Kumar reimmersed himself into his routine, but both incidents highlighted the omnipresent threat that training a Indian rhino with its speed and bulk could carry.

Ideally we should train Kumar either when the public are excluded, first thing in the morning, in an off-exhibit area or in a crush, but unfortunately none of these are a viable option at Whipsnade.

We have always asked for the public's cooperation through a brief explanation of his training at the start of the session and the use of explanatory signs during the session, but these are only preventative measures and could never be regarded as a total remedy to the problem.

Cutting it Fine July - December

This period was very much one of consolidating the behaviors that Kumar had already learned. We reached a point in August when the vet informed us that the optimum length of Kumar's toenails on his back feet had been reached. The nail length was then recorded and intermittent, rather than daily, filings were carried out to maintain them at this length. The one new piece of equipment we introduced to his training was a hoofknife. This allowed us to cut away the pieces of dead skin between his toenails and on the soles of his back feet. While Kumar was learning to accept the hoofknife we were learning to use it. Inevitably the hoofknife drew blood on a couple of occasions; Kumar would flinch and move his raised leg, but after a few soothing words would present his foot again for treatment.

Tools of the Trade

At the end of November we were using a number of tools in Kumar's training: an elephant rasp, a cotton wool-covered block, antiseptic wash and cream, a hoofknife, explanatory visitor signs and a daily diary. The diary has been completed every day since day one and had been one of the most instrumental components of his training. By keeping a daily record we could soon see correlations developing between Kumar's behavior during training sessions and the prevailing weather conditions, visitor numbers and food rewards. As it was a daily diary, it allowed us to record the gradual increments in Kumar's progress towards the intended behavior, and gave us rough guidelines as to how long to persevere with training methods before modifying or rejecting them.

On days when we had achieved relatively little progress for no apparent reason, the diary often showed that the trainers had been ill and Kumar's unwillingness to work had been due to the lack of enthusiasm on the trainers' part rather than the rhino's.

Conclusion

Watching, recording and encouraging Kumar's progress has provided us with the most satisfying aspect of our zoo careers to date. Both Kumar and his keepers have benefited from the last 11 months of training. The increase in time spent with Kumar and closer contact with him has been a big advantage for the keepers involved. For Kumar the condition of his feet has improved immeasurably since his training began.

These sessions have also proved to be the most successful form of enrichment we have used on Kumar. With the exception of two sessions early in the year, Kumar has always participated in the training even though he has the choice to leave at any time.

In the future we hope to condition Kumar to accept regular blood sampling procedures and most importantly of all teach him to lie down on command.

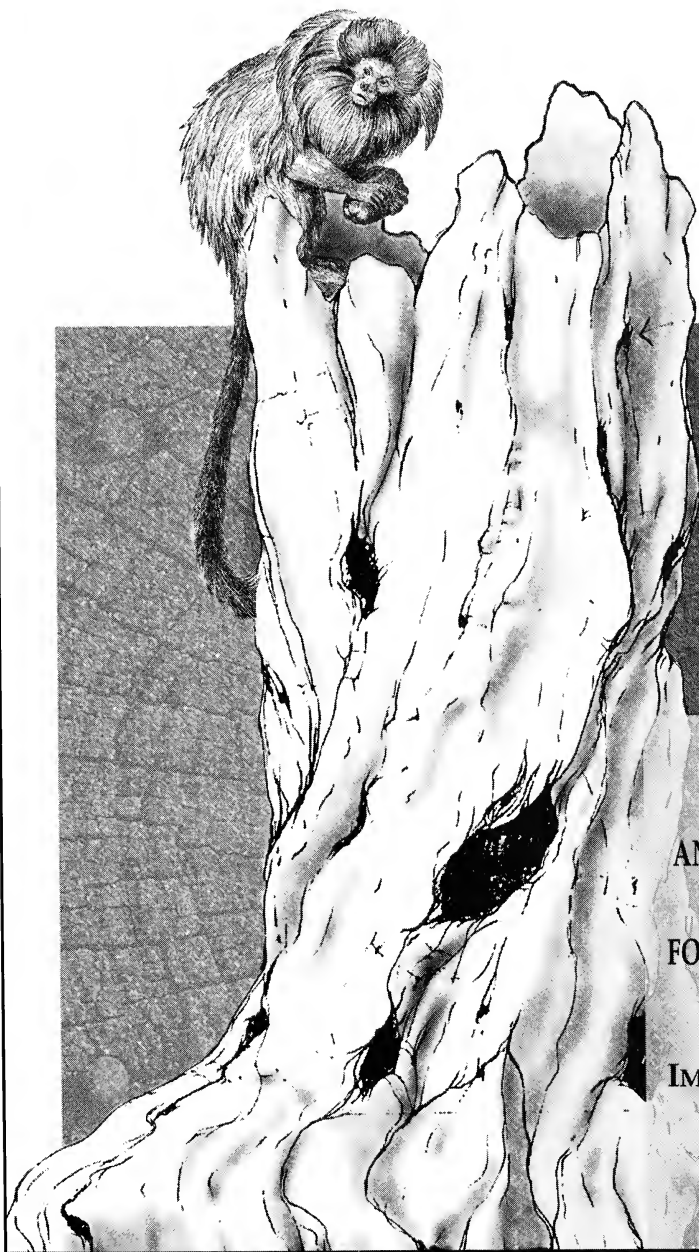
Acknowledgements

Training an Indian rhino isn't a one/two person job and wouldn't have been possible without the support of the Asian Region, especially Joy Lear, at Whipsnade as well as the involvement of the Veterinary and Elephant Departments. Thanks also to Susan and Gretchen from Wildlife Safari who taught me how to teach.

Bowling for Rhinos T-Shirt Available

Once again, talented Janie Coleman, Dallas Zoo staff graphic artist, has designed our 1997 Bowling for Rhinos T-shirt. This new black and teal design on a white T-shirt features four different species of rhinos to represent the sanctuaries that Bowling for Rhinos funding supports. These T-shirts are selling for \$12.50 each. For further information contact Ann Stevens at the Dallas Zoo (214) 670-6798 or Fax (214) 670-6717.





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*By Kayla Grams, Arizona-Sonora Desert Museum
and Gretchen Ziegler, Sequoia Park Zoo*

Our facility has a policy that all enrichment items must look natural if they are to be used on exhibit. Here are some things that we have tried on numerous species.

SMALL CATS:

- hanging mice/chicks from the top of the exhibit so cat must jump up to get food
- placing mice/chicks inside small wicker hamster balls
- nightcrawlers - some of the cats play with them, others eat them
- scent from opposite sex of same species
- scent from dik-dik and rock hyrax
- exchanging logs between exhibits

COATI:

- perfume
- lemons

FOXES:

- live crickets put in clear plastic hamster balls with holes drilled in them (this is left in overnight)
- whole cooked or raw eggs with shells
- nightcrawlers
- scent from dik-dik, hyrax, fox and cats

MEERKATS:

- live crickets, mealworms, superworms put in gourds or coconuts with holes drilled in them
- mealworm dispenser attached to roof of exhibit
- pumpkins hollowed out with holes cut in the sides

COUGARS:

- snake sheds placed over empty toilet paper rolls
- cardboard boxes and large paper bags (in holding)

SMALL RODENTS:

- live insects such as crickets, mealworms, superworms
- dirty shavings from the breeding white mice, soaked in water for 24 hours, then water siphoned off into spray bottle - this solution then sprayed on leaves and put in exhibits.
- rodent exercise wheels for animals in holding

PECCARIES:

- pumpkins
- ears of corn
- carrots with tops - bury the carrots in the soil with only the green tops sticking out

HOOFSTOCK:

- palm logs hung from shade structure in holding

BIRDS OF PREY:

- pvc pipe filled with BOP or mice
- whole eggs buried in substrate to Caracara and Black vultures
- feeder goldfish in ponds or buckets
- hide mice and eggs in flake of hay for Caracara

PARROTS AND OTHER SEED EATERS:

- pinecones smeared with peanut butter then rolled in bird seed then hung from branches
- swinging perches made from vines suspended from roof of exhibit
- peanuts for woodpeckers
- pine tree branches for Cockatoo

—*Kim Auckland*
The Living Desert-Palm Desert, CA

(Ideas appearing in this column have not necessarily been tested by the editors for safety considerations. Always think ahead and use good judgment when trying new ideas. Eds.)

Four More California Condors Released to Join Recovery Efforts Over Southwest Canyons

Four of the nine California condors being held atop the 1000-foot Vermilion Cliffs north of the Grand Canyon were released on 14 May. At 0700 hrs. Peregrine Fund biologists lifted the door of the condor pen and the birds cautiously hopped from their shelter and onto the lip of the cliff. As the last bird emerged, all four unfolded their nine-foot wings to initiate their maiden flights. Peregrine Fund biologists, Mark Vekasy and Shawn Farry, reported that the "the four made a number of short flights and are now perched on the talus slope near the base of the cliff."

The nine condors have been held in a netted adjustment pen since shortly after they were transported from the Los Angeles Zoo to the Bureau of Land Management administered cliff site on April 29, 1997. The four most subordinate condors were selected for release first with the hope that they will socialize more easily with the existing birds. The remaining captive birds will be released after biologists evaluate their behavior, weather conditions and the results of today's release. Prior to release, all nine birds were being held at Los Angeles Zoo.

The two-year old condors are the oldest to be released in the wild. Since older, more mature birds could immediately soar greater distances than their younger counterparts did when released last December, biologists chose to release them in small batches. "By releasing these birds a few at a time, it will give them the opportunity to gradually assimilate with the existing population. The younger condors have performed well since their release last December; these older birds could learn much from the existing birds as the two groups begin to socialize" said Bill Heinrich, Species Restoration Manager of The Peregrine Fund. The Peregrine Fund is a non-profit conservation organization conducting the release in northern Arizona.

Since December, the five original condors have greatly extended their range. They have soared below the north rim of the Grand Canyon and been spotted over Lake Powell and Page, Arizona. Each of the five condors regularly returns to the Vermilion Cliffs and has inspected the new arrivals. Researchers will continue to monitor the condors' movements and study how the groups interact and assimilate.

Condors Released May 14, 1997 at Vermilion Cliffs

Tag #	Sex	Hatch Date	Hatch Location
#16	Male	4/13/95	San Diego Wild Animal Park
#19	Female	4/17/95	San Diego Wild Animal Park
#27	Female	2/2/95	San Diego Wild Animal Park
#28	Female	2/21/95	The Los Angeles Zoo

Source: U. S. Fish and Wildlife Service Online Release 5/14/97

A First for All Large Cats

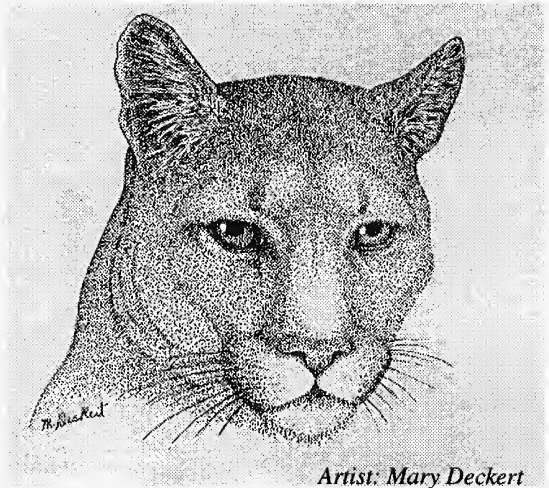
By

*Ivy M. McGovern, Mammal / Feline Keeper
Central Florida Zoological Park, Lake Monroe, FL*

In today's world many advances are taking place in animal medicine. This is extremely important, especially for those animals that are endangered or threatened. Advanced medical technology benefits these animals by prolonging their life span and allowing time for possible breeding purposes.

A cougar (*Felis concolor*), which is a subspecies to the endangered Florida panther (*Felis concolor coryi*) from the Central Zoological Park was given a knee replacement which had never been attempted on a large feline.

Tabatha was captive-born in Florida on 15 June 1979. After three years with a private individual she was donated to the Central Florida Zoo on 15 August 1982. Upon arriving at the zoo it was determined that her diet needed to be changed drastically. She had been raised primarily on chicken necks which did not provide enough vitamins or nutrients for healthy bone growth. Her diet was changed to a variety of meats and meat products with various mineral supplements as well. While at the zoo she was bred and had three offspring, one of which still resides at the zoo.



Artist: Mary Deckert

In 1991, Tabatha was diagnosed with severe degenerative joint disease. For the next five years Tabatha would experience good and bad days, especially with her right rear leg. It was noted in February of 1996 that her leg was visibly worse and appeared bent inward. Throughout June, July and August of 1996 her activity level began to decline and she started having more problems getting around on her right rear leg. During September 1996, zoo staff and veterinarians began discussing the possibility of corrective surgery on her leg. After reviewing her condition there were several choices to examine: arthroplasty (fusion of knee joint), amputation of right rear leg, knee joint replacement or euthanasia. Discussion of the choices among University of Florida veterinarians and zoo staff rendered the decision to be knee joint replacement.

The replacement of the knee joint in a non-domestic feline had never been attempted before. Dr. Avery Bennett (Assistant Professor, Wildlife and Zoological Medicine at the University of Florida and board-certified veterinary surgeon) along with the voluntary services of Dr. Steven Gibson (a board-certified veterinary surgeon from Phoenix, AZ,) coordinated and performed the surgery at the University of Florida Veterinary Medical Hospital. The right stifle in the knee was to be replaced using an artificial human knee joint.

During the beginning of the month of November 1996, Tabatha's keepers worked on getting her into a transfer cage for her journey to the vet school. After several days she cooperated and on 12 November 1996 she was transferred to the school. On 15 November 1996 the surgery took place and was successful. After five days Tabatha was transferred back to the zoo. Cage rest was prescribed for six to eight weeks. Along with rest she was to receive a strong antibiotic, Cephalexin™, to deter any infections.

During the next few days Tabatha refused to take the antibiotics or eat her regular diet. Her favorite enrichment items - liverwurst, chicken and beef liver - did not appeal to her. She did, however, consume water and small pieces of liver after a couple of days. Finally on 27 November 1996 she was tube-fed with success. Unfortunately, on 29 November at 0300 hours Tabatha died.

Tabatha's death was disappointing, but valuable information for future uses of technology in animal medicine was learned from this new procedure. Although successful surgeries of this kind have been performed on dogs, the placement of a prosthetic device in Tabatha's leg was a first. With continuing advances in animal medicine this procedure will not be the last of its kind. Cougars are sometimes referred to as pumas—the word “puma” in the Incan language means courage and power - traits which Tabatha exhibited both in body and spirit.

KEY DEER LOSSES: Wildlife officials say a record 100 endangered Key deer have died this year, about 2/3 killed by cars, the AP reports. Only about 250 to 300 of the deer remain, with “growing tourist traffic in the [Florida] Keys” threatening the herd. The deer are reproducing well, which may partially explain why deaths are up, officials say. A shrinking habitat because of growing human populations on Big Pine Key and the deer's lack of fear of humans are contributing factors to the deer mortality, AP says.

Source: GREENlines Issue #283 Jan. 2, 1997

Legislative Update

Compiled by *Georgann Johnston*
Legislative Advisor
Sacramento, CA
1-800-338-7348



USDA Issues Amended Rules For Imported Zoo Animals

The U.S. Department of Agriculture has decided to allow ruminants and swine, previously imported from countries which are experiencing endemic foot-and-mouth disease and rinderpest, to be transferred between zoos inside the United States. This determination is based, in part, on the fact that intrastate transfers would benefit endangered species breeding programs.

The imported animals are received at USDA Animal and Plant Health Inspection Service approved zoos (called PEQ zoos) where they are held in quarantine facilities. The new rule allows for ruminants or swine to be moved from a PEQ zoo to a non-PEQ zoo after spending at least one year in quarantine. The additional requirement imposed upon the receiving zoo is that they have biosecurity procedures as effective as, though not necessarily identical to, procedures used by zoos accredited by the American Zoo and Aquarium Association. The new rule went into effect on 2 June 1997.

Source: APHIS Press Release 30 April 1997

Sawfish And Sea Turtles On CITES Agenda

The U.S. Government has proposed an amendment to CITES which would list all species of sawfish on Appendix I. These unusual fish, distinguished by their long-toothed snout which resemble saws, are found in shallow coasts, estuarine, and freshwater habitats. They are closely related to sharks and their populations have been in decline because of habitat degradation and harmful fishing practices. Additionally, many of the fish are taken as trophies because of their unusual snouts.

Cuba, on the other hand, will be asking the 10th Conference of the Parties to CITES to allow a reopening in the trade in Hawksbill sea turtles. The shells of this species are made into combs, eyeglass frames and other curios. The sea turtles were not included in Appendix I in 1976, but were the subject of an international trade embargo established by the United States and other countries in 1992, when they were finally added to the CITES list. Cuba's argument is that the turtles are plentiful and that they should be downgraded to Appendix II — a move which would allow regulated trade in the species.

Nations that are parties to CITES meet every two years and maintain a list of wildlife

species that are threatened to varying degrees by trade. The upcoming meeting is set for mid- June 1997 in Hazrare, Zimbabwe.

Source: Marine Conservation News, published by the Center for Marine Conservation, Spring 1997.

Canada Working On Endangered Species Act

Last December, the Canadian Endanger Species Act (ESA) was introduced to Parliament. Canada has already placed 276 species on an endangered species list, but has no significant legislative authority for protecting those species. To date, protection of the species has been left to the individual provincial governments, which have far more autonomy than the states of the United States.

As introduced, the ESA would apply only to species on federal land (about 4% of the total Canadian area). It includes only those birds already covered by the Migratory Bird Convention with the U.S. and does not apply to species that migrate from one province to another, except when they are on federal land. The ESA also contains no provisions for habitat protection.

The legislation authorizes the creation of a Species-at-Risk Conservation Fund, which is to be supported solely by private donations, and which will be administered by federal officials in Ottawa. The most vehement opposition to the ESA comes from Newfoundland who argue that it might hurt the fishing and marine mammal hunting industries.

Source: Animal People News , May 1997

Legislation Pending In Congress On Public Use Of The National Wildlife Refuge System

On 23 April the National Wildlife Refuge System Improvement Act of 1997, H.R. 1420, was introduced in Congress. The bill is sponsored by Congressman Young, formerly an ardent opponent of the Endangered Species Act reauthorization bill. Just a week later, on 30 April, Congressman Young's Resources Committee voted unanimously to approve the bill for consideration by the full House.

"This legislation represents an historic moment for the U. S. Fish and Wildlife Service by reinforcing the National Wildlife Refuge System's longstanding commitment to wildlife conservation," said John Rogers, acting director of the U. S. Fish and Wildlife Service, the agency responsible for managing the Refuge System. "And this conservation mission goes hand-in-hand with the outdoor pursuits refuge visitors enjoy. When we do our job well conserving the wildlife, plenty of opportunities for wildlife-dependent recreation result."

The first national wildlife refuge was established in 1903, when President Teddy

Roosevelt set aside a tiny Florida island as a protected area for birds being indiscriminately harvested for their plumage to meet the fashion demands of the day. Today, the 92-million-acre National Wildlife Refuge System, comprising 509 units in all 50 states and U. S. territories, forms a network of diverse landscapes wildlife call home, providing habitats where migratory birds thrive and endangered species mark their recovery.

The USFWS reports that some provisions of the National Wildlife Refuge System Improvement Act coincide with those found in Executive Order 12996, Management and General Public Use of the National Wildlife Refuge System, signed by President Clinton in March 1996. Key legislative provisions mirroring the Executive Order include the Refuge System mission statement, priority public uses, and a requirement that biological integrity, diversity, and environmental health of the Refuge System be maintained.

The mission of the National Wildlife Refuge System, as spelled out in the new legislation, is "to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans."

Source: USFWS News Release 2 May 1997

Sea Turtles Suffer From TEDs Misuse

Seventeen Kemp's ridley turtles, the world's most endangered sea turtle, have been killed in Texas waters since 1 April as a result of nearshore shrimp fishing activity. Only 1500 female Kemp's ridley nesters remain in the wild and the Texas shrimp season's arrival is further threatening the species' survival. Recent reports showed that 41% of Texas shrimpers were not in compliance with U.S. TED laws. Call Rolland Schmitten (301)713-2239 of the National Marine Fisheries Service to demand increased enforcement of turtle protections and a 60-day closure of fishing activities within three miles of shoreline along the Texas coast.

Contact Earth Island Institute for more info: (415)488-0371, seaturtles@earthisland.org.

Source: GREENlines Issue #362 4/20/97

• Information Please •

Live birds that are being smuggled into the U. S., Canada and a number of other countries are often confiscated by customs officials, fish and wildlife agents, or other governmental entities. I am looking for statistical information on how many birds are confiscated each year, particularly in the U. S., and what happens to them after they are seized. Some information from the USFWS indicates that, in the past, confiscated birds were offered to zoos. Do you have any birds at your zoo which came from a smuggling/confiscation situation? Do you have any contact with any governmental entity that confiscates smuggled birds? Any information or leads about contacts in this area would be greatly appreciated. Contact Georgann Johnston, AAZK Legislative Advisor at (800) 338-7348.

Chemical Immobilization Classes Offered

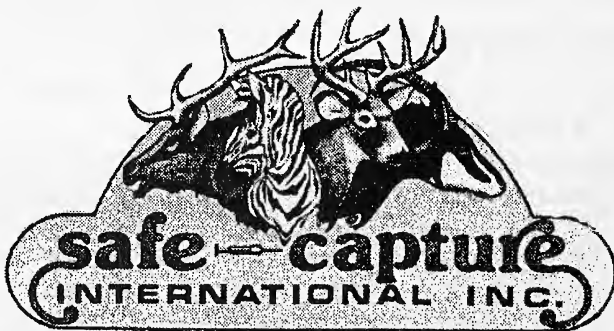
Short courses on chemical immobilization will be offered by Safe-Capture International, Inc. during the remainder of 1997. The 16-hour programs consist of 12 hours of multi-media, lecture presentations and a four-hour "hands-on" workshop.

Lecture topics include: Techniques to minimize capture stress and mortality; Remote delivery technology/capture pharmacology/radiotracking darts; Newtechnology-old technology - what works, what doesn't and why?; Safe, consistent drug and dosage recommendations; Anesthetic monitoring under field conditions; How to recognize, prevent, and treat immobilization-related medical emergencies; Record keeping; Legal considerations; Human safety protocols and protective equipment; Handling accidental human exposure to immobilizing drugs. Applications to free-ranging wildlife, urban wildlife, and captive species will be discussed.

Workshop topics include: Developing proficiency with blowguns and long-range projectors; Comparative use of commercial dart systems; and Practical field emergency techniques.

The remaining dates and locations for 1997 are: Lansing, MI (July 19-20); Portland, ME (August 7-8); Carlisle, PA (August 19-20); West Lafayette, IN (September 6-7); Kennet Square, PA (September 13-14); Salem, VA (September 16-17); Albany, NY (October 4-5); Corona, CA (October 8-9); Stevens Point, WI (Oct. 25-27); Bridgeport, CT (October 29-20); and Milwaukee, WI (December 5-6).

Registration fee is \$275.00. The course is open to anyone interested in learning the technique, and is approved for Veterinary Continuing Education. For a detailed information packet please contact: Dr. Keith Beheler-Amass, Safe-Capture International, P. O. Box 206, Mount Horeb, WI 53572 (Tel: (608) 767-3071; Fax (608) 437-5287.





Way Kambas



By Robert Berghaier
Zoological Society of Philadelphia
Philadelphia, PA

Sumatra is the fourth largest island on Earth. It contains an amazing diversity of animal life with over 250 species of herptiles, 397 species of land birds and 177 species of mammals found on the island. Nearly all of the large mammal species of the Southeast Asia region are native to Sumatra. These include elephants, tapiers, and what are probably the last of Indonesia's tigers. The island holds the largest and possibly the only viable populations of Sumatran rhinoceros on earth. Also found in Sumatra's forest are other large mammals such as sambar deer, barking deer, wild pigs, bearded pig, clouded leopard, sun bear, and Asian wild dog.

Even though the density of the human population, 80 persons per square kilometer, is less than one tenth that of its overpopulated neighbor Java, there are serious environmental problems. The soils of Sumatra are less fertile so it takes six times the amount of acreage to support the average Indonesian family than it does on nearby Java. As a result, many forests on the island, particularly the wildlife-rich lowland areas, are under heavy pressure.

The region of Sumatra suffering the greatest onslaught is Lampung Province on the southern end of the island. Since 1950 it has been an official policy of the Indonesian government to transfer people from crowded Java and Bali and settle them on other islands of the archipelago. As a result nearly four million people have been moved to Sumatra with most of them taking up residence in Lampung. This large number of settlers, combined with a population growth of over 4% annually, has created serious deforestation and erosion problems as well as a devastating effect on the region's wildlife.

Along the Southeast coast of the Province, surrounded by plantations and villages, is the 1,235-square kilometer (477 sq. mi.) Way Kambas reserve. It holds a remnant of some of Lampung's once extensive lowland forest. Way Kambas has an estimated 200-300 wild Sumatran elephants, a large number of tapiers and clouded leopards and 20-30 Sumatran tigers. Sumatran rhinos (an estimated 20+) have also recently been discovered. In addition there are important populations of agile gibbon, siamang, macaques and leaf monkeys. The coastal swamps of Way Kambas contain essential wetland habitat for numerous species and numbers of wading birds. In short, the reserve has the potential to be one of the most important conservation areas in Southeast Asia.

I spent a week in Way Kambas in October 1994 and found it to be one of the most spectacular tropical forest reserves that I have visited. While I did not see the larger and more rare mammals, I was surprised at the numbers and diversity of the birds, primates and smaller mammals that I encountered.

Compared to many Indonesian wildlife areas Way Kambas is relatively easy to visit. The reserve can be reached directly from Jakarta Java by car via a ferry across the Sunda Strait. An alternative would be to fly to Bandar Lampung Sumatra and charter a car or "bemo" (a type of local taxi/van) to drive to Way Kambas. It is also possible to take a series of buses from Jakarta to Bandar Lampung and from there to the park office.

As with all Indonesian parks you must have permits before entering. The permits may be obtained at the Way Kambas Park Headquarters in Tridatu or from the Conservation Department Offices in Bandar Lampung.

There are two areas of the park that have self-service bungalows. These are located at the Elephant Training Center at Kadangsari and at the forestry station at Way Kanan. The area around the training center has some small shops and a restaurant where food and bottled water may be purchased. Visitors to the forestry station, however, must carry their own provisions and drinking water. The bungalows at both locations have their own bed frames, mattress and bedding, but no mosquito netting. One can pack all of this gear or, as I did, arrange for a guide to outfit a trip to the park. The bathrooms are simple affairs: bucket-flushed toilets and traditional Indonesian water barrel and ladle bathing.

A visit to the park should include both the Elephant Training Center and Way Kanan. The Training Center holds over 100 elephants. A few of these animals were born in captivity at the center. However, most of the elephants were taken from the wild after episodes of crop raiding or in some cases, after causing injury or even death to local residents. On my last day at Way Kambas eight elephants were due to be darted and trucked to the center. This was deemed necessary since, two weeks previously, they had killed a woman who had entered the park to collect wild durian fruit.

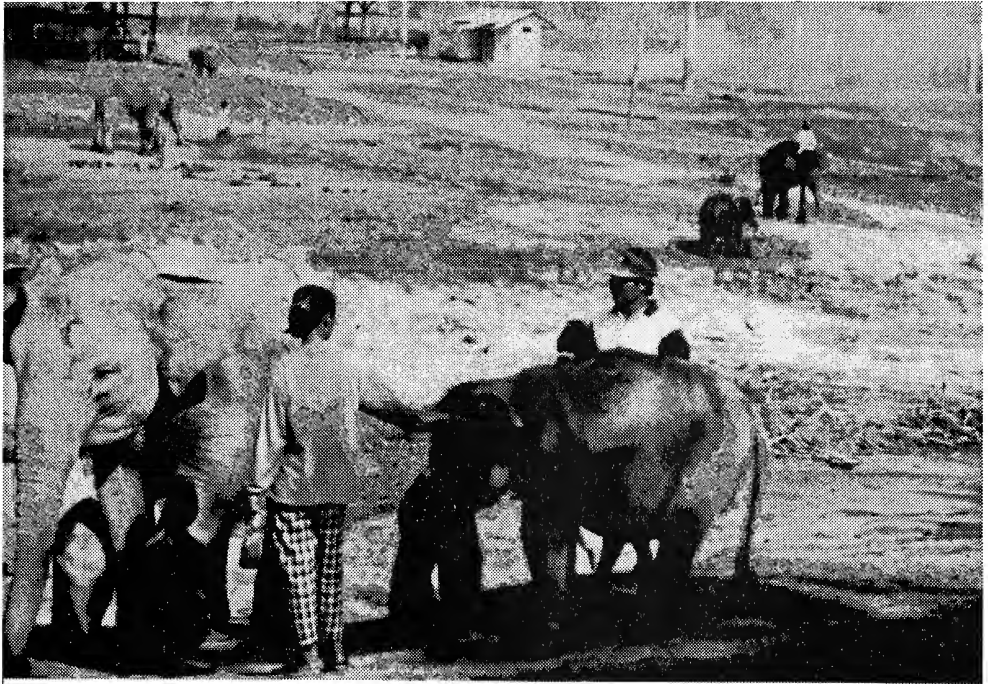
The personnel at the Center attempt to train the problem animals for eventual use in forestry operations or as riding elephants or performers. The Center conducts a sort of elephant circus once a day in which the animals execute various routines and maneuvers. The most memorable act was a full-grown bull who gently stepped between and over three reclining men who were volunteers from the audience. Just imagine trying to get your institution's insurance company to agree to such a stunt. On weekends an elephant football match (soccer for those unenlightened sports fans among you), very popular with the locals, is played.

The Center is a noteworthy operation run by the Lampung Provincial Government with little assistance from other sources. I found it heartening that the local authorities would go through this lengthy and expensive process rather than just shooting the crop-raiding elephants outright.

While at the Center I got to meet Queenie, a rather remarkable female elephant. Queenie was caring for her own week-old calf and the offspring of another cow who had rejected her infant two weeks before. She also acted as a surrogate

mother to three-year-old Susan who was accidentally left behind in a farmer's field by her crop-raiding mother. Queenie was an attentive and very patient mother who often had three youngsters trying to nurse off her simultaneously.

I also saw some of the more recent and less cooperative newcomers. These elephants could be found in remote corners of the Center with chains on their front and back legs. As I walked by these animals, at a safe distance of course, they first would glare at me then lunge towards me as I passed them. Most of these elephants appeared to be young bulls and I am not sure if any of them could ever be broken and trained.



The Elephant Training Center at Way Kambas (Photo R. Berghaier)

The Center could probably expand its program of elephant-back safaris into Way Kambas Reserve. However, these types of trips presently have the rider straddling the animal's back which makes for a very uncomfortable ride. Riding elephants in Indian and Nepalese reserves use a basket or carriage to carry passengers which provides a more enjoyable experience.

Although the Elephant Center is worth at least a half-day's visit, the real attraction in Way Kambas is the area of the reserve around the Way Kanan Ranger Post. In my experience it rivals or surpasses better known tropical forest sites I have visited such as Manu and Tambopata in Peru, Cuyabeno in the Ecuadorian Amazon and Ranomafana in Madagascar for the diversity, numbers and ease of visibility of wild animals.

The forest in this sector of the park was selectively logged in the seventies. This has caused an excellerated growth of secondary forest which has evidently

not affected, and has probably accentuated, contact with wildlife at Way Kanan.

The most common methods of viewing wildlife at Way Kanan is either on foot or by boat. Longtailed macaques and silver leaf monkeys are commonly seen while canoeing along the Way Kanan river and once I got a quick glimpse of two pig-tailed macaques. I saw barking deer, small groups of wild pigs and a red giant squirrel which is a reddish version of the giant black Malaysian form. There were water monitors and smaller lizards on the banks and once a thin, red-headed keel rat snake swam alongside us. There was an impressive amount of bird life on the river: white-breasted water hen, black crested serpent and grey-headed fish eagles, crested goshawk, bat hawk, blue-eared, stork-billed and rufous-backed kingfishers, black-bellied malkoha, greater coucal, chestnut-headed and blue-crowned night heron, red-throated barbet, and Oriental darter.

The immediate area around the ranger station is also a wildlife hotspot. Groups of wild pigs and long-tailed macaques would move through camp, usually in the morning. Prevost squirrels were also active in the mornings as well as siamang and agile gibbons which I could hear calling from the surrounding forest. There were barking deer and greater mouse-deer which would graze the camp's clearings at night. Every evening large flying foxes would fly overhead. One evening I found three types of civits: masked, common palm, and banded linsang foraging within 15 feet of one another by an empty bungalow. There was also a family of small-clawed otters which denned near the station and I was able to see them on several occasions. Birds included rufous-tailed and white-rumped shama, plain-throated sunbird, striped wren babbler and black and red broadbill.

I spent one evening camped out on an observation tower along the Way Kanan, downriver from the ranger post. We arrived before dusk and left early the next morning. While our party did not see anything unusual, I was awakened at 2:45 A.M. by the loud alarm bark of a sambar deer. Longer overnight expeditions deep into the interior of the reserve with a ranger escort can be arranged, but all supplies and equipment have to be carried in.

Walks along the road leading into the station became my favorite method to find wildlife. There were small flocks of red jungle fowl, crested firebacked pheasants crossing the road and hill mynas calling overhead. Other birds I saw here included pink-necked green, green imperial and rufous woodpecker, rufous piculet and white-throated kingfisher.

Mammals were relatively easy to spot on both sides of the forest lining the road. I frequently saw siamangs and once found a pair with what I think were two mitered leaf monkeys nearby. Barking deer, wild pig, long-tailed and pig-tailed macaques were more often heard than seen in the forest. I did, however, get a clear look at a lesser mouse-deer. On an evening walk I heard some barking which I assumed at the time was just another barking deer. A few evenings later, through a conversation with my English-speaking guide and the ranger who was assigned to me, I found out that the barking was actually from an Asian wild dog. Squirrels were diverse and I saw black giant, red giant, plantain and three-striped ground squirrel. I am less sure about my identification of

what I believe to have been Lows, slender and black-eared pygmy squirrels. However, all three species can be found in southern Sumatra. On the road at dusk one evening I felt a presence behind me and turned around in time to see a red giant flying squirrel glide over my head and land silently in a nearby tree.

One morning walk turned up one of the oddest looking creatures I have ever seen. It was a thin weasel-like animal which carried its long skinny tail upright. From a distance it looked like a cartoon stick-figure cat. After checking several mammal books on my return, the best possible identification I have come up with for this strange looking creature is the small-toothed palm civit. The highlight of my walks on the road was the leopard cat I watched hunting along the roadside early one morning just after dawn.

The only disappointment of my stay in Way Kambas was not being able to see a wild Sumatran elephant. All I found was old elephant tracks and dried dung during my walks in the forest. My ranger escort, Dermi, and I even found a dead elephant. This adult male must have become stuck in a mud wallow and died. The carcass was buried up to its neck. It was surrounded by a cloud of flies and swarming with maggots. Wild pigs and water monitors had eaten most of the flesh from the skull and it was the sounds they made while running away from us which first drew our attention to the remains.

Way Kambas, like nearly every area that I visited during my trip to Indonesia, was under an extended dry spell. Otherwise I would definitely have seen an elephant. I was told by two researchers that during the wet season elephants could be found nightly along the road from the park headquarters to the Elephant Center. The animals would cross this road every evening to raid the agricultural fields which border this area of the reserve. There are rickety wooden watchtowers scattered in the fields by this section of the reserve. They are used by the local farmers who man these structures to try to keep elephants out of the fields. These men keep a lonely and dangerous vigil using flashlights, firecrackers and the noise from banging gongs to attempt to discourage the crop-raiders.

The two researchers I met were an Irishwoman, Joanne Reilly and an Englishman, Guy Spedding, who were based at Way Kanan. They were collaborating on an elephant survey of the Reserve and had just been finishing their second year in the park. In the course of the project they spent numerous nights deep in the remote and wetter areas of Way Kambas. They would often see elephant, sambar deer, an occasional sun bear, and tiger and tapir tracks. Joanne and Guy were also responsible for gathering evidence that confirmed the presence of Sumatran rhinoceros in Way Kambas. They had in the course of their elephant work found three-toed ungulate tracks that were too large to be that of a tapir. They took casts of the tracks which were eventually verified to be those of the rhinoceros. It was a population of the animal that had been previously unknown to western researchers. Rangers had reported seeing rhinoceros in the reserve in the past but no one had believed them.

I spent two nights riding with Joanne and Guy trying to find wild elephants. I

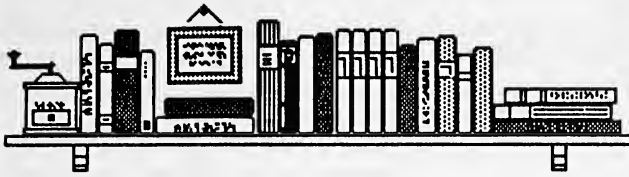
did miss, by an hour, one bull which had been attempting to raid a nearby farm. The farmer and his son had managed to drive the elephant out of their field before our arrival using flashlights and banging pots and pans. Though we did not find any elephants, we did see leopard cats, palm civits, wild pigs, savanah nightjars, Malaysian field rats and a penciled-tailed tree-mouse along the roadway.

The most unusual night sighting happened near Way Kanan. On our return to the forestry station Joanne and I got a glimpse of a red animal bounding off the road and into the forest. Guy, who was concentrating on his driving, did not see it clearly. Joanne and I are not positive about what we saw, but the size, color and method of movement of the creature leads me to believe that it was either an Asian wild dog or a golden cat. Since I had heard wild dog in the vicinity of the station I think that was most likely the animal we saw running across the road that night.

There are wildlife areas in Indonesia better known than Way Kambas. Places like the Komodo Islands, Tanjung Puting and Ujung Kulon easily come to mind. In my opinion Way Kambas has the potential to join these areas and become a premier ecotourism destination. Like all of Indonesia's reserves Way Kambas needs international support to provide the training, equipment and infrastructure needed to insure the reserve's survival on an increasingly crowded island.

(Editor's Note: The Sumatran Rhino Sanctuary at Way Kambas is a captive breeding/ecotourism project supported by \$2 million Global Environmental Fund grant and a \$50,000 International Rhino Foundation grant. At the writing, a European Union grant was pending. AAZK supports the Bukit Barisan Selatan National Park in Sumatra through its annual Bowling for Rhinos fundraiser.)





Book Review

Introduction to Ornamental Pheasants

by K. C. R. Howman, 1996

Hancock House Publishers

1431 Harrison Ave., Blaine, WA 98230

Hardback, 122 pgs. \$17.95

*Review by Debbie Aden, Registrar
Kansas City Zoo, Kansas City, MO*

This book is based upon writings by the same author published in Pheasants of the World: Their Breeding and Management (reviewed in the December 1996 *AKF*). This is a smaller and less expensive publication aimed at providing the beginner with all they need to know to get started in pheasant aviculture.

The book consists of two main sections. The first section is divided into chapters discussing aviary construction, common ailments and parasites, feeding, choice of species and stock selections, and breeding. The second part of the book is dedicated to brief descriptions of the 50 pheasant species.

The chapter on aviary construction discusses practical considerations in constructing an aviary including recommendations for size, building materials, support facilities, substrates, furniture, plantings, and predator control. More importantly, the author discusses the appropriateness of each aspect depending upon the types of species to be housed.

Sound advice is given in the chapter on choice of species and stock selection. The author suggests beginning with cheaper and more hardy species until confidence is gained. The importance of acquiring unrelated stock is also stressed and several methods for accomplishing this goal are suggested.

Information on breeding and incubation techniques is brief, yet thorough, covering such topics as nesting places, brooders, egg collecting, egg candling and record keeping. Artificial incubation was dealt with very briefly, however several references to find further information are given.

The last chapter describes the individual species. Each description contains natural history and habitat information, recommended aviary size, status in the wild, and a general physical description. There are full-color photographs for several of the species.

This book is geared toward the novice who has no experience with pheasants and I would recommend it as a good introduction to keeping these birds. With over half of all pheasant species considered at risk in their original wild habitat, encouraging the beginner's interest in pheasant aviculture can play an important role in future breeding of these threatened species.

Mark of the Bear: Legend and Lore of an American Icon

Edited by Paul Schullery 1996

A Sierra Club Book distributed by Random House, Inc.
through Tehabi Books, Del Mar, CA

Hardback, 120 pgs., 85 color illustrations \$30.00

*Review by Holly Tozier, Zookeeper I
North Carolina Zoological Park
Asheboro, NC*

This Sierra Club book is a collection of previously published essays from ten different authors including Barry Lopez, Doug Peacock, and Theodore Roosevelt. The essays are filled with adventure, wonder, and respect for bears and the North American Wilderness. "What this book celebrates is our coming to terms with the bear, in all the ways we find to do that. It celebrates a whole galaxy of impulses, emotions, ideas and hopes we may experience whenever we see the mark of the bear" (p. 13).

Through folklore, actual incidents, and encounters, the authors describe in great detail the awe inspired by black bears, grizzly bears, brown bears, and polar bears. Each essay is unique in content, style, and emotion. Although unique, there is an aspect that each essay has in common, and that is the deep respect that the author has for nature. "There was no trouble in my soul, in my heart that afternoon. There was only glory and wonder - only peace and awe. That is how I left the mountain: grateful, more than grateful, for having seen the tracks, and for the bears having heard me coming and having moved slowly away from me rather than toward me; and feeling that it was very important not to overstay" (p. 43).

The photography in Mark of the Bear is outstanding. Not only are the pictures bright and clear, but the captions are informative. Accurate facts such as physical characteristics and natural behaviors are described in the captions. This style seems to compliment the text as well as educate the reader.

Mark of the Bear is an enjoyable book to read for bear experts, novices, or anyone with a curiosity about these marvelous creatures. Although slightly high in price, this book would make a nice addition to anyone's library.

Landscape Approaches in Mammalian Ecology and Conservation

Edited by William Z. Lidicker, Jr.

University of Minnesota Press, 1995

111 Third Ave. S., Suite 290, Minneapolis, MN 55401-2520

Hardback, 215 pgs., about \$36.00

*Review by Nell Bekiares
Intern-animal care
Cincinnati Zoo, Cincinnati, OH*

Landscape Approaches in Mammalian Ecology and Conservation evolved from symposium presentations at the 6th International Theriological Congress (Sydney, Australia, July 1993) focusing on *in situ* conservation programs. The editor wrote both a preface and an epilogue, a nice framing for the chapters between.

With noble and attainable goals to educate scientists and influence the behavior of field biologists to “stanch anthropogenic losses in the Earth’s biodiversity and...stem the deterioration in the life support system of our own species (vii),” the organization of the book (introduction, examples and general experimental design) works. Three sections cover the nine articles, each with a brief general introduction: I. Context (including definitions, history and theory), II. Field Approaches (with articles on small mammals and large carnivores), and III. Model Systems (theory and experimentation). Bibliographies follow each chapter. The appendices are complete and very helpful, including contributors’ addresses, and two indices of authors and subjects.

Landscape refers to “an ecological system composed of [patches of] two or more community types (7)” with consideration of spatial parameters and edge effect on dispersal and life history. Reserve design recommendations (Laurance, Kozakiewicz and Szacki), including the SLOSS (Single Large area Or Several Small patches) argument were included in several chapters. Kozakiewicz and Szacki recommended “ensuring spatial connectivity and identifying and preserving key habitats that hold special significance for the survival of many species (90).” Most authors argued in some fashion or another that landscape heterogeneity is important in life histories (Hansson, Lidicker, Kozakiewicz and Sacki, Oksanen and Schneider). In addition, Laurance (56) concluded that “matrix tolerance...(i.e. the relative abundance of each species in the modified habitats surrounding fragments)...emerged as an overriding correlate to vulnerability.” A heterogeneous landscape will affect both population dynamics and persistence. From these conclusions, zoo biologists may take studies of the variation of a natural habitat to create zoo habitats not uniform over space or time.

The authors are especially good at defining the theory (Lidicker, Merriam) and providing very specific examples of experimental protocol (Section II). The information presented is both technical (with supporting data) and readable (with graphs, photographs and tables).

Most of the research data are on small mammal populations, although two chapters cover larger carnivores and predators (Bissonette and Broekhuizen, Oksanen and Schneider), and two authors have included a significant amount of natural history information (Bissonette and Broekhuizen, martins; Laurance, small mammals).

As an ecologist, I agree with the perspective of studying organism and habitat in a more holistic fashion, but the concept is not new. No man is an island, and neither is an organism just a collection of functional cells. On the other hand, depending upon the focus and methods of a particular research study, the landscape approach may be impractical or impossible, but the research may still be useful, a thought expressed by Bissonette and Broekhuizen (113) as well.

The book is of good quality overall, but probably a book to be checked out of a public library as needed and not kept in a personal collection. The book may be most useful and informative for students of ecology or natural resource management and biologists working in a lab or a zoo that may apply landscape approach in generating a new perspective on a old problem.

Chapter News Notes

Pueblo AAZK Chapter

The Pueblo AAZK Chapter has been keeping busy the past few months with officer elections, fundraisers and the unveiling of our new Conservation Parking Meter.

New Chapter officers for the 1997-1998 year are:

President.....Audrey Adams
Vice President/Liaison.....Davin Lopez
Treasurer.....Bill Franklin
Secretary.....Carrie Smith

Congratulations to the new officers!

We are working on many fundraising projects this year. Many bake sales are planned, another Penguin Dinner is in the works and the "Pennyquin" Project - we are working with the Pueblo Zoo to raise one million pennies for capital campaign projects at the Zoo.

And last but not least, our biggest event this year was the unveiling of our new Conservation Parking Meter which occurred on 26 April 1997. Many thanks to Norman Gershenz of the Center for Ecosystem Survival and the Woodland Park Zoo, Seattle, WA for sponsoring the meter. Our conservation area is Talmanca/Caribbean Biological Corridor in Costa Rica. With the help of the community we hope to purchase/preserve many acres of this Costa Rican rainforest.

—Audrey Adams, *President*

San Francisco AAZK Chapter

One fragment of the disbanded Great Bay Area Chapter had reformed, calling ourselves the San Francisco Chapter. So far our only members are San Francisco Zoo staff, but we may soon include other San Francisco organizations. We've had two meetings so far and our new officers are:

President.....Amy Bono-Kruckewitt
Vice President.....Barbara Palmer
Treasurer.....Laurie Nikitas
Secretary.....Tom Turowski

We are just beginning our plans for speakers and fundraisers while already making a list of worthy causes on which we can spend the money we have not-yet-made! A simple conservation measure has started us off on the right foot - Amy took the initiative and wrote a letter to get all interested members off junk mailing lists. Our plans are big for the coming year, so we'll keep you informed of our progress.

—Barbara Palmer, *VP/Liaison*

Metro Washington Park Zoo AAZK Chapter

The Metro Washington Park Zoo AAZK Chapter (Portland, OR) elected new officers in December. They are:

President.....Melissa Baringer
Vice President.....David Illig
Treasurer.....Michael Illig
Secretary.....Jan McCoy
Liaison.....Michelle Schireman

As you may know, we will be hosting the 1998 National AAZK Conference. We are very busy with preparations

such as deciding on our theme and hotel site, as well as starting our fundraising efforts.

Anna Michaels and Brett Sellers will Co-chair the event and Michael Illig is our Conference Treasurer.

This year's Bowling for Rhinos event took place in early April and we hope to place among the top money earners again this year.

So far in 1997 our Chapter members have attended meetings for and are members of the Bat TAG, Felid TAG, AZA Conservation Academy, Bear Consortium, and AZA Southern Regional Conference. In addition, Chapter member Mary Jo Anderson did research on Humboldt penguins in their native Peru and Farshid Mehrdadfar has been traveling across the country gathering information on U.S. facilities that have produced black rhino calves recently. Upon their return both of these individuals have given enlightening seminars for our Chapter.

We are counting down the days 'til we see you all in the Beautiful Pacific N. W. in 1999!

—Michelle Shireman, Chapter Liaison

Central Florida AAZK Chapter

Just a friendly hello and update from the Central Florida Chapter. Our new officers this year are:

President.....Rick Smith, Sea World
Vice Presidents.....John Brueggen
and Dianna Rubly, both from
Discovery Island
Secretary.....Mindy Johnson-Powell,
Discovery Island

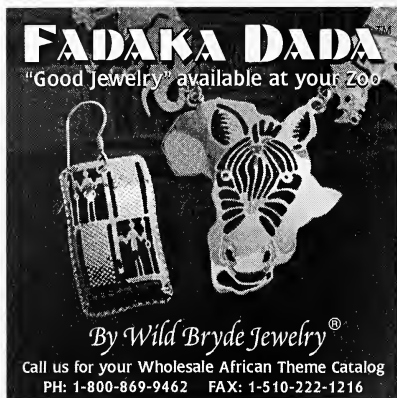
Treasurer.....Jeannie Hipple,
Central Florida Zoo
Liaison.....Dawn Safranek-Leonard,
Discovery Island

We produced our *Zu Newsletter* in May and are currently working on a Rummage Sale for Rhinos. Our Central Florida Chapter also has great outings and trips planned throughout the summer months, like our Silver Springs Campout, special tours of Sea World and a Turtle Walk, just to name a few. We wish you could all be here to join in the fun!

—Mindy Johnson-Powell, Sec'y

AAZK Welcomes New Chapters

AAZK, Inc. welcomes both the Akron Chapter and the newly reorganized San Francisco Chapter to the Association. We wish them well with all of their activities and projects.



Institutions wishing to advertise employment opportunities are asked to send pertinent data by the 10th of each month to: Opportunity Knocks/AKF, 635 S.W. Gage Blvd., Topeka, KS 66606-2066. Please include closing date for positions available and when setting these dates keep in mind that because of bulk-mail, most readers do not receive the AKF until the middle of the month or later. There is no charge for this service and phone-in or fax listings of positions which become available close to deadline are accepted. Our phone is 1-800-242-4519 (U.S.); 1-800-468-1966 (Canada). Our FAX is (913) 273-1980.

VETERINARY TECHNICIAN/HOSPITAL KEEPER...The Gladys Porter Zoo is seeking qualified applications for a full-time veterinary technician/hospital keeper position. Job responsibilities include weekend and relief hospital keeper duties (cleaning, feeding, treatments, etc.), weekend and relief technician duties (clinical pathology, assisting with all procedures, radiology, etc.). MedARKS data entry and maintenance of medical records. Prior technician, animal keeper and computer experience preferred. Wage in the mid-teens, plus benefits. Send resumé to: Teri Hermann, RVT, Gladys Porter Zoo, 500 Ringgold St., Brownsville, TX 78520.

The following positions are available at the Birmingham Zoo. For all positions send resumé to: Jerry Wallace, Director, Birmingham Zoo, 2630 Cahaba Rd., Birmingham, AL 35223.

ZOOKEEPER (Pachyderms)...

ZOOKEEPER (Hoofstock)...

ZOOKEEPER (Marine Mammals)...above positions require experience specific to Pachyderms/Hoofstock/Marine and Small Mammals. Bachelor's degree in related field preferred. Salary \$20,758.00 - \$27,788.00 a year plus good benefits.

SENIOR KEEPER(Predators)...position requires three (3) years experience in care of large carnivores and other predators, good communication skills and supervisory experience. Bachelor's degree in related field preferred. Salary \$22,859.00 - \$30,659.00 a year plus good benefits.

CURATOR (Birds/Reptiles)...position requires five (5) years experience in care of Birds/Reptiles, good communication skills; two (2) years supervisory experience. Bachelor's degree in related field preferred. Salary \$27,788.00 - \$37,252.00 a year plus good benefits.

SENIOR ANIMAL KEEPER 37 (DALLAS ZOO)...Requires high school diploma or equivalent, three (3) years related experience with the care of exotic animals. Must be well versed in animal husbandry/biological sciences. Positions may be in mammal or bird departments. Duties include feeding, cleaning, observations of behavior, exhibit design/construction, assisting in zoo research, and veterinary procedures. Starting salary \$19,260.00 annually. Your application must reach City Hall between the dates of **9 June and 18 July 1997**. Call (214) 670-6833 for an application. Send original completed application to: City of Dallas, Human Resources/Staffing Manager, City Hall, Room 6AN, 1500 Marilla, Dallas, TX 75201. Also, if at all possible, please send a copy of

your application (with resumé) to: Wanda Weaver, Dallas Zoo, 650 South R. L. Thornton Freeway, Dallas, TX 75203. All positions are subject to drug and alcohol testing. EOE.

AVICULTURE INTERN...junior, senior or graduate student with interests in avian management/zoo biology to work with our animal care staff. 10-12 weeks - Spring, Summer and Fall positions available. On-site housing provided. Send resumé and three (3) references to: Scott Barton, Curator, Tracy Aviary, 589 East 1300 South, Salt Lake City, UT 84105. Positions open until filled.

ELEPHANT HANDLER/Wildlife Safari...requires one years experience. Duties include daily feeding, cleaning and husbandry of 1.5 African elephants in a free contact management program that incorporates rides and demonstrations. Send cover letter and resumé to: Michael E. Blakely, Executive Director, Wildlife Safari, P. O. Box 1600, Winston, OR 97496.

ZOOKEEPER/Mammals...responsible for observation, record maintenance, care of animals and cleaning of exhibits. Requires high school diploma with one years working experience in a zoo mammal department. Degree in Biology or related field desired. Previous elephant experience preferred. Starting salary \$20,488.00 per year plus benefits package. For consideration submit resumé by **30 June 1997** to: Nancy Foley, Director of Human Resources, The Toledo Zoo, P. O. Box 4010, Toledo, OH 43609-3100.

KEEPER...requires a degree and one year of experience with captive exotic animals. Two or more years of experience may substitute for the degree. Responsibilities include all aspects of daily animal care, routine exhibit maintenance and public education. Two positions are available: Bird Keeper and Open Relief Keeper. To apply send cover letter and resumé to: Human Resources, The Philadelphia Zoo, 3400 West Girard Ave., Philadelphia, PA 19104.

ASSISTANT CURATOR...requires four (4) years experience in the care/handling/feeding of mammals/birds/reptiles/amphibians. A relevant degree preferred. Will be involved in all facets of animal care, as well as zoo maintenance/improvements, record keeping, animal demonstrations, behavioral enrichment, promoting zoo safety, supervising assigned personnel/staff/animal training. Salary \$26,000.00 - \$29,000.00, benefits and opportunities for advancement. Send letter/resumé/references by **11 July 1997** to: Jay Christie, Cohanzick Zoo, 181 East Commerce St., Bridgeton, NJ 08302.

Executive Director...The Central Wisconsin Wildlife Center, Inc. is searching for an Executive Director to be the full-time manager of its new Hospital and Education Resource Center. The CWWC mission is education through rehabilitation and release of wildlife. The Center serves an eight-county area surrounding Stevens Point, WI with a paid staff of Executive Director, Director of Animal Care and Release, Volunteer Coordinator and Education Outreach Coordinator. In addition, there are currently two part-time Animal Care coordinators, and several University of Wisconsin/Stevens Point students who

serve as interns and work/independent study students. More than 50 volunteers supplement the efforts of the staff. The Center admits 70-900 orphaned or injured animals and birds each year with the goal of releasing as many as possible back into the wild. The CWWC, Inc. building is a \$350,000 state-of-the-art facility nearing completion, and it will be ready for occupancy in December 1997. The CWWC is governed by a volunteer Board of Directors with several working committees. The Executive Director would work primarily with the Operations and Executive Committees. The Center is permitted by the Wisconsin Department of Natural Resources and the USFWS with good support from local veterinarians. A successful candidate for this position would have a B.S. degree in Environmental Education or Business, or some related field, with experience in managing a program like to CWWC; experience with wildlife is desired. Ability to plan, schedule, delegate and supervise staff, to communicate freely, to inspire, to manage resources, and to keep abreast of current information in the wildlife rehabilitation and education fields are also prerequisites for this position. Starting salary range is \$22,000.00 - \$28,000.00 depending on credentials. Applicants should contact the Central Wisconsin Wildlife Center, Inc., Box 576, Stevens Point, WI 54481-0576 for specific application information.

SENIOR AVICULTURIST/Lisbon Aquarium, Portugal... requires Bachelor's degree in zoology/ornithology/related field; four years' experience in large aviary/zoo/aquarium, including two years in a supervisory position; broad knowledge/experience in handling/keeping/displaying penguins, alcids, waders, and other water/land birds; good communication/interpersonal skills; willingness to work a flexible schedule; and ability to live/work in a foreign country. Additional experience with small marine mammals preferred. Academic background is secondary to experience. Duties include "hands-on" supervising, acquiring specimens and acclimating them into large exhibits, developing husbandry practices, and training keepers. Send letter/resumé to: Jack Batchelder, IDEA/Cambridge Seven Associates, 1050 Massachusetts Ave., Cambridge, MA 02138.

SPOTLIGHT ON THE FIELD

Seattle's Woodland Park Zoo will sell 600 tons of what it calls "well-rounded feces of endangered species" this fall. The bi-annual manure sale will save the zoo \$60,000 in landfill fees and generate \$20,000 in profit. (Source: CNN Headline News, 9/5/96)



AAZK Membership Application

check here if renewal []

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MASTERCARD _____ VISA _____ Card # _____ - _____ - _____

Name on card _____ Expiration date _____

Signature _____

Mail this application to: AAZK Administrative Offices, Topeka Zoo, 635 S. W. Gage Blvd., Topeka, KS 66606-2066. Make checks/money orders payable to AAZK, Inc. Must be in U.S. FUNDS ONLY. Membership includes a subscription to *Animal Keepers' Forum*. The membership card is good for free admission to many zoos and aquariums in the U.S. and Canada.

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