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# Animal Keepers' Forum

January 1993



*Dedicated to Professional Animal Care*

ANIMAL KEEPERS' FORUM, 635 S.W. Gage Blvd., Topeka, KS 66606  
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**January 1993**  
**Volume Twenty**  
**Number One**

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Animal Keepers' Forum (ISSN 0164-9531) is a monthly journal of the American Association of Zoo Keepers, Inc., 635 S.W. Gage Blvd., Topeka, KS 66606. Ten dollars of each membership fee goes toward the annual publication costs of Animal Keepers' Forum. Third Class postage paid at Topeka, KS. Postmaster: Please send address changes to:

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**Administrative Offices, 635 S.W. Gage Blvd., Topeka, KS 66606**  
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#### AAZK PUBLICATIONS : CONTINUING DATA COLLECTION

Zoo Infant Development Project - Harmony Frazier-Taylor, Woodland Park Zoo  
Diet Notebook, Mammals, Vol. II - Susan Bunn Spencer, Bronx Zoo  
An Approach to Zoo Keeping - Patricia Sammarco, Gainesville, FL



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### 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. All illustrations, graphs, charts and tables should be clearly marked, in final form, and should fit in a page size **no greater than** 15cm x 25 1/2cm ( 6" x 10"). Literature used should be cited in the text (Brown, 1986) and alphabetically in final bibliography. Avoid footnotes. Include scientific name of species (as per ISIS) the first time it 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.) Black and white photos only are accepted. Color slides should be converted to black and white prints (minimum size 3 x 5 inch) before submission. Clearly marked captions should accompany photos. Please list photo credit.

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 envelope. Telephone or FAX contributions of late-breaking news or last-minute insertions are accepted. However, long articles must be sent by U.S. mail. The phone number is (913) 272-5821 Ext. 31.

### DEADLINE FOR EACH EDITION IS THE 15TH OF THE PRECEDING MONTH

Articles printed do not necessarily reflect the opinions of the Animal Keepers' Forum editorial 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 \$2.00 each.

*This month's cover art features a pair of Kuhl's marmosets (also known as Black-eared marmosets) (Callithrix penicillata kuhli). These South American primates dwell in lowland rainforest areas on that continent and are totally arboreal. They are omnivores and eat a wide variety of foods including fruits, nuts, buds, insects, spiders, small tree frogs and bird eggs. They usually produce twin offspring after a gestation of 140-160 days. Infant rearing duties are shared among the extended family group. The cover was drawn by Diane L. Koskie, a keeper who works in the Marmoset Colony at the Los Angeles Zoo. Thanks, Diane!*

## Scoops

and

## Scuttlebutt

### Deadline This Month for BOD Nominations

We are currently seeking nominations for the 1993 Board of Directors election. There are two positions up for election. New board members will serve from 1 January 1994 through 31 December 1997. Nomination forms are due **by 31 January 1993** and should be sent to: Mike Light, NEC Chairman, Wild Animal Habitat, Kings Island, Kings Island, OH 45034. Nomination forms appeared in the June, November and December issues of AKF or you may call AO to have forms sent to you.

### February AKF to Be Dedicated to Hand-Rearing

The February 1993 issue of AKF will be an issue dedicated to material on hand-rearing. Among the articles appearing will be Hand-rearing Shorebird Chicks, Hand-rearing Binturongs, Gorilla Nursery Protocol, Pronghorn Hand-rearing, etc. This issue will also include a book review on "The Evolution of Parental Care". We also plan to include some simple hand-rearing diets.

### ADT Forms Available Upon Request

Animal Data Transfer Forms for zoos and aquariums are available free of charge upon request. This is a professional service provided by AAZK. Contact: Bernie Feldman, Burnet Park Zoo, 500 Burnet Park Drive, Syracuse, NY 13204. If your facility is not already using the ADT form, please encourage your administration to implement its use whenever an animal is shipped.

### Two New Logo Products Offered by Detroit and Memphis Chapters

Two AAZK Chapters have recently announced the availability of new AAZK logo products. The Detroit Chapter AAZK is offering License Plate Frames for sale. The frames are white with green lettering and the rhino logo in black. The cost per frame is \$5.00 for U.S. and \$6.00 for Canadian sales. These prices include postage and handling. They may be ordered by sending check/money order made payable to Detroit Chapter AAZK plus your complete name and mailing address to: Detroit Chapter AAZK, License Plate Frame Sales, P.O. Box 39, Royal Oak, MI 48068-0039.

The Memphis Zoo Chapter is offering AAZK 25th Anniversary Pocket Knives for sale. This pocket knife has five functions (2 blades, scissors, toothpick, tweezers). It features the AAZK rhino logo and 100% of profits will be sent to AAZK, Inc. for use on national projects and publications. Cost per knife is \$5.75 which includes postage. To order please make checks/money orders payable to the Memphis AAZK Chapter and mail to: Dena Mandino, Memphis AAZK Chapter, 2000 Galloway, Memphis, TN 38112.

### **Bartlett Society Seeks Members Interested in Zoo History**

The Bartlett Society is an international society for the study of the history of zoos and wild animal husbandry. Anyone with an interest in this historical perspective is welcome to join the Society. The British group publishes a newsletter (which is sent to North American members) and an annual journal (which is available for the cost of the postage). There is also a North American newsletter. The Society is an informal network for the exchange of information, and there are no dues or meetings. If you are interested, contact the North American representative of the Society: Vernon Kisling, P.O. Box 1511, High Springs, FL 32643-1511.

### **AAZK Grants Available**

The American Association of Zoo Keepers, Inc. announces the availability of two \$750 research grants in the field of zoo biology. Interested applicants should direct their inquiries to Sue Barnard, Chairperson, AAZK Research/Grants Committee, Zoo Atlanta, Department of Herpetology, 800 Cherokee Ave. S.E., Atlanta, GA 30315. The deadline for submission is 1 March 1993.

### **Basic Avian Seminar Offered for Vets and Vet Techs**

Two regional basic avian medicine educational programs are being offered by the Association of Avian Veterinarians in 1993 -- in Dallas on 21 February and in Baltimore on 23 May -- for six continuing education credits.

The program will provide the basics of pet bird care for veterinarians and technicians. The morning program is designed for both veterinarians and technicians in areas of interest to both. The separate afternoon session for technicians is designed to provide basic technical information in sampling and care for avian patients. The overall program includes the avian basics of equipment and supplies, anatomy and physiology, nutrition and feed practices, capture, restraint and basic physical examination, practical diagnostic techniques, recognizing the most common psittacine diseases, medical care and treatment, and typical drugs and necropsy. The technicians' segment includes the basics of avian hospital care, anesthesia, hematology, and sampling techniques.

Cost is \$145-\$185 for the day long seminar and includes an "Introduction to Avian Medicine & Surgery" notebook. For complete information contact the AAV Conference Office, 2121 So. Oneida St., Ste 325, Denver, CO 80224 - phone (303) 756-8380, fax 303-759-8861.

### **Information Please**



I am interested in primate food presentation techniques or devices used by other facilities. We currently place food on shelves and in hanging buckets, but would like to find an easy to clean dispenser that stimulates activity. Results of Spider Monekey feeders would be especially useful, but information on any primate feeder would be appreciated. Please send ideas to: Sue Averill, Senior Mammal Keeper, Dallas Zoo, 621 E. Clarendon, Dallas, TX 75203.

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The Lube Foundation, Inc. of Gainesville, FL is seeking information regarding supplemental feeding of gum, sap or nectar to *Saguinus*, *Callithrix* and *Cebuella* species. Also please indicate how these fluids are dispensed to these small primates. Send information to: Dana LaBlanc, Lube Foundation, Inc., 18401 NW County Rd 231, Gainesville, FL 32609.



# Births & Hatchings



San Diego Zoo (San Diego, CA)...The following mammal births (by Order) have been reported from July-November 1992:

Artiodactyla - 1.0 Slender-horned gazelle (*Gazella leptoceros*) [E/SSP]; 1.0 Gunther's dik-dik (*Madoqua guntheri smithi*) [1st time birth from pair]; 0.1 European mouflon (*O. orientalis musimon*) [E]; 1.0 Cuvier's gazelle (*Gazella cuvieri*) [E]; 2.1 Mhorr gazelle (*Gazella dama mhorr*) [E]; 0.2 Kaffir crowned duiker (*Cephalophus grimmia caffra*) [1st time birth from 2 pair - one each]; 1.0 Mandarin sika deer (*C. nippon mandarinus*) [E]; 1.0 Central Chinese goral (*Nemmorhaedus goral arnduxianus*) [E]; 0.1 White-lipped deer (*C. albirostris*) [U/E]; 2.0 MacNeill's deer (*C. elaphus macneilli*) [U/E - 1st time birth from pair]; 0.2 Barbary deer (*C. elephus barbarus*) [U/E - 1st time birth from pair]; 1.0 Kull's deer (*Cervus kulli*) [U]; 1.1 Western tufted deer (*Elaphalophus cephalopus*) [U]; and 1.0 Klipspringer (*Oreotragus oreotragus stevensoni*) [U].

Persiodactyla - 1.0 Black rhinoceros (*Diceros bicornis*) [E/SSP - 1st birth for pair] - see related story this issue.

Marsupialia - 0.0.3 Northern koala (*Phascolarctos cinereus adustus*) [SSP/U]; 0.0.1 Goodfellow's tree kangaroo (*Den drolagos goodfellowi*) [T/U]; and 0.0.2 Parma wallaby (*Macropus parma*) [E].

Primates - 1.0 Francois langur (*Presbytis francoisi francoisi*) [E/SSP]; 0.0.2 White-faced saki (*Pithecis pithecis*) [T]; and 0.0.1 Slender loris (*Loris tardigradus*) [U].

Rodentia - 0.0.1 Patagonian cavy (*Dolichotis patagona*) [T/U].

Carnivora - 0.4 Transvaal lion (*Panthera leo krugeri*) [1st time birth to pair]; 0.3 Arabian wild cat (*F. silvestris tristrami*) [T]; 0.0.3 Dwarf mongoose (*Helogale parvula*) [1st time birth from pair]. *submitted by Curby Simerson, Assistant Animal Care Manager/Mammals, San Diego Zoo.*

Silver Springs Wildlife Park (Silver Springs, FL)...reports the following significant B&H for 1992:

Mammals - 0.2 Scimitar-horned oryx (*Oryx dammah*) [T]; 0.1 White handed gibbon (*Hylobates lar*) [E]; 1.1 Ring-tailed lemur (*Lemur catta*) [1st for our park and for dam/0.1 DNS]; 6 Egyptian fruit bats (*Rousettus aegyptiacus*) [1st for our park/3 DNS]; 1.1 Reticulated giraffe (*Giraffa camelopardalis reticulata*) [21st and 22nd for our park but first for these dams. Female calf being bottlefed due to maternal rejection; male's delivery was keeper assisted due to complications/now back with mother].

Reptiles - 4 Dwarf crocodiles (*Osteolaemus tetraspis*) [1st for our park/2 DNS - eggs incubated in natural nest built by dam for 95% of development, then due to repairs on habitat, were removed for artificial incubation until hatching.]. *submitted by Jo Ann Zeff, Senior Zookeeper, Silver Springs.*

Sunset Zoological Park (Manhattan, KS)...reports the following significant B&H for 1992:

Mammals - 1.1 Red Panda (*Ailurus fulgens fulgens*) [E/SSP] [1st for our zoo/1st offspring from this pair]; 1.0 Binturong (*Artictis binturong*) [U]; 1.0 Black and white colobus (*Colobus guereza*) [T].

Birds - 1.0 Andean condor (*Vultur gryphus*) [E/SSP] [1st for our zoo - the egg was transferred to the San Francisco Zoological Gardens where it hatched and is being puppet reared. It will be released into the Andes upon maturity.]; 1.0 Florida sandhill crane (*Grus canadensis pratensis*) [zoo's 1st]. --*submitted by Jared Akers, Flint Hills Chapter President, Manhattan, KS.*



# *Message From the President....*

## **State of the Association**

Calendar year 1992, the 25th Anniversary of our Association, was both complex and progressive. The goals set forth by the President and the Board of Directors for firmer financial stability are being met with satisfaction. The Board will now build upon this financial base during 1993 and lay the groundwork for increased and measured revenues that will insure a progressive attitude for many years to come.

During 1992, AAZK was able to realize many other goals established by both the membership and the Board. We have worked extremely hard to establish a better and more open line of communication. This open frame of communication has enabled the Board and staff to better serve the membership and to solve most of the problems that have confronted us during 1992, such as the revised election procedures that were requested by the membership.

Nineteen-ninety-two also saw the realization of many other objectives. *Biological Values for Selected Mammals III* was compiled by the Greater San Francisco Bay Area Chapter and printed. This valuable research tool has already realized a profit and is contributing needed monies into the publication's budget of your Association. The *AAZK Diet Notebook* continues to be a popular resource of information and underwent a second printing, again contributing to a growing library of respected publications.

Conservation issues continue to receive constant attention and funding from AAZK sources. The Third Annual Bowling for Rhinos (BFR) was again a very successful venture with over \$100,000.00 raised in the name of the Ngare Ndare Forest Preserve. With a commitment in funding from the BFR project and the Ngare Sergoi Support Group, Inc. (NSSG, Inc.), the fencing project to insure a true sanctuary for rhino and a migratory corridor for elephants was completed. The conservation programs of the Ecosystem Survival Plan (ESP), Adopt-an-Acre and the Conservation Parking Meter, have generated over \$100,000.00 in 1992 for rainforest conservation in Latin America. This successful and award-winning program continues to make a definitive impact and is internationally recognized by the conservation community as innovative and educational tools for today's youth and tomorrow's leaders.

During 1992, the Board also worked on streamlining the many committees and projects that are governed by the Association. Selected committees were drawn to closure and disbanded by the Board. Other committees were directed to change their focus or were combined with like committees to better service the membership. All in all, 1992 was a year of evolution and progression for our Association.

In 1993 we will be concentrating on refinement of AAZK policies and procedures. The recently completed Manual of Resources will be integrated into policy manuals that will detail how the Board operates and should conduct business on a daily basis. Facets of the Manual will also be woven into the L.I.N.K. policies and procedures to create a comprehensive manual regarding the operation of Chapters.

AAZK will also be changing the focus of "Committees" to true membership services. Membership services are made available because of your annual dues. To gain the full benefit of your dues dollar, avail yourself or Chapter of these wide-ranging services which are listed in the *Animal Keepers' Forum*.

The editorial staff of the *Animal Keepers' Forum* has made significant changes in the way information is presented to the readership. The changes were requested from the membership responding to the *AKF* surveys. Dedicated issues on Enrichment and Hoofstock were well-received by the membership and these types of issues will continue to be published. Changes in the content and appearance of the *Forum* will continue during 1993.

## From the President, *Continued*

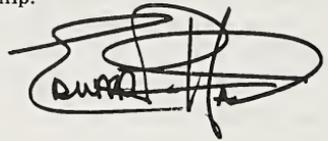
The Conservation, Preservation and Restoration Committee will also evolve during 1993. The CPR Committee is in the process of developing criteria that will allow AAZK to award yearly conservation grants to AAZK members, Chapters and/or affiliated organizations. More information will be made available by the Committee as this process progresses.

Both the ESP and BFR advisors have identified their goals for revenues generated during 1993. The Conservation Parking Meter will soon be generating revenue in Nature Company retail stores across the country. A 200% increase in the number of meters presented to the public will have a dynamic impact on revenue generation for this project. Additional sites have been identified by The Nature Conservancy and the ESP Project Coordinator to receive 1993 revenues. BFR and the NSSG, Inc. have identified the fulfillment of financial guarantees that enabled completion of the solar fence and the replacement of vehicles for the 1993 generated bowling funds. NSSG, Inc. has also presented the AAZK Board with a 5-year plan for financial underwriting for the very important and internationally recognized Bowling for Rhinos project.

AAZK will also be developing both training and continuing education materials that will be made available to the membership and to institutions in the future. AAZK has a vast resource of information already compiled that should enhance many continuing education programs or serve as the basis for your zoo to develop a continuing education program for current employees.

The year 1992 was basically a year of recovery and controlled growth for our Association. Continuing down this same road during 1993 will enable us to build upon the goals set by the membership and keep the American Association of Zoo Keepers, Inc., in the forefront of conservation and education issues, while continuing to provide the important aspect of new husbandry and enrichment information to our membership.

Ed Hansen, AAZK President  
Reid Park, Tucson, AZ



## **Przewalski Horses Sent to Wilds of Mongolia**

In mid- November, ten Przewalski wild horses (*Equus przewalski*) from John Aspinall's Howlett's Zoo in Kent, England traveled by air on the first leg of what is hoped to be their eventual release into their ancestral habitat.

The animals, part of a successful 20-year captive breeding program at Howlett's, eventually will be released in the Anxi Gobi Nature Reserve in Chinese Mongolia. The Przewalski horse, which has been extinct in the wild for over 30 years, has bred well at Howlett's with the current herd at 71 individuals with 20 foals expected in 1993. Over the next two years, 20 more horses from Howlett's will participate in the re-introduction program in Mongolia. The initial shipment consisted of five mares and five colts.

The ambitious reintroduction program involved a number of zoos with Przewalski herds. Last year the Amsterdam Zoo sent animals to the release site in Mongolia. The Przewalski horse is thought to be the last surviving wild ancestor of the modern horse and is distinct from domesticated horses even having a different chromosome count.



# DOWN UNDER



By  
Judie Steenberg, Keeper  
Woodland Park Zoo  
Seattle, WA

DOWN UNDER....is an information column about Australasian animals. While there are a number of Keepers who work in Australasian Units, or routines, off times a Keeper will have a few species

of animals from the Australasian zoogeographical region on their string or routine. It is hoped this section will contain information on birds, mammals and reptiles.

This column is intended to:

- share experiences and information to improve the care and management of Australasian animals.
- seek information and advice on problems that occur.
- serve as a forum through which to make comment, to ask questions, to critique, or to verify information.

Please send your materials (a question, a paragraph or an article) directly to *Animal Keepers' Forum*, Topeka Zoological Park, 635 Gage Blvd., Topeka, KS 66606, Attn: Susan Chan.

## Macropod Identification

By John Arlidge and Carla Srb  
Healesville Sanctuary, Australia  
(reprinted from *Thylacinus* (Vol. 17, No. 2, 1992), the journal  
of the Australasian Society of Zoo Keepers)

Currently available identification techniques for macropods were investigated to determine if there was one unique application suitable for all. Most of the techniques are used by institutions, but usually different techniques are applied to different macropod species. This examination of techniques was instigated to determine whether one method was applicable to all species of macropods.

The requirements of an identification scheme was defined as any identification technique, employing applied marks to have the following attributes to be completely effective:

- 1) The identification must be permanent
- 2) The identification should be inexpensive and easy to apply
- 3) The identification should not damage the animal unreasonably
- 4) Application of the identification should be relatively painless
- 5) It should not interfere with the animal's mobility
- 6) It must be adaptable to modern data retrieval systems
- 7) It should be clearly visible
- 8) It should be unalterable
- 9) It should positively identify the animal as an individual

There are currently six methods of macropod identification in use. These are ear tags, ear holes, tattoos, freeze-branding, physical identification and implantable transponders.

## **DOWN UNDER**, *Continued*

The above methods were tabled against their basic requirements with a check mark identifying acknowledgment of the requirement and an X if they did not (Table I).

	Ear tag	Ear hole	Tattoo	Freeze Brand	Physical ID	Transponder
Suitability	All except animals with short, thick ears	All except animals with small or very thin ears	All except animals with dark skin	All	All	All
Permanency	×	✓	✓	✓	✓	✓
Inexpensive & easy	✓	✓	✓	×	✓	×
Not damaging	×	×	✓	✓	✓	✓
Painless	✓	✓	✓	×	✓	✓
Non-invasive	×	×	✓	✓	✓	✓
Modern data	✓	✓	✓	✓	×	✓
Visible	×	✓	×	✓	✓	×
Unalterable	✓	✓	✓	✓	✓	✓
Unique	✓	✓	✓	✓	✓	✓

Table 1. Suitability of various identification methods for macropods.

In summary, the investigation revealed that no one technique could be recommended as a unique method for identifying macropods. Ear tags were inexpensive but not necessarily reliable. Ear holes mutilated the appearance of the animal (i.e. torn ears) and brought unfavorable comments from the public. Tattoos, while permanent and inexpensive, do tend to fade and are restricted to the light skinned animals. Freeze-branding proved expensive in that the animal had to be captured and anesthetized for its application to be painless and to eliminate smudging of the brand should the animal move. Physical identification in the form of photographs or pictorial markings were at fault if the training of the Keeper was inadequate to recognize the individuals. Implanted transponders, although initially expensive for the technology, was a sound method. Reported cases of lost implants were eliminated once veterinary procedures were altered. However, once implanted, identification is only possible by catching the animal for scanning purposes.

While all systems have their advantages and disadvantages, it may be wise to employ two methods to avoid misidentification. This is especially important in endangered or managed species where a limited gene pool exists and every identity is important.



## **'Born Free' Lion Ordered Killed After Ranger Attack**

The Associated Press out of Johannesburg has reported that one of two remaining lions raised by George Adamson was ordered killed following the fatal mauling of a tracker. The four-year-old lioness, Furaha, and her two 16-month-old cubs, were shot under orders of the Department of Wildlife and National Parks in Botswana.

Gareth Patterson, who was responsible for the introduction of the lions to the wild following George Adamson's death in 1990, said that the ranger was mauled as he approached the animal and its cubs in the bush at night. Adamson and his wife, Joy, gained international recognition in 1950's when she wrote a book about how the couple adopted three lion cubs while he was serving as a game warden in Kenya. One of the cubs, Elsa, was the subject of both the book and the movie "Born Free".



# Rhino At the Brink of Extinction

By Anna Merz

If you are like most people, your interest and involvement in the Ngare Sergoi Rhino Project occurred when you read or heard about what Anna Merz was doing and became intrigued with her work. Your interest and support may have begun that day.

Anna Merz has written her own story. Everyone can now read, in Anna's own words, why and how she started the Ngare Sergoi Rhino Sanctuary. *Rhino At the Brink of Extinction* is a fascinating book because it covers a wide-breadth of topics in a highly readable fashion. The text is supplemented with numerous photos.

Merz begins by explaining how she came to Africa and her early life there. She has always been interested in wildlife. After moving to Kenya in 1976, her attention soon focused on the black rhino and the preservation of the species. She details how she became involved with the Craig family, the founding of Ngare Sergoi, the arrival of the rhinos, and daily life at the reserve.

Anna knows the intelligence of the black and white rhinos species and that each rhino has individual "personality" traits - the variety of anecdotes underscores this. Readers will laugh at Morani's "musical tendencies" on the land rover and cement mixer, and as Samia tries to climb into Anna's lap. The book is not

without sadness, however, as Merz relates what effects drought, fights, and poaching have had on the rhino population.

*Rhino At the Brink of Extinction* goes beyond autobiographical reflections though. After working with black rhinos for eleven years, Merz is undoubtedly an authority on the wild black rhino. Much scientific information is embedded in the text and there are appendices on mating, medical data, and socializing. Through her careful observation and meticulous writing style, Merz notes many characteristics of rhino behavior.



*Rhino At the Brink of Extinction* is available in the U.S. through: Ngare Sergoi Support Group, P.O. Box 29503, Columbus, OH 43229

Cost is \$20.00 plus \$2.50 shipping and handling. All proceeds go directly to Ngare Sergoi Rhino Sanctuary for the continued operation and success of the sanctuary.

In addition, about one-third of the text is a diary of Samia's first five years (the calf hand-raised by Anna). This will be of particular interest to anyone who has attempted to hand-raise animals.

Anyone who is familiar with Anna Merz and her work will be absorbed by this book. Between every line, one can feel her deep love and respect for the black rhinos.

To order your copy of  
*Rhinos At the Brink  
of Extinction*, mail \$20.00  
plus \$2.50 S&H to:

Ngare Sergoi Support Group  
P.O. Box 29503  
Columbus, OH 43229

Please send me \_\_\_ book (s) Total Enclosed \$ \_\_\_\_.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

All proceeds from the book go directly to Ngare Sergoi Rhino Sanctuary for the continued operation and success of the sanctuary.



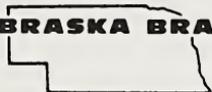
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# Book Review

## Guide to the Birds of Madagascar

By Oliver Langrand, 1990

Illustrated by Vincent Bretagnolle, Translated by Willem Daniels

Yale University Press

456 pgs. 40 color plates. Hardback, Price: \$40.00

*Review by Tom Aversa  
Franklin Park Zoo  
Boston, MA*

Madagascar, the fourth largest island in the world, is certainly one of the most fascinating localities on the planet. Due to the fact that it has been isolated for at least 120 million years, a large proportion of its plants and animals are endemic. Most familiar to zookeepers is the vast array of prosimians that are found there. The fact that so many of the organisms are found no where else on earth, makes saving the island one of the most critical challenges facing the world's conservation community.

The number of species of Malagasy avifauna is comparatively impoverished when compared with a similar latitude of mainland Africa. However, more than one half of Madagascar's 201 resident bird species are endemic. Unusual families of birds such as vangas, cuckoo-roller, and ground roller, are some of the most divergent of this island's bird life.

This field guide is indispensable to any student of natural history who is fortunate enough to visit Madagascar. Langrand provides a text that is both technical and readable. Identification, as well as all aspects of each species' ecology including behavior, voice, habitat, diet, distribution, and nesting are covered. A full page of text is spent on each species.

The book is very well organized. The species accounts, which makes up most of the manuscript, are concise and to the point. Reference to the 40 watercolor plates by Vincent Bretagnolle is simple and straight forward. Langrand provides an overview of the natural habitats on the island, and then relates the avifauna to it. In addition, he provides a list of protected areas and sites for observing birds, and even informs the reader which site each species can be found at. A taxonomic listing of each bird's scientific, French and English names is also provided. The reader would not suspect that this book was translated from French to English, as Willem Daniels did a wonderful job. My only criticism of the text is the lack of a bibliography.

The plates depict adults, as well as various immature, dimorphic, and subspecific plumages. They are well presented and easily understood. Although a little stiff at times, Bretagnolle's artwork is beautiful as well as functional.

Guide to the Birds of Madagascar would be a welcome addition to any birdkeeper's library, and a necessity to anyone who travels to the island. The detailed information found in the species accounts section could provide critical information to keepers involved in future captive rearing programs. As the habitat on the island becomes progressively degraded, more Malagasy birds may come to reside in zoo collections. Hopefully this book may increase interest in Madagascar, and ultimately provide more tourist dollars to assist with conservation efforts.



# Staff Exchange - 1993

*By Dale Frerking, Staff Exchange Project Head  
Kansas City Zoo, Kansas City, MO*

Many members approach me at conferences asking for information on exchanges after seeing the words "AAZK Staff Exchange" printed on my name tag. Except for the distance and expense of attending the conference, they have found the easy way to obtain some information on staff exchange. The rest of you must find the listing inside the AKF covers, or call the Administrative Offices, or hear it from peers, or however else you can find a way to contact this project. Hopefully, the following will help:

Staff Exchange is technically a Membership Service although it has been known variously as a committee, program, or team. A membership service implies some benefit to AAZK members. We will provide, free of charge, basic resource materials with information helpful to persons interested in pursuing a reciprocal exchange with an employee in another zoological institution, or alternately, a working visit to another facility.

Staff exchanges have been taking place for many years under various auspices. It is recognized that participants gain new and broader knowledge of tools, techniques, natural history, and husbandry philosophies when they are exposed to others' operations; often increasing enthusiasm and a sense of responsibility to the community of captive wildlife care providers as a whole. To this end, the project is devoted to creating a world-wide network of institutions that exchange staff as an on-the-job training tool.

My working predecessor, Elandra Aum at Woodland Park Zoo, put much hard work into this operation and the establishment of the words "Staff Exchange" as a standard household...er...zoological institution phrase. While many facilities have never participated in an exchange, others have someone coming in or leaving several times a year. Every institution is slightly different in its goals on allowing exchanges or visits, and in its procedures for setting them up. Some facilities have one contact person (usually management) who oversees exchanges; conversely, some offer very little help or encouragement at all, if indeed exchanges are even allowed. I know of instances where keepers were told or were otherwise under the impression that an exchange could never take place at their zoo, only to find that through creativity, diplomacy, or personal sacrifice they got where they wanted to go, and everyone benefited.

Even though many zoo professionals, both management and line personnel, recognize exchanges for the fine training they are, there are various impediments to be encountered. City councils, counties, states, trusts, foundations, societies, boards, commissions, managers, and more are all entities we are familiar with in trying to secure procedures, policies, or money for anything. They will have their own agendas regarding consideration of staff exchanges, and necessarily so; i.e. will their insurance cover you in Amsterdam, or in the zoo 50 miles away? Your zoo director also must consider whether he or she wants you representing the zoo. If you are accident prone in your zoo, why send you to TimbucZoo to embarrass him there? One major city bureaucracy balked when asked to electronically transfer an employee's pay to another city (since losing a paycheck in the postal system would have caused undue hardship). Policy problem? No, the finance department didn't know how since they had never done it before.

The scope of this service is to provide information only, and is in no way a governing body. Those who send inquiries to Staff Exchange are sent the following:

1. Staff Exchange Access List
2. Purpose/Goals statement
3. Proposal writing suggestions
4. Participant responsibilities
5. A personal response letter

### Staff Exchange - 1993, *Continued*

The last item will cover more succinctly what I have presented on the previous page plus whatever I can tell you about whatever you specifically ask. It is always the responsibility of the interested persons to make contact with potential exchange participants or candidate institutions.

The Exchange Access List is over four years old and is currently under revision for updates on contact persons, zoo specializations and exchange policy details. The next draft should be ready sometime this year. Also this year we will be greatly expanding our search for institutions to add to the list both in North America and abroad.

If any readers believe their facility should be on our Access List, write to me and send the name of a contact person who has the authority, or can bring this registry to the attention of the appropriate authority. Registering with us implies no obligation to participate in any exchange or visit. Again, we are in no way a governing body, nor will we set up exchanges. The project's only purpose is to be an information clearinghouse.

We are aware that some exchange activity is occurring most of the time somewhere. Keepers and zoos go about making their own arrangements for exchanges constantly with no input from this registry. We wish only to encourage and increase such activity. If you participate in a successful exchange or working visit, please drop a note briefly outlining where, when, why etc. for statistical and future reference by others.

Write to: Dale Frerking, AAZK Staff Exchange  
Kansas City Zoo, 6700 Zoo Drive, Kansas City, MO 64132



## **AAZK Announces New Professional/Contributing Members**

Lori Cottrell, Franklin Park Zoo (MA)	Kelly Nulick, Mystic Marinelife Aquarium (CT)
Penny L. Cram, Utica Zoo (NY)	John Adamski, Seneca Park Zoo (NY)
Tony Chapman, Erie Zoo (PA)	Terri Colo, Riverbanks Zoological Park (SC)
Jay Ferreri, Riverbanks Zoo (SC)	Ricardo Prieto, Monkey Jungle (FL)
Jan Reed Smith, John Ball Zoo (MI)	Joanne Kelly, Como Zoo (MN)
Mary Moser, Henson Robinson Zoo (IL)	Monica Thornton, Henson Robinson Zoo (IL)
Susan Lynch, Henson Robinson Zoo (IL)	Jim Funsch, Henson Robinson Zoo (IL)
David Menasco, Caldwell Zoo (TX)	Karen-Marie Bottorff, Caldwell Zoo (TX)
Don Dasinger, Denver Zoo (CO)	Jerri D. Henry, Ross Park Zoo (ID)
Elizabeth Bodmer, Hogle Zoo (UT)	Virginia Lee Bishop, Wildlife World Zoo (AZ)
Christina Simmons, San Diego Zoo (CA)	Sharon Brounstein, Nat. Found. to Protect American Eagles (TN)

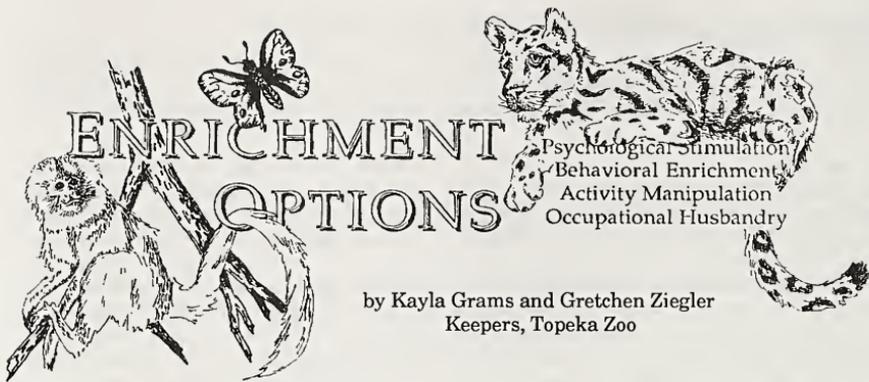
### **New Contributing Members**

Tina Riscignolo, Rochester, NY  
Philadelphia Zoo, Philadelphia, PA  
Dian Fossey Gorilla Foundation, Englewood, CO

### **Renewing Contributing Members**

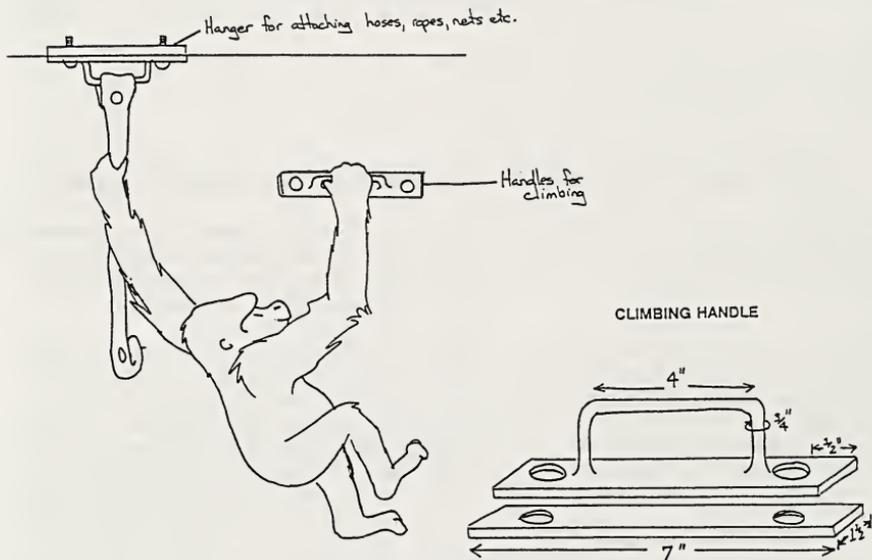
John G. Shedd Aquarium, Chicago, IL  
John Tobias, Superintendent, Miller Park Zoo, Bloomington, IL  
Serials Dept./Ellis Library, University of Missouri-Columbia, Columbia, MO  
Richard Block, Executive Director, Dian Fossey Gorilla Fund, Englewood, CO  
San Diego Zoo Library, San Diego, CA  
Jardin Zoologique du Quebec, Quebec, Canada





by Kayla Grams and Gretchen Ziegler  
Keepers, Topeka Zoo

The design shown below was created by Rob Sutherland for the Calgary Zoo (Box 3036, Station B, Calgary, AB, Canada T2M 4R8). Rob gave a paper at the Gorilla Workshop called "Naturalistic Variation and Gorilla Husbandry". His paper included design variations to increase gorilla food gathering techniques and challenges. Thank you, Rob, for allowing us to include these designs for our column. We will be including more of these in the future.



**WHITE RHINOCEROS** - provide browse, logs to push, spread produce in the animal's yard.

**NILE HIPPOPOTAMUS** - provide various kinds of browse

**DOMESTIC PIG** - provide beer keg, round stones, wooden dumbbells, hollow logs; install a shower in the stall with a ring to pull; provide small logs, browse, bury pieces of produce in the yard the pig can root for.

--Betty Jean Schmitt, Keeper  
Virginia Zoological Park, Norfolk, VA



# 1992 AKF Survey Results

*compiled by Kayla Grams and Gretchen Ziegler  
Associate Editors, Animal Keepers' Forum*

During the 1992 National AAZK Conference in San Diego, the editorial staff of the AKF conducted an informal survey to gather opinions on the changes we have made this past year in the publication. We received approximately 93 surveys returned from those distributed to delegates. Most of these voiced very positive impressions of the changes in AKF.

The following are the tallied results:

1. What is your opinion of the new B&H format?  
Better - 71      Worse - 5      No opinion - 12
2. Is B&H information easier to extract?  
Yes - 72      No - 6      No opinion - 12
3. Is enough information presented to make the column worthwhile?  
Yes - 67      No - 8      No opinion - 4
4. Will you read B&H more often in the future?  
Yes - 21      No - 2      Just as often - 68

As a result of the 1991 survey we have added a Table of Contents on the first page of each issue to help readers locate items of interest.

5. Does the Table of Contents help you use your AKF more easily?  
Yes - 68      No - 13      No opinion - 14
6. Do you use the Table of Contents regularly?  
Yes - 62      No - 30
7. Does the Table of Contents add to the quality of the AKF?  
Yes - 73      No - 3      No change - 14

Since January 1992 we have run two dedicated issues - one of Hoofstock and another on Enrichment. We will consider dedicating more issues to a particular subject if feedback is positive.

8. What is your general opinion of dedicated issues?  
Good - 62      Bad - 3      No opinion - 9
9. How much did you read from those issues?  
More - 29      Less - 5      Same - 54
10. How often should dedicated issues run?  
More often - 27      Less often - 2      The Same - 54
11. Do you find the sample bibliographies run in the dedicated issues helpful?  
Yes - 53      No - 1      No opinion - 33

(EDITOR'S NOTE: The February 1992 issue will be dedicated to Hand-Rearing)

For the last nine months we have been running a new column called "Enrichment Options" which contains brief descriptions and drawings of various enrichment ideas for many species of animals.

12. Do you find the information in this column useful?  
Yes - 86      No - 0      No opinion - 4
13. Do you read "Enrichment Options" regularly?  
Yes - 86      No - 5
14. Would you consider submitting ideas for "Enrichment Options" in the future?  
Yes - 54      No - 2      Maybe - 35

## 1992 AKF Survey Results, *Continued*

These results demonstrate that a majority of delegates responding felt positive about this year's improvements in the AKF. In addition, several helpful comments were made on the survey regarding various aspects of AKF. We appreciate your suggestions and will continue to solicit your comments. As always, we can only include the results submitted by those completing the survey. If you have opinions on the questions contained in this survey or would like to offer other suggestions, comments or constructive criticisms, please write to the Editorial Staff AKF, 635 Gage Blvd., Topeka, KS 66606.

We make every effort to respond to the desires of the membership when formatting each month's publication and your input is important. While not all suggestions are feasible to incorporate, we do try to use those which can be included. We strongly encourage all members to submit articles for the AKF as we need materials on all species and all aspects of exotic animal husbandry. Material need not be research oriented or lengthy - short husbandry ideas, diet suggestions, etc. are useful and important. Do not let your good information get buried in a daily report or in-house memo. Please share your knowledge and experience gained from your work in this field with your colleagues.



## Bowling for Rhinos '93 Update

*from Patty Pearthree, BFR Coordinator  
Indianapolis Zoo, Indianapolis, IN*

I will be sending out cards this month to determine who will be bowling in the 1993 BFR event. Please return them as soon as possible. Also, please note the following rules for eligibility to win the sanctuary trip:

### Bowling for Rhinos Sanctuary Trip Rules

- \* The top two money raisers each year in "Bowling for Rhinos" will win a two-week trip to the Ngare Sergoi Rhino Sanctuary near Isiolo, Kenya.
- \* The two individuals will visit the sanctuary together and arrange their trip through Andy Lodge, Ngare Sergoi Support Group, Inc.
- \* 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.
- \* The winners' trips are paid for by the Ngare Sergoi Support Group, Inc. and **not** out of "Bowling for Rhinos" funds.
- \* The winners must be **paid, National AAZK members at the time** of their bowling event.
- \* **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 sanctuary and see the benefit of their hard work.
- \* Canadians count their total in Canadian currency. Therefore, if a Canadian raises \$5,000 but it only equals \$3,000 in US dollars, their \$5,000 counts in the contest.
- \* Only money which is turned in to the BFR Coordinator **by August 15th** of the same year can be counted in the contest.



# Chapter News

## National Zoological Park Chapter

Kelly Brock, NZP Curatorial Intern, gave a very interesting talk on "DNA Analysis in Animal Populations for Management and Conservation" at our Chapter's meeting in June.

John Haddidean, Center for Urban Ecology, gave a slide presentation on the "Wildlife of Rock Creek Park" at our July Chapter meeting. Our Chapter purchased a copy of the AAZK Diet Notebook and mailed it to Melba Shields who is currently working at a small zoo in Uruguay. A box of baby bottles was also sent to be used to help hand-rear some of the infant animals at this zoo.

At our September Chapter meeting, members received a tour of NZP's Genetics Lab and heard a talk by Rob Fleisher, Evolutionary Geneticist, on "DNA Fingerprinting".

The following new officers for 1993 were elected at our November meeting:

President.....Eric Krussman  
Vice Pres.....Kathy Ruffino  
Secretary.....Carol Prima  
Treasurer.....Lee Miller  
Chapter Liaison.....Kathy Kelly

Kathy Ruffino also showed copies of some videotapes on enrichment ideas for captive birds, primates and cats which she had brought back from the San Diego Conference. The meeting ended with a unanimous vote to enroll in a membership to Zoo Conservation Outreach Group (ZCOG, Fossil Rim, TX).

Congratulations to Rachel Watkins Rogers who did an excellent job putting together the AAZK History Book. It is a comprehensive and interesting publication and I recommend it to all AAZK members. I would like to thank the Rocky Mountain Zoo AAZK Chapter and the Greater Baltimore Zoo AAZK Chapter for their continued support of NZP's outreach project. Also, thanks to the Baltimore Zoo

Chapter for allowing Lee Miller and myself to attend one of their Chapter meetings, where we had an opportunity to see a slide show on Zimbabwe and meet some of their Chapter members. Thanks also for the tour of the bird areas at their zoo.

--Kathy Kelly, Chapter Liaison

## San Diego AAZK Chapter

In November, Elliot Handrus, Senior Mammal Keeper at the Wild Animal Park, gave an interesting and enlightening talk on his experiences as an exchange keeper in Israel this past May-September.

Facilities Elliot visited/worked at included: Tel Aviv Zoological Center, the Jerusalem Zoo, Rishon le Zion, Hai Bar, and the Coral Reserve Aquarium on the Red Sea.

During his slide presentation, Elliot touched on breeding, variety of species, exhibits, diets, and educational programs at these facilities. The Tel Aviv Zoo has an extremely small hospital/research building (one microscope!). However, Elliot was quick to emphasize how well they do with the little they have.

What an incredible opportunity, that is, if one can tolerate a 120° Israeli summer day.

--Mary Dural, Chapter Liaison

## Puget Sound AAZK Chapter

This Chapter donated a total of \$739.12 to the Zoo Crisis Fund to assist the South Florida animal facilities damaged by Hurricane Andrew. The Chapter is also underwriting the costs of the Tree Kangaroo Research Project at Woodland Park Zoo.

Chapter member Scott Barton reported that \$19,000 has been raised to date for the purchase of 5000 acres of rainforest land in Columbia. A research center has been constructed and things are moving along very well. A Cambridge team is mist netting and taking a census. A student from the University of Kansas has identified 13 new species

## Chapter News, Continued

of frogs for a Masters thesis. A new genus may have been discovered, and definitely some new species. A list is being compiled of the species on the Reserve which gets 3000 inches of rain a year.

The total price for the Columbian acreage is \$23,000; \$19,000 has been paid by the Puget Sound Chapter. They are hoping to raise the balance through the sale of Rain Forest Crunch® candy, aluminum can recycling, and selling Rain Forest acres (\$20 buys 1/2 acre and \$40 buys 1 acre).

--Minutes of 11 November 1992  
Chapter Meeting

### Indianapolis Zoo AAZK Chapter

It has been a busy summer and fall for our AAZK members. In July we had a membership drive. As a way to financially assist the Association and attract new members we paid a new member's national dues if they joined in July. Our outcome on this membership drive was 15 new members and \$415.00 sent to AAZK, Inc. We also have a point system and if a member had earned 10 points, we paid the renewal for their national dues as well. To date we have sent \$175.00 to AAZK, Inc.

In August, the zoo is the hot spot for "Animals & All That Jazz", weekly jazz concerts. For the second year during the concerts, our Chapter held bake sales. This year we raised over \$700.00 and this money was used to assist four members to attend the National Conference.

During September we held a garage sale. With a big thanks to the zoo's many volunteers for donating items for the sale, over \$500.00 was raised. We could have probably used a bigger garage for all the stuff we had.

We also purchased another acre of rainforest in Costa Rica with our sales of Rain Forest Crunch®. In December we sold hot chocolate during the "Christmas at the Zoo" activities.

--Julie Route, Chapter Treasurer

### The North Carolina Chapter AAZK

Here's an update on the activities of the North Carolina Chapter AAZK. On 20 May our Chapter held Bowling for Rhinos at the Family Sports Center in Asheboro. The event raised \$2,700.00 for the Ngare Sergoi Support Group!

The June meeting took place at the Museum of Life and Science in Durham, NC. Michael Sandy gave us a great tour of the animal facilities; then we were allowed to explore all the educational areas of the Museum.

The Chapter held a doughnut sale fundraiser in July and raised approximately \$200.00. We also participated in "Fall Festival", an annual event put on by the Randolph Arts Guild in Asheboro. This year we had AAZK and zookeeping information available as well as two fundraising projects. One was a raffle with three prizes and the other was to "take your picture with a snake" for a small fee.

The August meeting included a tour of the Natural Science Center of Greensboro by Hannah and Paul Decker. We also said our good-byes to one of our founding members, Louise Martin, who left in late August for Madagascar. She will be spending a year there doing field studies on the Greater fat-tailed dwarf lemur (*Cheirogaleus major*). She will be greatly missed, but we wish her the best of luck!

In September the Chapter voted to send \$100.00 to aid the Hurricane Andrew victims in South Florida. Six Chapter members attended the National AAZK Conference in San Diego, Sept. 27-Oct. 2. One member, Gisela Wiggins, presented a paper at the conference. We enjoyed the conference very much (especially the Zoolympics) and wish to thank the Conference Committee for putting on a great one!

The October meeting took place at the Frederick Moir Hanes Veterinary Hospital at the North Carolina Zoological Park. Dr. Lucy Spelman, who is participating in the zoo's Residency Program, gave a very

## Chapter News, Continued

informative presentation on "Anesthesia in the River Otter". She had participated in a relocation program for river otters in North Carolina and conducted a study to ascertain the best anesthesia to use. She plans to participate in this program again in 1993 and promised to give us an update next year!

The Chapter continues to participate in the Conservation Parking Meter program, located at the North Carolina Zoological Park. So far, we have sent \$2,200 to the Ecosystem Survival Plan.

Our annual covered dish Christmas get-together was held in December at which time officers were elected for the upcoming year. They are:

President.....Kathy Trogdon  
Vice Pres.....Gisela Wiggins  
Treasurer.....Hannah Decker  
Sec'y/Chapt.Liaison.....Lucy Segerson

--Lucy Segerson, Secretary

## Flint Hills AAZK Chapter (Sunset Zoo, Manhattan, KS)

The Flint Hills AAZK Chapter has been very busy maintaining several conservation programs in 1992. Our aluminum can recycling system has really boomed thanks to all the help we've received from the community and our own zoo guests. We are currently working on updating our can collecting bins in order to make them more attractive to the public, hopefully urging people to want to participate in recycling. Much of the money we make from recycling goes towards buying acres of rapidly disappearing rain forests.

We are also busy gearing up for the 1993 AAZPA Regional Conference to be held right here in Manhattan, KS in early April. We would like to urge any and all keepers in the area who can attend to try and do so. It will be an educationally enlightening experience as well as a great time! Keep your eyes peeled for more information coming your way!

--Emily Folsom, Secretary



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## Special Invitation to AAZK Members

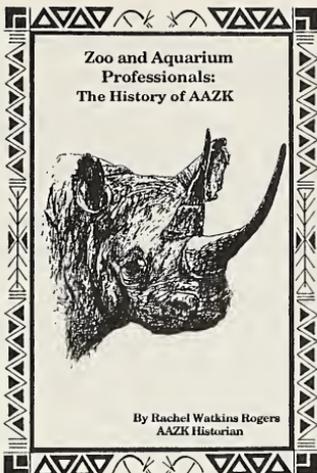
Sunset Zoological Park will be hosting the 1993 AAZPA Central Regional Conference from 4-6 April 1993. The Flint Hills Chapter of AAZK (Sunset Zoo) cordially invites all interested AAZK members to attend and participate in this year's Central Regional.

There will be a conference paper session for Animal Keepers which will focus on "Back to the Basics". The Flint Hills Chapter invites keepers to submit paper abstracts of any and all aspects of animal care. Topics on enrichment, exhibit design, husbandry or behavioral studies or any topic related to animal keepers and animal keeping is welcome. Please send your abstracts to: Mike Quick or Dr. Bob Klemm, Co-Program Coordinators, 2333 Oak St. Manhattan, KS 66502. Please send a copy of your abstract to Jared Akers, President Flint Hills Chapter AAZK at the same address.

The 1993 AAZPA Central Regional will offer many fun and educational experiences for Animal Keepers. Numerous hosted social events are planned along with a "Keeper Symposium" at "The Outback" in Aggieville. Additionally, the closing banquet will be held on the KONZA Prairie, the world's largest tall grass prairie preserve. All social events and hospitality rooms are hosted, making this a very economical conference for all delegates.

A special Regional Research Symposium will be hosted at the Rolling Hills Ranch, Salina, KS on Saturday, 3 April. Transportation and lunch will be provided, but only to those who pre-register for this event. We hope that as many AAZK members will attend this meeting as possible. If you have questions, please call Jared Akers at the Zoo: (913) 587-2737 or FAX (913) 587-2730. We hope to see you in April.





# Zoo and Aquarium Professionals: the History of AAZK

AAZK is pleased to announce the availability of Zoo and Aquarium Professionals: the History of AAZK. This 216-page volume chronicles the history of the American Association of Zoo Keepers from its beginnings at the San Diego Zoo in 1967. Included in the book is the early evolution of the Association, its projects, programs and committees, the histories of its 70

plus chapters, and its highly successful conservation programs - "Bowling for Rhinos" and the Ecosystem Survival Plan's Conservation Parking Meters.

AAZK is proud of the progress it has made in the past 25 years in the promotion of professionalism among zoo keepers and is pleased to share this growth through the pages of Zoo and Aquarium Professionals: the History of AAZK.

The book may be ordered by completing the form below and returning it to: AAZK History Book, AAZK Administrative Offices, 635 S.W. Gage Blvd., Topeka, KS 66606. Make checks or money orders payable to "AAZK, Inc."

-----

## AAZK History Book Order Form

Please send \_\_\_\_\_ copy(ies) of the AAZK History Book to:

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State/Province: \_\_\_\_\_

Zip/Postal Code: \_\_\_\_\_ Country: \_\_\_\_\_

**PRICES:** AAZK Member: \$10.00      Non-Member: \$15.00

Note: Orders outside the U.S. add \$3.00 per copy for postage.

TOTAL Enclosed \$ \_\_\_\_\_ (U.S. Funds ONLY, Please)

# 1992 Conference Proceedings Order Form

If you are interested in obtaining a copy of the Proceedings containing the papers presented at the 19th National AAZK Conference held in San Diego, CA, you will need to fill out and return the form below no later than **10 February 1993**. All orders **must** be prepaid in U.S. Funds Only. Allow 4-6 weeks following deadline for receipt of publication. Prices are as follows:

AAZK Member	\$15.00
Non-Member	\$25.00

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**Note:** Individuals who presented papers at the Conference and submitted a manuscript 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.

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# The American Association of Zoo Keepers Membership Survey

This survey serves two purposes. It will help the Association plot the demographics of our membership and it will also let every member have their say in the goals and objectives of our profession. Please take the time to fill the survey out and return it to the following address:

Ed Hansen, President  
American Association of Zoo Keepers, Inc.  
Reid Park Zoo  
1100 S. Randolph Way  
Tucson, AZ 85716 USA

## PLEASE RETURN THIS SURVEY BY 1 MARCH 1993

1. SEX  
 Female  Male
2. ASSOCIATION STATUS  
 Professional  
 Affiliate  
 Associate  
 Contributing
3. JOB TITLE  
\_\_\_\_\_
4. INCOME LEVEL  
 Less than \$10,000  
 \$10,000 - \$15,000  
 \$15,000 - \$20,000  
 \$20,000 - \$25,000  
 \$25,000 - \$30,000  
 \$30,000 - \$35,000  
 \$35,000 and above
5. LOCATION OF YOUR ZOO \_\_\_\_\_  
(State/Province, Country)
6. YEARLY ZOO BUDGET  
 \$100,000 - \$500,000  
 \$500,000 - \$1,000,000  
 \$1,000,000 - \$2,500,000  
 \$2,500,000 - \$5,000,000  
 \$5,000,000 and ABOVE
7. IS YOUR ZOO AAZPA ACCREDITED?  YES  NO  PENDING
8. CHECK THE TYPE OF INITIAL TRAINING YOU RECEIVED AT YOUR ZOO.  
 ON THE JOB  
 MANUALS  
 VIDEO  
 CLASSROOM  
 OTHER \_\_\_\_\_
9. CHECK THE APPROPRIATE BOX THAT PERTAINS TO YOUR ZOO AND THE OPPORTUNITIES THEY PRESENT FOR CONTINUING EDUCATION.  
 TUITION HELP  
 FUNDING FOR CONFERENCE ATTENDANCE  
 IN HOUSE JOB ADVANCEMENT TRAINING  
 IN HOUSE WORKSHOPS  
 OTHER \_\_\_\_\_

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- 11. ARE YOU A LOCAL CHAPTER MEMBER?
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- No
- Former Member
- Potential Member

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- Confereces
- Communication
- Continuing Education
- Professional Involvement
- Chapters
- Conservation
- Other \_\_\_\_\_

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- Conferences
- Chapters
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- Conferences
- Chapters
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- AAZPA/AAZK communication
- Conservation Programs
- Research
- Publications

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- Animal Welfare
- Continuing Education
- Training
- Safety
- Publications
- Enrichment
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- Needs Improvement
- Non-existent

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- YES
- NO

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# Coming Events

## **Sea World Symposium on Marine Mammals in Florida**

February 6, 1993

Orlando, FL

Will feature presentations by six of Florida's most prominent marine mammal specialists who will discuss the latest scientific findings, research efforts, and management practices affecting Florida's marine mammals. For more information contact the Sea World Education Department at (407) 363-2380. Space is limited.

## **The AAZPA School for Professional Management Development for Zoo and Aquarium Personnel and Applied Zoo and Aquarium Biology**

February 7-11, 1993

Oglebay Park, W. VA

For further information contact: AAZPA, Oglebay Park, Wheeling, WVA 26003-11698.

## **Northern California Herpetological Society's Sixth Conference on the Captive Propagation and Husbandry of Reptiles and Amphibians**

February 13-15, 1993

Davis, CA

All professional and amateur herpetologists are invited to submit for consideration the titles and abstract of papers they wish to present. Send to: Conference Program Committee, Northern California Herpetological Society, P.O. Box 1363, Davis, CA 95617-1363. For more information contact: Rick Staub (707) 553-9739 or Mark Olin (707) 449-6425.

## **Annual Conference of the National Wildlife Rehabilitators Association**

March 3-7, 1993

Sacramento, CA

The University of California at Davis Raptor Center will be hosting the symposium which will feature qualified speakers on rehabilitation, education, administration, veterinary and other topics. Publications of all previous symposia are available and are an excellent tool for persons or organizations interested in this field. Symposium will include hands-on workshops in radiology, parasitology, bandaging and more. For more information contact: MWRA, Carpenter Nature Center, 12805 St. Croix Trail, Hastings, MN 55033 (612) 437-9194.

## **The AAZPA Conservation Academy March 16-20, 1993**

The AAZPA Conservation Academy will offer classes on Studbook I and SSP Coordinator Training. For further information or an application, contact Debra Boyster, AAZPA Conservation Academy, St. Louis Zoo, Forest Park, St. Louis, MO 63110 (314) 781-0900, ext. 297.

## **ARZAPA/ASZK Annual Zoological Conference 1993**

March 29-April 2, 1993

Adelaide, Australia

Joint meeting of the Australasian Association of Zoological Parks and Aquariums and the Australasian Society of Zoo Keepers. This year's theme is "Zoos Enriching Environments". For information contact: Christina Macdonald, Conference Coordinator, Adelaide Zoological Gardens, Frome Rd., Adelaide 500, Australia. Tel: (08) 267-325 Fax: (08) 239 0637.

# Legislative Outlook

*Compiled by  
Phyllis Nilson-Wojcik  
Legislative Advisor*



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## Wild Bird Conservation Act

The Wild Bird Conservation Act passed the House of Representatives and the Senate and was signed into law by President Bush on 27 October. The Act will restrict wild bird imports into the U.S. for the pet trade. There are varying degrees of protection for different classes of birds depending on their status. Those birds on the most threatened list worldwide (eight species) are protected immediately. These species include the Fisher's lovebird and the blue-fronted Amazon parrot. For the other birds, it provides two tiers of protection, depending on whether trade in the species is regulated by the Convention on the International Trade in Endangered Species (CITES). For those species listed on Appendix II of CITES (threatened by trade), the Act directs the USFWS to identify and list those species subject to effective conservation programs in the country of origin. If a CITES-listed bird is not on this list, it cannot be imported into the U.S. after one year from the date of enactment of the law. The Secretary of the Interior is authorized to ban the importation of these species if there is reason to believe that they are threatened. The Secretary is also authorized to take emergency action to ban the importation of species which may be in trouble.

Notwithstanding any prohibition, suspension or quota established by the Act, the Secretary may issue permits which authorize the importation of birds for zoological breeding or display programs, for cooperative breeding programs designed to promote the conservation of the species and maintain the species in the wild by enhancing the propagation and survival of the species, and for scientific research purposes. The new law also seeks to ensure humane treatment of birds. The methods of capture, transport, and maintenance en route must minimize the risk of injury or damage to health.

Another provision of the Act establishes the Exotic Bird Conservation Fund. This fund will use monies collected from penalties, fines, donations, and any additional appropriations for projects to conserve exotic birds in their native countries. Many of the countries where these birds are found do not have funds available to conduct conservation activities, or develop acceptable management plans.

*>AAZPA Communiqué, Nov. 1992 and Department of the Interior News Release 10/27/92*

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## Endangered Species Highlights

\* An endangered species success story in the U.S. may have a Russian chapter if an effort to bring the rare Aleutian Canada goose back to Russia is successful. After being virtually extinct in Asia for decades, the geese that once migrated between Japan and Russia will be returning, thanks to a permanent loan of 10 nesting pairs from the U.S. The Aleutian Canada goose was once listed as endangered in the U.S., but recovery efforts by the USFWS brought populations back from a low of fewer than 800 in 1967 to a current estimate of 8,000 birds. The species' status in the U.S. has been upgraded to threatened.

\* The USFWS and the Center for Plant Conservation have signed a cooperative agreement aimed at benefiting rare plant species in the U.S. The agreement paves the way for the

## Legislative News, *Continued*

Service to provide funding and technical expertise in support of the Center's research and development of techniques for propagation and reintroduction of endangered and rare plants.

\* Six rare California condors will soon join the nation's only free-flying condor in the skies over the Los Padres National Forest in southern California. The young condors, all hatched last spring at the L.A. Zoo, were transferred in October from the zoo to a secluded acclimation site in the Sespe Condor Sanctuary. It is hoped that by this month the birds will be old enough and will have mastered flying skills sufficiently for USFWS biologists to drop the nets surrounding the site and allow the birds to take to the open skies.

\* Biologists from the USFWS and the state of Wyoming released another 91 Black-footed ferrets in the Shirley Basin of Wyoming this fall, supplementing last year's historic reintroduction of 49 of the rare mammals. Encouraging news for the ferret recovery program came last summer when biologists discovered that several of the released ferrets had produced young in the wild. Black-footed ferrets were thought to be extinct until a small population was discovered in 1981 and eventually taken into captivity where a highly successful breeding program has greatly increased the species' numbers.

>Department of the Interior News Release 11/16/92



## Smithsonian Institution Archives Announces Access to National Zoo Records

The Smithsonian Institution Archives announces that a collection of records entitled National Zoological Park, Office of Public Affairs Records, 1805 -1988 and undated, has been processed and is now available to scholars as record unit 365 (19.5 linear meters). A finding aid to the collection is available upon request from the Archives.

The records of the National Zoological Park (NZN), Office of Public Affairs, were for the most part created and maintained by Sybill E. Hamlet, Public Information Officer at NZN for over 20 years. Also included are some general correspondence and memoranda created by Hamlet's predecessor, Marion McCrane. The material documents the activities of the Office of Public Affairs and is also a rich source of information about the history of NZN.

The records consist of daily and weekly animal reports written by the keepers; drafts of exhibit label text; memoranda and correspondence concerning NZN special events; notes, correspondence, clippings, photographs, and manuscripts concerning animals at NZN and other zoos; correspondence pertaining to animals, NZN events and programs, and zoos in general; administrative files; articles, notes and drafts of manuscripts about the history of NZN; photographs and lantern slides of animals; original artwork primarily of "Smokey Bear" and the giant pandas, "Ling-Ling" and "Hsing-Hsing"; architectural maps and drawings of NZN grounds and buildings; and scrapbooks of clippings about NZN people, events and animals.

The collection may be consulted in the Smithsonian Archives, located in room 215 of the Arts and Industries Building of the Smithsonian Institution, 900 Jefferson Dr. S.W., Washington, DC 20560. The Archives is open between 9:00 a.m. and 5:00 p.m. weekdays, excluding Federal holidays. Written and telephone inquiries (202-357-1420) are welcome.



# Ranomafana

By Robert Berghaier, Senior Keeper  
Philadelphia Zoo, Philadelphia, PA

The evening was cool and a thin mist descended from the trees to the ground. As it got darker, our range of vision contracted until we could see only a small area around the radius of our fire. Loret, our guide, was cooking a freshly killed chicken on the floor of an abandoned, open-fronted research cabin. Occasionally he would fan the fire, causing clouds of smoke and cooking odors to leave the structure and enter the forest. At intervals Loret would toss bones with bits of meat into the clearing in front of us. We kept very quiet and hoped that all this preparation would give us a rare sighting of the largest predator of Madagascar, the Fossa (*Cryptoprocta ferox*).

The Fossa is a giant civet (a cat-like carnivore) that reaches six feet in length, the size of a small mountain lion. It is a very lean, thin animal and, while it poses no danger to humans, is deadly to lemurs, the endemic primate species of Madagascar. Its agile body allows it to race up tree trunks and along limbs, a superb adaptation for hunting these arboreal prosimians. However the Fossa, while being an effective predator, is not above eating food scraps. Loret was hoping that the bits of chicken and cooking smells would act as bait to draw the Fossa close enough for a flash photo.

Having a chance to see and perhaps photograph elusive Fossa (the equivalent of getting a photograph of a leopard in Kenya) would be the ideal end to an extraordinary day of wildlife viewing at the Ranomafana Forest Reserve in southeast Madagascar. Already that day I had sighted four species of mammals that I had never seen before in the wild. Earlier in the afternoon the much smaller relative to the Fossa, the beautifully marked Ring-tailed mongoose (*Galidia elegans*), came to our cabin looking to steal a meal.

In the early evening, just before we set out on a hike to an abandoned research site, I heard some movement in the vegetation above our cabin. I spotted a dark yellowish-colored animal. It was the Golden bamboo lemur, unknown to science until its discovery in 1986. The man who is credited with realizing that this creature was a new species, Bernhard Meier, built the shelter we were to use that night. The Golden bamboo lemur appears to be found only in the immediate environs of Ranomafana. Due to its tiny range it is one of the most endangered animals in the world. To see it in the wild was an incredible experience.

That evening Loret had found an Avahi (*Avahi laniger*), one of the larger nocturnal lemurs. The loud call that the Avahi makes sounds just like its name. We heard the call several times during the course of the evening. Earlier, after Loret placed slices of banana on a tree in front of the shelter, a Mouse lemur (*Microcebus murinus*), the smallest primate in the world, was tempted into view. The tiny creature streaked up the tree, stole a quick bite from the slice and scampered back down.

I reflected on the previous two days. I had already seen and photographed three species of lemurs, the squirrel-like Red-bellied (*Lemur rubriventer*) and Red-fronted (*Lemur fulvus fulvus*) lemurs and a group of the handsome Diademed sifakas (*Propithecus diadema*). The two-and-one-half-foot tall sifaka traveled through the forest by jumping from tree trunk to tree trunk. Two very appealing young sifakas (looking very much like miniature Philly Phanatics) in this group hung on their mothers' backs while the group bounded through the forest.

My train of thought was suddenly broken by a movement in front of our shelter. I caught a fleeting glimpse of something running off with a chicken bone. I heard Loret's voice whisper, "Fossa". We remained tense in anticipation, straining our eyes as we stared at the clearing. The animal returned and we quickly realized that it was the fox-like Fossana civet and not the Fossa. It was still a special sighting and again an animal I had never seen before. Seeing it was certainly worth the long hike back in the dark to our cabin. It was the fifth new species that I had observed that day.

## Ranomafana, *Continued*

It was the recently discovered Golden bamboo lemur and the presence of 11 other lemur species that drew me to Ranomafana. The area is named for the thermal springs found here. In Malagasy, Rano means water and mafana means hot. The town of Ranomafana is a rather nondescript, ramshackle collection of wooden shacks with corrugated metal roofs. The people of the town are another story. As in the rest of Madagascar, they are a photogenic people: a mixture of Asian and African peoples and cultures with some French and Arabic influences thrown in. The result is a handsome people, gentle and gracious, of various shades of skin color. The children in particular are charming and beautiful.

Getting to Ranomafana can be difficult and time-consuming. The road south from Madagascar's capital, Antananarivo, is relatively easy driving for about half the ten-hour trip. The remainder is horribly rutted and potholed. Just riding in a vehicle can be exhausting. If you do not have your own vehicle getting to Ranomafana can be a problem, leaving you dependent on hitchhiking on local transport or a taxibrousse (bush taxi). However, the traveler should be aware that these do not move unless filled with passengers and goods going in the same general direction. The taxibrousse driver operates on a purely profit motive. Alternately, it is possible to fly to the towns of Fianarantsoa to the west of Ranomafana or Mananjary to the east. Air Madagascar flights to these destinations are erratic and one can only reach Ranomafana by native transportation from either town. The only completely reliable method of travel to Ranomafana is overland from Antananarivo.

Along the route you can see why the island's environment is in such desperate straits. Nearly every bit of land is used for either zebu cattle pasture or rice paddies. Hardly any patches of forest remain and any passed on the main route are mostly planted with pine and eucalyptus, both non-native species. These plantation forests do not have the diversity of the native growth and are biological deserts in comparison. Madagascar has been isolated from mainland Africa for an estimated 160 million years. As a result its plants and animals have evolved in isolation from the rest of the world and many are found nowhere else on earth. If the remaining natural forest areas are destroyed, thousands of species will be driven to extinction.

One of the most significant forest remnants is the two hundred or so square miles surrounding the town of Ranomafana. This forest is not only important for its unique flora and fauna but also to the local people. From here the villagers take building materials to construct their homes; here they also find local wild plants for medical purposes. Perhaps a few of these plants will one day enter our pharmacies like the rosy periwinkle already has. It provides an extract called vincristine which is now used as an effective childhood leukemia treatment. The Ranomafana forest also provides watershed protection for a Malagasy hydroelectric project which provides much of the electricity for this area of the country. The forest's importance to species preservation, the indigenous people and local development has drawn the attention of the world's conservation community. It is planned to give the forest national park status. Heading the effort is Doctor Patricia Wright of Stony Brook University, who received a prestigious MacArthur fellowship for her work in Ranomafana. The Ranomafana project will attempt to balance the needs of the local population while conserving the forest's biological diversity.

It is hoped that encouraging tourism to the area will provide an alternative source of income to take the pressure off the forest. Several local men have been trained as guides to escort visitors through the reserve. When they are not accompanying tourists, they assist the scientists who study at Ranomafana. The guides are accomplished naturalists in their own right. They can identify nearly all of the animal life and most of the plants by their scientific names. Loret, who had attempted to draw the Fossa into view, was one of these men.

I was fortunate to be granted permission to use the Duke University research cabin during my stay at Ranomafana. Most tourists stay at the Hotel Thermal and either hike to the reserve or take a vehicle to the village of Ambodiamontana and walk in from there. The Hotel Thermal has great food and comfortable rooms. Surprisingly, in spite of its name, the hotel does not have hot water. There is, however, a warm water swimming pool nearby

## Ranomafana, *Continued*

and cabanas in which one can get a hot bath. Camping is permitted in the forest and it may be possible to rent tents from any researchers who may be present at the Duke cabin. You must be escorted by a guide to enter the reserve. The fee is minimal (\$3 U.S.) and, as I have previously mentioned, is important to the success of the Ranomafana project. Food, including canned goods, can be bought in town. The guides will show you where it is safe to drink and bathe from local streams. There is a pit latrine by the cabin that visitors can use.

During my two-week stay at Ranomafana I saw nine of the 12 species of lemurs found there. The one species I had really hoped to see, the striking Black and white ruffed lemur (*Lemur variegatus variegatus*), still eluded me. This handsome cat-sized primate has always appealed to me and after working with the species in captivity for 12 years, I am still impressed with its gentleness and beauty. I had already spent two long, hard days of climbing up and down the forested slopes of the reserve in a fruitless effort to find ruffed lemurs, stopping only to pick off the occasional leech that would drop onto my neck or down my boots. After this search the guides told me of a small reserve 60 kilometers to the east of Ranomafana, called Kianjavato. They reported that it had a dense population of this rare lemur.

On my last full day at Ranomafana the guides convinced me to make an attempt to get to Kianjavato and return the same day. They arranged the initial ride. Three of them - Emile, George and William - came with me. We set off on our adventure crammed into the back seat of a small French-made sedan taxibrousse along with cases of Coca-Cola® behind our heads and jerry cans of soybean oil at our feet. In the front was the driver, his helper and, tightly wedged between them, a pretty girl they had coaxed from a pick-up truck in Ranomafana. We raced along the battered, twisting road dodging potholes, hand-pulled carts, pedestrians and other vehicles. We stopped once in a small town while the helper looked over some emeralds, which are often found in the local forest. After extensive bargaining he declined to purchase them. We made it to Kianjavato in two hours, a bit frazzled but, surprisingly, in one piece.

In front of us was a huge rock massif. The surrounding land was planted with banana groves except for the base of the bluff which had a ring of forest clinging to it. It was immediately obvious to me why the ruffed lemurs were so concentrated here. The area's forests had been cut down to plant the bananas and the lemurs were forced into the remnant in unnaturally high densities. After a short walk we reached the edge of the banana groves. Almost immediately, a loud shrieking call echoed off the rock and was quickly followed by other cries across the length of the massif. It was a sound I was very familiar with from my experience with them at the Philadelphia Zoo - the alarm call of the ruffed lemur.

We divided into two groups to search for the creatures. Within 15 minutes William found a group of three. The lemurs were resting 30 feet up on the limb of a large tree, sunning themselves. One growled at us, but with that lone exception they ignored us. I was greatly pleased and was so excited that I had trouble deciding whether to just look or take pictures. It was getting late and we still had to get back down to the road. The guides pointed out some recently illegally-felled trees. Kianjavato is supposed to be a protected forest. That fact did not stop the previous destruction of most of the forest for planting bananas and it would probably not prevent the rest of it from eventually being cut. Tragically, both the forest and the lemurs of Kianjavato are probably doomed.

We started walking to the nearest town since it was thought that we would have a better chance of getting a ride back to Ranomafana from there. After walking for an hour we got lucky when Emile flagged down a rather battered looking lorry whose driver agreed to drop us off on his way west. The driver suggested that I ride in the front cab but I declined and decided to hang on in the back with my three companions. The lorry was carrying planks of lumber, some type of cargo up front and a dozen Malagasies with their baskets of assorted goods. I stood up holding on to the sides of the lorry as it swayed back and forth. Everyone watched their footing since there was a gaping hole in the lorry bed floor, through which we all could watch the lorry's spinning rear axle. The driver may have been a

## Ranomafana, *Continued*

frustrated race car driver since he kept the gas pedal to the floor most of the way. We careened up, down and around the narrow mountain roads. At blind curves he would lean on his horn and barrel through. In spite of this I enjoyed the ride. Looking out the back I got fleeting glimpses of small villages and their accompanying rice paddies. In one valley I saw a single line of twenty or more women bent over planting rice. One by one they spotted me, a vazaha (foreigner); one by one they stood upright in surprise; one by one they started laughing and waving at this crazy vazaha hanging out the back of a speeding truck waving at them.

We made several stops to drop off passengers. After most of them had left, my guides and I had a clear view of the cargo in front. It was loaded tanks of propane tied together with one lone rope. Essentially, this lorry was a motorized bomb and a high speed collision would have incinerated the truck and all of us. George gave a short gasp, then the four of us started laughing. There was nothing else we could do. In spite of our driver, we arrived safely in Ranomafana. Because of his reckless skill and despite numerous stops, we did so in one-and-one-half hours. I checked into the Hotel Thermal and bought us all a round of excellent Malagasy Three Horse Beer. The four of us celebrated our successful adventure. I paid the three of them a day's wages and bid them farewell. What a fantastic finale to an equally fascinating stay at Ranomafana.



### *The Shape of Enrichment*

*The Shape of Enrichment* is a new publication focusing on environmental and behavioral enrichment for captive animals. This international open forum includes feature articles as well as regular columns on browse, feeding programs, behavior, and exhibit design and construction. The first issue was published in August, 1992.

All material is submitted by professionals or volunteers who are involved in captive animal care. If you or your staff are employing enrichment devices or techniques within your collections, we would love to hear from you. Articles are accepted in any format. The deadlines are Dec. 20 (Feb. issue), Mar. 20 (May. issue), Jun. 20 (Aug. issue) and Sep. 20 (Nov. issue).

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(619) 231-1725 FAX

*Institutions wishing to advertise employment opportunities are asked to send pertinent data by the 15th of each month to: Opportunity Knocks/AKF, 635 Gage Blvd., Topeka, KS 66606. Please include closing dates for positions available. There is no charge for this service and phone-in 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.*

**HORTICULTURE ASSISTANT**...the Virginia Living Museum, a combined zoological & botanical park, aquarium, planetarium, and educational facility, offers a unique opportunity to work with native plants and animals in naturalistic habitats. Responsibilities: exhibit construction, maintenance of plants in indoor and outdoor exhibits, lawn care, landscape/greenhouse/nursery maintenance, propagation, supervision of volunteers, and interaction with visitors. Qualifications: Bachelor's degree in Horticulture or related field, 1-2 years experience at a botanical/zoological garden or similar facility, and knowledge of Eastern Forest/Coastal Plain flora preferred. Salary: \$16,500, plus benefits. Send resume by **1 February 1993** to: Janis Miller, Horticulture Curator, Virginia Living Museum, 524 J. Clyde Morris Blvd., Newport News, VA 23601.

**ASSISTANT ANIMAL SUPERVISOR**...the newly renovated Queens Zoo of North American Animals seeks an experienced animal person to help manage the daily activities at this 11-acre facility. Candidates should have a Bachelor's degree in biological science and/or 3+ years experience supervising employees and caring for hoofstock and carnivores. Competitive salary. Excellent benefits package includes 3 weeks vacation, health, dental, and retirement plans. Send resume to: John Fairbairn, Personnel Department, New York Zoological Society, 2300 Southern Blvd., Bronx, NY 10460 (718) 220-5119. EOE.

*The following three (3) positions are open at the Toledo Zoo. Closing date for both is 31 January 1993. Submit resume to: Nancy Foley, Director of Human Resources, Toledo Zoological Society, P.O. Box 4010, Toledo, OH 43609.*

**ZOOKEEPER/MAMMALS**...requires high school diploma with one year's working experience in a zoo mammal department. Degree in Biology or related field desired. Responsible for observation, record maintenance, care of animals and cleaning of exhibits. Elephant experience desirable. Starting salary \$17,700.00 with benefits.

**ASSISTANT CURATOR OF MAMMALS**...requires Bachelor's degree in animal sciences and supervisory/curatorial experience in the management of a zoo mammal collection. Responsibilities include assisting the curator in directing the care and management of major mammal collection. Must have proven management skill and excellent written/oral communication skills. Starting salary \$28,000.00 per year with benefits.

**CURATOR OF BIRDS**...Seeking individual with Bachelor's degree in animal sciences and a minimum of two year's supervisory/curatorial experience in the management of a zoological institution bird collection. Responsibilities include acquisition, maintenance and care of a major bird collection. Must have proven management skill and excellent written/oral communication skills. Starting salary \$28,000 - \$32,000 per year depending on qualifications/capabilities. Benefit package included.

**HEAD ANIMAL TRAINER/WILDLIFE SHOW**...this supervisory position requires experience in public speaking and stage work. Duties include training and maintaining behaviors of parrots, raptors, and a variety of exotic mammals. Must be well groomed and maintain professional appearance. Must be able to effectively interact with staff as well as public. Contracted wildlife show, Toni Brough, Inc. Send resume to: Lynn Shinkle, Amphitheater Supervisor, Miami Metro Zoo, 12400 S.W. 152 St., Miami, FL 33177.

**ZOOKEEPER**...Commonwealth Zoological Corporation (Franklin Park Zoo & Walter D. Stone Memorial Zoo). Experience and related education preferred. Should have demonstrated interest and abilities in working with birds and herps, but be willing to work in any area of either zoo. Competitive salary developed in relation to experience and performance. Please submit resume, cover letter, and list of three (3) professional references by **1 February 1993** to: John Linehan, Commonwealth Zoological Corporation, Franklin Park Zoo, Boston, MA 02121.

## Opportunity Knocks, *Continued*

**ANIMAL/GROUNDS KEEPER**...(AAZPA related organization: Private Zoological Breeding Farm - northern Atlanta suburb). Not open to the public. Full-time duties include (but not limited to) daily animal care, and exhibit and landscape maintenance. Experience with marsupials and small hoofstock a plus. Must be physically fit, able to operate farm equipment. We are looking for a mature, responsible employee who would enjoy working with rare animals in a quiet, picturesque environment. Salary commensurate with experience. Send resume (including salary history) and three (3) references to: Nelson Twin Oaks Farm, 13305 Bethany Rd., Alpharetta, GA 30201.

*The following three (3) positions are available at the Point Defiance Zoo & Aquarium. Candidates must apply separately for each position. Application materials may be obtained from the Metropolitan Park District of Tacoma, 10 Idaho St., Tacoma, WA 98409 (206) 591-3690. Applications must be received by 5:00 p.m. on 8 February 1993. Salary range \$11.70 - \$16.20/hr. plus benefits.*

**ELEPHANT KEEPER**...B.S. degree in Zoology or related field desired and at least two year's experience in the handling and training of elephants at an accredited zoo. Experience in both protected and free contact systems preferred, as well as familiarity with operant conditioning techniques. Also responsible for care of primates and hoofstock.

**SENIOR ANIMAL KEEPER**...B.S. degree in Zoology or related field and extensive experience in animal husbandry techniques. Responsible for assisting General Curator in planning and directing activities for major zoo exhibit area. Small mammal, bird, herp, and public animal behavior demonstration experience highly desirable. Position will be instrumental to the planning of a major new Master Plan addition, pending availability of funding source.

**ANIMAL KEEPER**...B.S. degree in Zoology or related field and two year's experience in animal husbandry practice desired. Also, experience in public animal behavior demonstration highly desirable. May be assigned to Swing Shift.

**BIRD KEEPER**... the Bronx Zoo/International Wildlife Conservation Park seeks an enthusiastic candidate to join its animal care team. The position requires 1+ years experience working with captive exotic avian species. College background preferred. The position is available immediately. Salary \$24,400.00. Benefits include paid vacation, health, dental, and retirement programs. Send resume to: John Fairbairn, Human Resources, NYZS The Wildlife Conservation Society, 2300 Southern Blvd., Bronx, NY 10460. Call (718) 220-5119 with inquiries.

*The following two (2) positions are available at the North Carolina Zoological Park. Starting salary for all positions is \$21,071.00. Closing date for applications is 12 January 1993. Contact: Lisa Miller, North Carolina Zoological Park, 4401 Zoo Parkway, Asheboro, NC 27203 (919) 879-7310 FAX 919-879-2891.*

### **ZOOKEEPER III - Birds...**

### **ZOOKEEPER III - Reptiles & Amphibians...**

These are supervisory positions which require at least six years of zookeeping experience in an accredited zoo, three of which must have been in working with and developing expertise with a diverse collection of species. Must be a high school graduate; a four-year degree may be substituted for two years of zoo experience; and an Associate degree may be substituted for one year of zoo experience. Supervisory experience is highly desirable. Supervises zookeepers in the daily care and husbandry of assigned animals. Must have substantial knowledge of diet, habitat, social organization, breeding behavior, husbandry and methods of capture and restraint of the animals in area of responsibility.



- (c) indicates a correction  
 (?) indicates information please  
 (K) indicates a keeper alert  
 (P) indicates a photograph

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# AAZK Membership Application

Name \_\_\_\_\_ check here if renewal [ ]

Address \_\_\_\_\_

City \_\_\_\_\_ State/Province \_\_\_\_\_ Zip \_\_\_\_\_

Telephone \_\_\_\_\_ (home) \_\_\_\_\_ (work) \_\_\_\_\_

## U.S. Members

- \$30.00 Professional/U.S.  
*Full-time Keepers*
- \$25.00 Affiliate/U.S.  
*Other staff & volunteers*
- \$25.00 Associate/U.S.  
*Those not connected with  
an animal facility*
- \$50.00 or up Contributing/U.S.  
*Individuals*
- \$50.00 or up Institutional/U.S.  
*Organizations/Institutions  
(requires Board approval)*

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- \$35.00 Professional/Canada  
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- \$30.00 Affiliate/Canada  
*Other staff & volunteers*
- \$30.00 Associate/Canada  
*Those not connected with  
an animal facility*
- \$55.00 or up Contributing/Canada  
*Individuals*
- \$55.00 or up Institutional/Canada  
*Organizations/Institutions  
(requires Board approval)*

## International Members

- \$40.00 International  
*All members outside U.S. &  
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## Library Only

- \$20.00 Library  
*Available only to  
established libraries*

Zoo Affiliation (if any) \_\_\_\_\_

Zoo Address \_\_\_\_\_

Title \_\_\_\_\_

Work Area \_\_\_\_\_

Mail this application and check or money order (U.S. CURRENCY ONLY PLEASE), made payable to American Association of Zoo Keepers, Inc., to : AAZK Administrative Offices, Topeka Zoo, 635 S.W. Gage Blvd., Topeka, KS 66606 U.S.A.

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 Gage Blvd.  
Topeka, KS 66606

Address Correction Requested

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TOPEKA KS 66603



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NFP Library  
Washington . DC 20008

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# Animal 'Keepers' Forum

February 1993

Special Hand-Rearing Issue



*Dedicated to Professional Animal Care*

**Editor-In-Chief:** Susan Chan

**Associate Editors:** Kayla Grams & Gretchen Ziegler

Animal Keepers' Forum (ISSN 0164-9531) is a monthly journal of the American Association of Zoo Keepers, Inc., 635 S.W. Gage Blvd., Topeka, KS 66606. Ten dollars of each membership fee goes toward the annual publication costs of Animal Keepers' Forum. Third Class postage paid at Topeka, KS. Postmaster: Please send address changes to:

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#### AAZK PUBLICATIONS : CONTINUING DATA COLLECTION

Zoo Infant Development Project - Harmony Frazier-Taylor, Woodland Park Zoo

Dict Notebook, Mammals, Vol. II - Susan Bunn Spencer, Bronx Zoo

An Approach to Zoo Keeping - Patricia Sammarco, Gainesville, FL



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## 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. All illustrations, graphs, charts and tables should be clearly marked, in final form, and should fit in a page size **no greater than** 15cm x 25 1/2cm (6" x 10"). Literature used should be cited in the text (Brown, 1986) and alphabetically in final bibliography. Avoid footnotes. Include scientific name of species (as per ISIS) the first time it 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.) Black and white photos only are accepted. Color slides should be converted to black and white prints (minimum size 3 x 5 inch) before submission. Clearly marked captions should accompany photos. Please list photo credit.

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 *AKE*. 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 envelope. Telephone or FAX contributions of late-breaking news or last-minute insertions are accepted. However, long articles must be sent by U.S. mail. The phone number is (913) 272-5821 Ext. 31.

### DEADLINE FOR EACH EDITION IS THE 15TH OF THE PRECEDING MONTH

Articles printed do not necessarily reflect the opinions of the *Animal Keepers' Forum* editorial 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 \$2.00 each.

*This month's cover features a Snipe (Gallinago gallinago) only a few days old. Along with Snipe, the Killdeer, Solitary sandpiper and Spotted sandpiper are featured in this issue of AKF in an article detailing methods of hand-rearing shorebirds. The artist, Kathy Twamley, is an Apprentice Zookeeper at the Calgary Zoo, Calgary, Alberta, Canada. Thanks, Kathy!*

# Scoops and Scuttlebutt

## Zoo/University List Available

The purpose of this project is to provide a list of colleges and universities which offer course work or degree programs relating to animal care/management. The list currently has over 100 entries. The task for this year is to update the list and verify that all the entries are correct. Anyone who knows of courses or degree programs in their areas, please send pertinent information to me. I would like to see a copy of the list in every zoo's library. If your zoo would like a copy on file, send your requests to: Michael Illig, Metro Washington Park Zoo, 4001 S.W. Canyon Rd., Portland, OR 97221.

## Thanks to Topeka and Utah Chapters for Donations

The Board of Directors and the AAZK staff would like to express their thanks to two Chapters who recently made donations to the Association. The Utah Chapter, located at the Hogle Zoo in Salt Lake City, sent \$200.00 raised from several fundraisers to AAZK. This amount represents nearly the mailing costs for one month's domestic copies of *AKF*. The Topeka Chapter donated an electric water cooler to the staff at AO. The Chapter is also providing bottled water. The water cooler had been purchased by the Chapter and used in the old Keeper Center. When a new Keeper Center was built, it included water fountains and so the Topeka Chapter donated the portable unit to AO. Many thanks to all Topeka and Utah Chapter members!

## Footprints Sought in Fundraiser for Atlanta Conference

Mike Warren, President of the Birmingham Zoo AAZK Chapter, is raising money to help finance food and beverages for the Hospitality Suite at the 1993 AAZK Conference in Atlanta. He is collecting photocopies of inked animal footprints to use on T-shirts which will be sold to raise these funds. He is especially in need of a print of a chimp, but would also like to collect any interesting prints, preferably from great apes, bears and carnivores. Prints should be sent to: Mike Warren, Birmingham Zoo, 2630 Cahaba Rd., Birmingham, AL 35215.

## Elephant Keeper Killed at San Antonio Zoo

At approximately 3:30 p.m. on 15 December 1992, San Antonio zookeeper Jubal Cox, age 29, was injured while working in the elephant yard. He bent over to unfasten the tether on "Ginny", a 37-year-old female Asian elephant. She was being untethered to be moved inside for the night, according to normal routine. The elephant reached down and picked up Cox with her trunk, then threw him down. Cox was taken by ambulance to a local hospital where he was pronounced dead at 4:30 p.m. AAZK wishes to extend its sincere sympathies to Mr. Cox's family, friends and colleagues.

## National Zoo's Giant Panda Dead at 23

Ling-Ling, the National Zoo's female Giant panda resident, and the oldest panda living in a zoo outside of China, was found dead in her enclosure on 30 December. She was 23 years old. In the wild, pandas rarely live beyond their teens. Born in the wild in 1969 or 1970, Ling-Ling and her mate Hsing-Hsing were given as gifts of state to the people of the United

## Scoops & Scuttlebutt, *Continued*

States from the People's Republic of China in April 1972, in celebration of the establishment of diplomatic relations between the two countries. Although Ling-Ling had become pregnant at least twice during her tenure at National Zoo, none of the offspring survived. The male, Hsing-Hsing will remain on exhibit, and the National Zoo will continue its role in educating the public about the plight of the Giant panda in the wild.

## AAZK Now Has Capability to Accept Credit Cards

The Association is pleased to announce that Administrative Offices now has the capability of accepting either MasterCard or VISA credit cards for payment of membership dues or for publication purchases. All membership and order forms are being revised to reflect this option and credit cards may also be used in orders placed by telephone. Members wishing to use the credit card option for dues payment or publication purchases are asked to be sure and complete all the information requested on the appropriate form. This includes the credit card number, name on the card being used, whether MasterCard or VISA and the expiration date of the card. If all necessary information is not included, the credit payment will be denied. We appreciate your cooperation.

## "Wishing Wells" Can Be Cheaper With Multiple Purchases

For any AAZK Chapter that is looking into acquiring a Vortex (commonly referred to as a Wishing Well) for use as a fundraising device, California Regional Coordinator Johnny Merk advises that you not go through with your purchase until after contacting him. A substantial discount is available if more than three are purchased at one time. If orders can be consolidated, this could result in a nice savings for Chapters. A number of Chapters across the country have used these very successfully in raising money for conservation causes and Chapter activities. If your Chapter is interested you may wish to contact Johnny at the Exotic Feline Breeding Compound, HCR #1, Box 84, Rosamond, CA 93560.



## **Special Thanks to Columbus Zoo Staff & Information on Hand-Rearing Print-outs**

The Editorial Staff would like to thank the Nursery/Children's Zoo staff of the Columbus Zoo, and Beth Pohl in particular, for the wealth of material they submitted for inclusion in this special issue on hand-rearing. We greatly appreciate their willingness to share the information on their successes in hand-rearing a variety of species.

Also included in the material they submitted were computer print-outs of records that had been kept on hand-rearing efforts with Cheetah, Tiger, Pronghorn, and Baird's Tapir. These print-outs contain such information as formula amounts taken by age, when solid food was introduced, stool character, weights, and additional comments. If anyone is interested in obtaining a copy of these print-outs, you may do so by sending \$1.00 for each print-out desired, name of print-out being requested, along with your name and complete mailing address to: AKF Editor, 635 S.W. Gage Blvd., Topeka, KS 66606-2066. For more extensive information on any of the species covered in the articles from the Columbus Zoo, we suggest you contact Beth Pohl, Columbus Zoo, Box 400, Powell, OH 43065-0400.



# Coming Events

## Annual Conference of the National Wildlife Rehabilitators Association

March 3-7, 1993

Sacramento, CA

The University of California at Davis Raptor Center will be hosting the symposium which will feature qualified speakers on rehabilitation, education, administration, veterinary and other topics. Will include hands-on workshops in radiology, parasitology, bandaging and more. For more information contact: MWRA, Carpenter Nature Center, 12805 St. Croix Trail, Hastings, MN 55033 (612) 437-9194.

## The AAZPA Conservation Academy March 16-20, 1993

The AAZPA Conservation Academy will offer classes on Studbook I and SSP Coordinator Training. For further information or an application, contact Debra Boyster, AAZPA Conservation Academy, St. Louis Zoo, Forest Park, St. Louis, MO 63110 (314) 781-0900, ext. 297.

## ARZAPA/ASZK Annual Zoological Conference 1993

March 29-April 2, 1993

Adelaide, Australia

Joint meeting of the Australasian Association of Zoological Parks and Aquariums and the Australasian Society of Zoo Keepers. This year's theme is "Zoos Enriching Environments". For information contact: Christina Macdonald, Conference Coordinator, Adelaide Zoological Gardens, Frome Rd., Adelaide 500, Australia. Tel: (08) 267-325 Fax: (08) 239 0637.

## International Conference on Tortoise & Turtle Conservation

July 11-17, 1993

New York, NY

Sponsored by the American Museum of Natural History's Turtle Recovery Program and the New York Turtle & Tortoise Society. For further information write to: Craig Vitamenti c/o The New York Turtle Trust & Tortoise Society, 163 Amsterdam Ave., Suite 365, New York, NY 10023 or call (212) 459-4803.

## 14th Association of Avian Veterinarians Conference

Aug. 31 - Sept. 4, 1993

Nashville, TN

For further information and Paper Criteria, contact: AAV Conference Office, 1625 S. Birch St., Ste. 106, Denver, CO 80222 (303) 756-8380, FAX 303-759-8861.

## AAZPA 1993 Regional Conferences

Western Regional Conference (7-9 March, 1993) - for more information contact: Nancy Hollenbeck, Santa Barbara Zoological Gardens, 500 Ninos Dr., Santa Barbara, CA 93103 (805) 962-5339.

Southern Regional Conference (21-23 March 1993) - for more information contact: Fred Antonio or Sandi Tilwick, Central Florida Zoological Park, P.O. Box 470309, Lake Monroe, FL 32747 (407) 323-4450.

Central Regional Conference (4-6 April 1993) - for more information contact: Angela Baier, Sunset Zoological Park, 2333 Oak St., Manhattan, KS 66502 (913) 587-2737.

Great Lakes Regional Conference (18-20 April 1993) - for more information contact: Julene Boe, Lake Superior Zoological Gardens, 7210 Fremont St., Duluth, MN 55807 (218) 624-1502.

Northeastern Regional Conference (2-4 May 1993) - for more information contact: Julia Alarcon-Lorenz, Pittsburgh Zoo, P.O. Box 5250, Pittsburgh, PA 15206 (412) 665-3762.



## **AAZK Award Nominations Are Now Being Accepted for 1993!**

The AAZK Awards Committee would like to begin accepting nominations for the **Certificate of Merit for Zookeeper Education (CMZE) Award** to be presented at the 1993 AAZK Conference in Atlanta. The deadline for all award nominations is **1 June 1993**. All award nominations received after 1 June will be reviewed for 1994, so please keep this in mind when submitting your nominations.

All awards given by the AAZK do not have a minimum or maximum number offered each year. Also, if the nominees do not meet the qualifications and nominators do not follow the nomination procedures, they will not receive the award for which they were nominated. Please include scientific names of animals when they are included in the nomination of a special or outstanding breeding acknowledgment.

Please submit all nominations to:

Janet McCoy, AAZK Awards Chair  
Washington Park Zoo  
4001 S.W. Canyon Rd.  
Portland, OR 97221

### **CERTIFICATE OF MERIT FOR ZOOKEEPER EDUCATION (CMZE) AWARD**

The American Association of Zoo Keepers, Inc. (AAZK) is the administering organization of the Certificate of Merit for Zookeeper Education (CMZE) presented by the AAZK Awards Committee. 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 character of the award includes; a certificate, letter of notification to the institution's director and national recognition by professional journals. Such journals include; the American Association of Zoological Parks and Aquariums (AAZPA) 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 being published by Gale Research Company based in Wheaton, MD and found in medium to large sized libraries across the U.S. and Canada.

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 existence 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.



## Message From the President.....

Chapters have been part of the foundation that forms AAZK for many years. We have evolved from a few scattered Chapters across the country to almost 70 strong today. Chapters, with their ability to convene small groups of keepers together on a regular basis, will always have a strong voice in our Association.

It also seems that Chapter membership is on a perpetual roller coaster. As new projects are dreamed up and enthusiasm levels are high, Chapter membership increases. As projects are completed or personal needs take precedence, membership levels out or decreases.

It is the challenge to this Association and its members to continually work to find outlets for Chapter efforts. Many Chapters have revolving projects or merchandise items that require constant effort. Other Chapters are seen to constantly seek out the project that will best suit their membership.

The LINK System is designed to coordinate these efforts and serve as a sounding board for projects and ideas. The LINK System also has in place all the requisite forms to fill out that will ensure compliance with IRS and Association policies.

I encourage all Chapters, whether struggling to stay afloat or bursting at the seams with enthusiasm, to pick up a conservation cause or project to make an impact on your local environments. Your work ethics and professional attitudes carry forth beyond the work place. The position of zoo keeper is recognized and highly respected in the conservation field. Use this recognition to make an impact on your community.



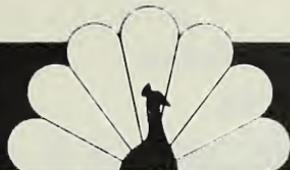
Ed Hansen  
AAZK President  
Reid Park Zoo, Tucson, AZ

## AAZK Announces New Professional/Contributing Members

- |  |  |
|--|--|
| Marc Payne, The Raptor Trust (NJ)                | Kathy Wassel, Utica Zoo (NY)               |
| James A. Bonner, Pittsburg Aviary (PA)           | Sandy Skeba, Philadelphia Zoo (PA)         |
| Sandra L. Robbins, Philadelphia Zoo (PA)         | Valeri Boyce, Elmwood Park Zoo (PA)        |
| Carolyn Atherton, Baltimore Zoo (MD)             | James Ballance, Baltimore Zoo (MD)         |
| Keith R. Harris, Riverbanks Zoo (SC)             | Eric Pflaging, Discovery Island (FL)       |
| Leslie R. Braun, Discovery Island (FL)           | Jamie Sincage, Discovery Island (FL)       |
| Timothy R. Green, Discovery Island (FL)          | John B. Smith, Busch Gardens (FL)          |
| Deborah A. Scott, Discovery Island (FL)          | Patricia Fay Stroud, Knoxville Zoo (TN)    |
| Eric Garrett, Memphis Zoo (TN)                   | Shane Good, Cleveland Metroparks Zoo (OH)  |
| Meghan Kelley, Cleveland Metroparks Zoo (OH)     | Barbara Bell, Milwaukee County Zoo (WI)    |
| Noel Scott Snyder, Ft. Wayne Children's Zoo (IN) | Larry Nuzym, Jr., Henry Doorly Zoo (NE)    |
| Kimberly Doehrman, Ft. Wayne Children's Zoo (IN) | Linda Weaver-Hamilton, Audubon Zoo (LA)    |
| Becky Wagner, Oklahoma City Zoo (OK)             | Douglas H. Latham, Oklahoma City Zoo (OK)  |
| Stacy Palm, Arizona-Sonora Desert Museum (AZ)    | Nicki McGahey, San Diego Zoo (CA)          |
| Tori K. Prill, Oakland Zoo (CA)                  | Kenneth Kriese, Pt. Defiance Zoo (WA)      |
| Frank V. Pucci, Valley Zoo (Alberta)             | Michael Malik, no facility listed (Canada) |

### Renewing Contributing Members

- Joan Schultz, Boomer Ball, Grayslake, IL  
Mike Quick, Sunset Zoo, Manhattan, KS  
Ellen Trout Zoo, Lufkin, TX  
Gerald W. Murrie, San Diego, CA



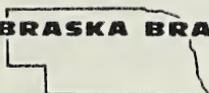
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## *San Diego Zoo Celebrates First Rhino Birth*



© Zoological Society of San Diego Photo by Ron Garrison

The first rhinoceros ever born at the San Diego Zoo was delivered at 9:50 p.m. on 15 November. The male Black rhino (*Diceros bicornis*) was born to 20-year-old Scooter, who was born at the Oklahoma City Zoo. The father is Dillon, a 25-year-old from the National Zoo. Dillon and Scooter have been together at the SDZ for four years. The 17-month, two-week gestation concluded with the arrival of the 60-pound infant which has been named "Werikhe" after Kenya's "Rhino Man" Michael Werikhe. Michael Werikhe has walked across Africa, Europe and the U.S. to raise funds for Black Rhino preservation in Africa.

Initial reports from Lead Zoo Rhino Keeper Martin Ramirez said that the baby was nursing and doing fine with its mother in an off-exhibit holding area. It was scheduled to make its public debut in late December.

This is the first rhinoceros of any kind born at the San Diego Zoo in its 76-year history. The San Diego Wild Animal Park, opened 20 years ago, has had 100 rhinoceros births --five Black rhinos, 17 Indian rhinos, and 78 Southern white rhinos. Black rhinos are critically endangered with fewer than 3,000 estimated to remain in their native Africa. --*excerpted from Zoological Society of San Diego News Release*

# A Method for Rearing Shorebird Chicks

By  
John Creviston, Keeper  
Calgary Zoo, Calgary, AB, Canada

Through the years many young shorebirds have been brought to the Calgary Zoo in the belief that they were orphaned. In some instances this was true, but many times this was done in error. The species most commonly seen are Killdeer (*Charadrius vociferus*), owing in part to the wandering nature of the young, and to the abundant open, dry habitat surrounding Calgary. Occasionally Snipe (*Gallinago gallinago*), Spotted sandpiper (*Actitis macularia*), and Solitary sandpiper (*Tringa solitaria*) are also received as wetland habitats dot the land in and around the city.

When young shorebirds are received at the Zoo they are invariably in a state of hypothermia, often unable to stand or walk without falling down. Given sufficient warmth, these birds should be able to walk and run strongly within a short time after hatching. It has often been assumed that such precocious chicks, accustomed to living outdoors in a variable climate, would naturally retain adequate body heat in order to survive. It must be remembered however, that these chicks are most active on sunny days and that they absorb radiant heat directly from the sun. They also benefit from heat released or reflected back up from the ground. Since the chicks are usually only a few centimeters tall they are usually out of the wind. At other times these young birds are brooded by their parents.

For human comfort most buildings are maintained at a temperature of about 21° C (70° F), but this is far too cold for such small chicks despite their warm fuzzy appearance. Artificial brooding methods used for chickens are appropriate if scaled down. Within the brooding enclosure there should be one end with a temperature of 37.7° C (100° F) and a distant end unheated, thus allowing a temperature gradient to exist.

A rearing enclosure for shorebirds must accommodate their active nature. It must have a smooth floor and sides, and the top should be screened to prevent escapes and deter predators while permitting ventilation and heat dissipation. An aquarium works well for this purpose and it can be easily cleaned and disinfected. A minimum 76 cm (30 in.) long aquarium is recommended in order to provide a reasonable temperature gradient. The smooth floor is essential due to the high activity level of these birds as they will continually pace over abrasive or sharp objects until wounds are opened on the feet and toes. Smooth sides are also required because many shorebirds will repeatedly run to the sides of barred or screened enclosures and try to force their way through. Experience has shown that this quickly causes severe deformities of the beak and facial area and sometimes to the breast feathers. It is best to avoid such incidents as injuries can develop very quickly and may not be reversible.

Finding appropriate and nutritious foods in sufficient quantity for shorebird chicks can be a daunting task. Fortunately the tropical fish industry has inadvertently solved this problem, although not inexpensively. Many commercially available ornamental fish foods are similar to the natural diets of shorebirds in the wild, and should meet the nutritional and psychological needs of these animals. It is still wise to offer a variety of the available food items, and to avoid staying with any one item for reasons of expense or convenience. Live brine shrimp and tubifex worms as well as small earthworms, whiteworms, glassworms and small crickets and mealworms are excellent choices in combination with freeze-dried river shrimp, white shrimp, bloodworms, red grubs, and krill. Mosquito larvae may be appropriate if obtained from a clean source, but fly larvae (maggots) are not a good idea because of their reported ability to chew out of the gastrointestinal tract.

Both Killdeer and Sandpiper species readily hunt their own food on the ground and along the shoreline almost immediately after hatching and will readily key to movement on the

## A Method for Rearing Shorebird Chicks, *Continued*

floor or walls of the enclosure. Snipe on the other hand are offered food picked up by the parents (Cramp, 1983) for the first few days and will not actively seek food at a very early age, even if they are hungry.

A shallow (1cm, 1/2 in.) dish works very well for feeding shorebird chicks, but the rim must be smooth and rounded to prevent foot injuries. The dish must be shallow for two reasons; to allow these small birds to step inside and to ensure that food items are not submerged in water that is too deep. Live terrestrial prey items can be placed in another shallow dish without water but a similar dish must be available as a fresh water supply and to "activate" freeze-dried and aquatic food items. Activation of freeze-dried food items means simply sprinkling them on the water's surface as disruption of the surface tension will cause some movement. Each time the young birds walk through the water, they again cause food items to move. After a short while movement of prey will no longer be essential as these shorebirds will recognize food without activity. It may be necessary in the beginning to mix freeze-dried foods with live water-borne prey in order to attract the chick's attention.

The feeding strategy for Snipe differs somewhat from that of Killdeer and Sandpipers, although the same shallow dish system for food and water should be available from the beginning. Snipe diets in the wild contain a small proportion of aquatic vegetation and small seeds in addition to invertebrate fare (Cramp, 1983), and this should be reflected in the captive diet. Finely shredded spinach and soft panicum millet can be added to the water dish, specially with tubifex worms. Tubifex have a natural tendency to ball together and cling to available surfaces, and will entwine the spinach and millet. Because Snipe chicks do not appear to eat vegetation deliberately, the tubifex act as a vehicle of delivery for it.

During the first few days, food can be offered on a narrow probe or bamboo skewer at the young Snipe's eye level, ensuring that the prey touches the chick's beak (see cover art this issue). Over the next few days the Snipe chicks will begin probing the water and enclosure floor with increasing frequency, learning to eat on their own. By the sixth day of age, the young birds should feed completely independently in a manner similar to Killdeer and Sandpipers. Be aware that Snipe find food often by touch, using their sensitive beaks to locate prey.

Feeding should be frequent for these young shorebirds, but only during the daytime hours. All Snipe, Killdeer and Sandpiper chicks refused food when they were full, and did not tend toward obesity. Do not let food dishes stand longer than one hour as bacterial levels will increase rapidly under such conditions. To optimize food quality in the young shorebird's enclosure, dishes should be placed at a distance from the brood lamp.

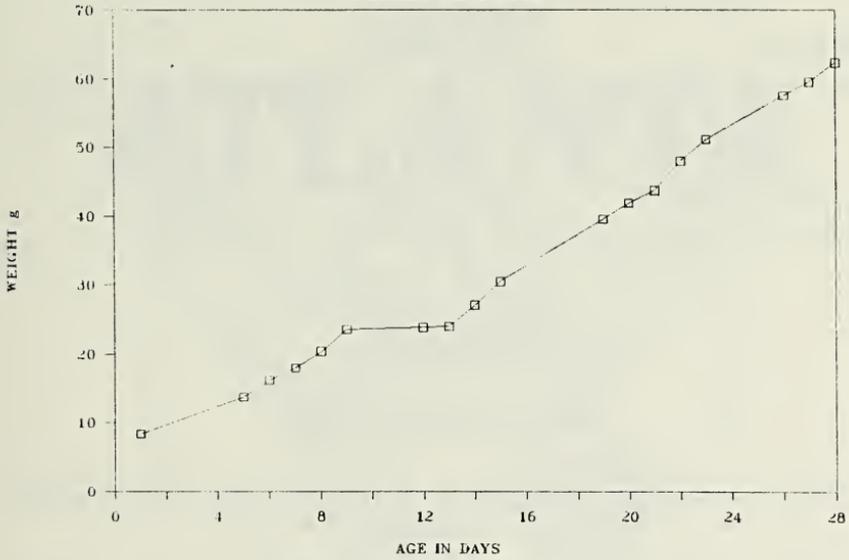
Young shorebirds will soil their substrate quickly and frequently, so an easily replaceable bedding should be used. Paper toweling works well for this purpose as it is often ink-free, absorbs well, and will not be ingested unlike ground corn cob and wood shavings. Since paper towels can be changed easily and quickly more frequent cleaning is ensured. These little birds will also track a tremendous amount of water out of their dish and onto the substrate, causing it to be continuously wet. Particles of food will be flung onto nearby enclosure walls, and this too creates an increased disease hazard which should be avoided by a good cleaning regime.

Quality of light does not seem to be of major significance, but the length of day may be important. In the natural state, most shorebird chicks are reared during the time of year when the days are longest. Long days allow the chicks sufficient time to find plenty of food and grow rapidly. In captivity, 16-hour days permit young shorebirds to feed over extended periods, eliminating the need for overnight food offerings. Shorebird chicks have been reared successfully under fluorescent and incandescent lights and under natural illumination through a window without apparent ill-effects.

Snipe mature much more quickly than Killdeer and Sandpipers, and will be flying short distances at about 18 days of age. Killdeer and Sandpipers fledge at approximately 40 days old.

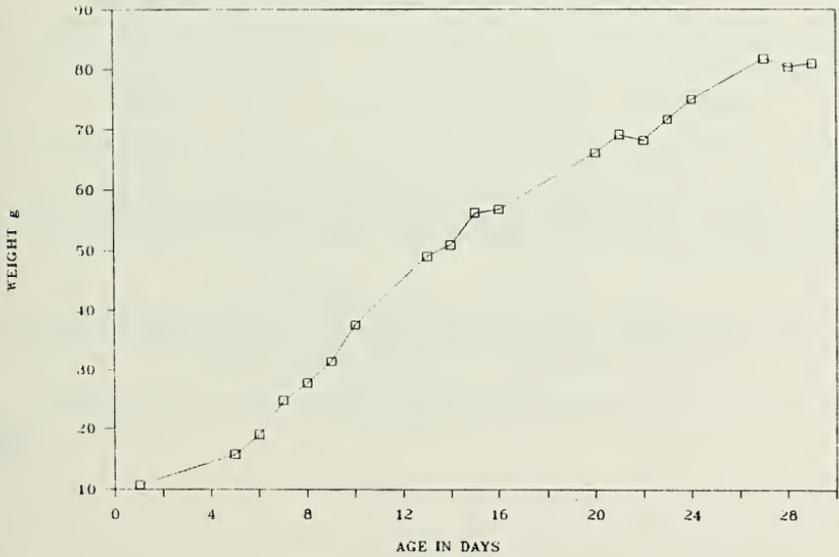
### KILLDEER WEIGHTS

AVERAGED FOR 5 BIRDS



### SNIPE GROWTH CHART

AVERAGED FOR 4 BIRDS



## A Method for Rearing Shorebird Chicks, *Continued*

While the information provided here may not answer all questions, it should be of some assistance. This rearing method has proven successful with four Snipe, ten Killdeer, one Solitary sandpiper, and one Spotted sandpiper. It seems likely that this method or a modification of it would be useful for similar species.

### **Bibliography**

Cramp, Stanley 1983. Chief Editor for Handbook of The Birds of Europe, The Middle East and North Africa. The Birds of the Western Palearctic, Vol. III, Waders to Gulls. Oxford University Press, London, England.

### **Acknowledgements**

Thanks to Mona Keith, Kathy Twamley, Dave Elphinstone and Susan Creviston.



## **KILLDEER DIET**

The following material is reviewed from REHABILITATION NOTES: KILLDEER (*Charadius vociferus*) by Jan White, Director, Wildlife Rehabilitation Service, Fairfield, CA, and reprinted with permission from Wildlife Health News, Vol. 3, No. 2 1992.

The Killdeer is probably the most widespread of all the shorebirds in America. Also it may be one of the most difficult to raise when orphaned. The killdeer was hunted almost to extinction. By the turn of the century they were rare in New England. It is a very important species for the ecosystem...it eats huge amounts of insects.

Animal matter makes up some 98% of the adult Killdeer's diet. Natural foods include: beetles, grasshoppers, caterpillars, dragonflies, bugs, ants, spiders, snails, worms, and crayfish. The young leave the nest as soon as they are dried and begin foraging for food. Live food is critical to sustaining feeding behavior. Begin feeding a baby Killdeer baby worms. Small mealworms seem to be enjoyed. The captive diet must be primarily insects.

"...Calcium carbonate should be added to the dry worms (to raise the Calcium-Phosphorus ratio). Mealworms, depending on the substrate they are grown in, can be very low in calcium. This may result in clinical signs of metabolic bone disease. In this particular species, these signs usually begin with the bird "going down on its knees". The problem is compensated for by giving 75-100mg of Calcium carbonate orally each day in addition to the powdered worms.

"Food intake is voluminous. One growing bird may eat 1/2 ounce of worms daily. By 6-7 days, each bird will consume 50 mealworms (if it is the sole ingredient of the diet) each day. This increases to 75-85 daily by the time the bird reaches Day 23.

"Birds will consume small amounts of dry feeds (i.e. game chow, trout chow, seeds)...".





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Average high temperatures in Atlanta for October are in the low 70's with moderate chances for rainfall.

---

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PLEASE SUBMIT A SHORT ABSTRACT FOR ALL PROPOSED PAPER, WORKSHOP, AND POSTER PRESENTATIONS BY JULY 1, 1993. ABSTRACTS SHOULD INCLUDE THE NAME OF PRESENTER, ZOO AFFILIATION, TITLE OF PAPER, PROPOSED FORMAT (PAPER, WORKSHOP, ETC.) AND EQUIPMENT NEEDED.

- We would like to offer a few panel discussions and breakfast roundtables in order to promote exploration of important issues, challenges and controversies surrounding the future of zookeeping. We welcome any suggestions or requests for specific topics and/or potential panelists. Help ensure that the 1993 conference program serves your needs.

Send abstracts and other program suggestions to:

Sue Barnard & Craig Piper, Program Committee, 1993 AAZK Conference, Zoo Atlanta,  
800 Cherokee Avenue, SE Atlanta, GA 30315

# Response to "Bungee Jumping Monkeys" December 1992 AKF, p. 437

At the suggestion of a 12-year-old boy, one male and one female White-faced capuchins (*Cebus capucinus*) were provided with three various bungee cords last summer. Although the female had been introduced as a juvenile to a hoop tied to a chain with a loop of elastic, the elastic provided a much shorter and more predictable stretch than the bungee.

Now mature, this female demonstrates her conservative use of the bungee (Figure 1). To avoid triggering its "daredevil" elasticity, she uses knots tied at approximately 15cm intervals, as a means to achieve a "controlled climb".

The mature White-faced male would not even approach the bungee cord until a forage feeding device (filled with dates and peanuts) was attached. He was then willing to overcome his anti-bungee bias, but also dealt with the cord in a peevishy conservative manner. Several times he approached and retreated, directing an open mouthed threat at the undesirably lively cord. He was finally able to carefully attain several of the desired "treats". Once the dates and peanuts were gone, the bungee was again abandoned.

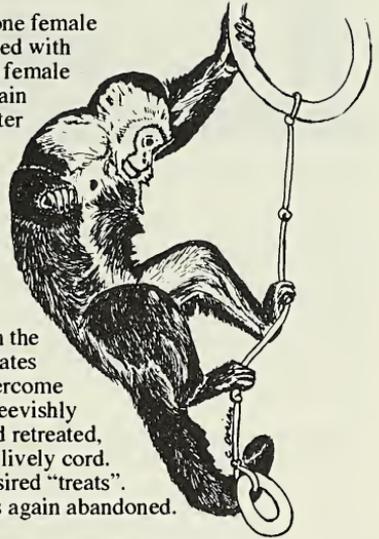


figure 1

This bungee baited with a feeding device has been offered repeatedly but, while a novel experience in itself, still has not lead to experimental bungee play in these mature primates.

Submitted by Camille Dorian, Monkey Zoo, Orinda, CA, who also did the accompanying artwork.

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## American River Otter Diet

The following formula is reviewed from AMERICAN RIVER OTTER (*Lutra canadensis*) by Melanie Cain-Stage, H.A.W.K.E. Inc., 216 Hermosa St., Davis Shores, St. Augustine, FL 32084, and reprinted with permission from Wildlife Health News, Vol. 3, No. 2 1992.

"...Various milk formulas have been used with River otters. Milk analysis for this species reveals as follows: Solids 38%, Fat, 24%, Protein 11%, Carbohydrates .10% and 2.60 Keal/cc. In looking at the mother's milk, several things are evident. Because of the high level of fats in the milk, substituting cow's milk would not be satisfactory. However, using a substitute such as Multi-milk™ with Esbilac™ or KMR™ higher fat and protein levels can be achieved. Some authors have recommended KMR® alone (Evans, 1986).

The formula used by the author to raise several Rivers Otters is:

Multi-milk™ one part powder to 2 parts water	One egg yolk
1/2 oz. liquid whole milk whipping cream	1/2 dropper of liquid HiVite™
1/2 tsp white Karo™ syrup	multi-vitamins.

Formula is made fresh daily and heated portions should not be reheated. The formula is mixed in a blender and stored in the refrigerator until used...

"A composition more like the natural milk can be achieved using Multi-milk™, Esbilac™ and heavy whipping cream. The ratio is as follows: One part powdered Esbilac™ with two parts water and one part Multi-milk™ and one part heavy whipping cream...

"...River otters have also been successfully raised using Esbilac™ mixed as shown on the carton."



# Ngare Sergoi Sanctuary Update

## ...1992 in Review

*from Anna Mertz, Founder*



Nineteen-ninety-two has been another very dry year for the Rhino Sanctuary but, thankfully, not as disaster-stricken as the last year. We have had four rhino births and one human. Just before last Christmas Stumpy gave birth to a female calf, and in February Shaba and Juno both produced male calves. Alas, Juno's died after five days from a severe infection of the umbilical cord. It was also underweight and believed to be premature. In May the white cow Marengo had her second calf, also a male. Thanks to handouts of lucerne (alfalfa) all rhinos have survived the present drought though a lot of other animals have been lost, mainly eland, waterbuck, buffalo and warthog. The great excitement in June was the birth of a son, Harry, to Francis & Bimbi. He is the most gorgeous and totally enchanting baby.

In March the British High Commissioner, Sir Roger Tomkys, and Dr. Richard Leakey of the Kenyan Wildlife Service opened the Ngare Ndare Forest Preserve fence which has been funded in large part by the Support Group, together with AAZK through its "Bowling for Rhinos". The establishment of this fence had created a big fund of goodwill towards us from the local farmers whose crops are thereby protected from the unwelcome attentions of buffalo and elephant. Previously "Bowling for Rhinos" has enabled us to replace the Supercub which we crashed during the capture of Kikwar and also to buy a big orange, 4-wheel drive lorry for the transportation of rhino and giraffe. This truck is now fully equipped for capture and is available for anyone in the public or private sector who has to move rhinos.

This year the money from "Bowling for Rhinos" is going a long way towards our current huge project of fencing in the whole of Lewa Downs, thereby increasing the size of the Sanctuary from the present 10,000 acres to 61,000 acres. This will make the Sanctuary one of the biggest and most successful for an endangered species. It will also make it more costly to run, mainly due to the necessity of employing large numbers of people because of the security factor. On the other hand, providing a lot of well-paid employment for the local people, especially in these years of drought and hardship, is good both locally and politically.

This year expenditure in running costs is expected to be about \$130,000 U.S. and will go up next year when the fence is completed and the extension becomes operative. Looking ahead we have already acquired, thanks to Halvar and Ian, five sub-adult white rhinos from the National Parks Board. We were supposed to receive three and two were to go to the Mara, but last minute complications with the Government resulted in all five coming here and our sending out two of our sub-adult white rhinos down to the Mara. All have settled well after a few initial dramas. We are hoping next year to bring in a few more black rhinos from Solio if they become available and if translocation funds can be raised. We then should be in a position to safeguard the future of a genetically viable herd of over 50 black and over 50 white rhinos. This will probably cost in the region of \$200,000 U.S. per annum. This figure must compare favorably with the same figure which was the cost of transporting one Sumatran rhino from Southeast Asia to an American zoo. In this light, I hope you will think your support of our endeavors not only worth while, but also cost effective.

On a more personal note, last year I had dramas with a leopard, but this year it has been with snakes. Both my horse and I nearly came to grief. She was bitten on New Year's Day by a puff adder and in August I had an eyeball to eyeball encounter with a very large spitting cobra. I rushed around the corner of my verandah and the snake, unable to retreat fast because of the smooth surface of the floor, instead reared up to meet me. With its head

## Ngare Sergoi Sanctuary Update, *Continued*

no more than four feet from mine, I thought I read in its black, expressionless eyes, my own certain death, so I screamed and it spat--not into my eyes but straight down by throat and I swallowed it! Convinced my last moment was close I grabbed the hay rake to kill it and was surprised to find myself in due course none the worse for wear at all. According to the pundits the story could have had another ending had I suffered from a wound in the mouth or an internal ulcer enabling the poison to enter my blood stream.

Those of you who knew him will be sad to learn that my husand Karl died in August after 4 ½ years of illness, the last four of which were spent in a hospital in his home town in the east of Switzerland.

From Switzerland in September I traveled directly to America and to the experience of a lifetime. Seeing so much of the country and meeting so many wonderful and kind people more than compensated both for the terror of having to speak in public for the first time, and for the endless hours spent in planes and airports. For this experience I am wholly indebted to Gerry Ellis and his wife, Karen Kane. Gerry has visited here many times and met Andy Lodge here and he also made most of the photos for my book "Rhino at the Brink of Extinction", which was published in London last year. Gerry also made all the slides for my slide show and told me what to do. Both the rhinos and I owe them both a big debt of gratitude and also to Andy Lodge who helped with some of the arrangements. I am also deeply grateful to Park East Tours and the K.L.M. Airlines for sponsoring my flight to Europe and the U.S. and back again.

I went to America with three objects in view: first, to thank Andy and the Support Group members and all those who through AAZK and its "Bowling for Rhinos" have given us such incredible support, worth nearly \$500,000 U.S. in the last few years. Secondly, to see if I could increase public awareness of the plight of the rhino, not only ours, but all five species. Thirdly, to see if we could not get a much bigger organization going which would appeal to a much wider section of the public outside of zoos. I went first to Karen and Gerry's house in Portland and started off with two unforgettable and much needed days holiday in Alaska. I know it sounds crazy to go to Alaska for two days but it was well worth it. My host, Joe Ordenez, runs a rafting enterprise in Haines which surely boasts some of the most spectacular scenery anywhere. In two days we managed two raft trips down the Chilkat River; I got colder than I have ever been before. I saw salmon in the thousands spawning and on the last evening, two huge brown bears fishing for salmon. It has been my dream for many years to see a wild bear and they were even more magnificent than I had expected. On my return to Juneau, as I was the only passenger in the plane and as the pilot was a friend of Joe's, I was taken on a special round-about flight over some glaciers which were quite terrifying, but unbelievably beautiful and another experience I shall not forget.

Holiday over, I returned to Portland and then went with Gerry to Toronto for my first talk which was even more unnerving than flying over the glaciers. I then went with Gerry to New York, which felt a bit like being at the bottom of the Grand Canyon, and then on to Philadelphia. There I stayed with Mark Levin and was able to thank the local AAZK Chapter for their support. There too, Andy, Gerry and I were able to sit down and discuss at length what our future plans should entail and how we should set about fulfilling them in the best interests of both the rhinos and Andy. From there Gerry and I returned to Toronto where John Cook, whose previous generosity has meant so much to us, and his wife

Marilyn, hosted a most successful fundraising dinner for the Sanctuary. John also most kindly agreed to help us get a Trust going and both his name and expertise will, I know, be of the utmost benefit to us. While there I was also able to visit the Toronto Zoo to thank their AAZK Chapter for their support. Gerry and I then returned to Portland and up to Seattle to thank their AAZK Chapter. That evening we were the guests of Bruce and Carol Hosford who had visited the Sanctuary earlier this year. Their lovely house has a superb view over the Puget Sound and they also gave a most generous party for the benefit of the rhinos.

From there I went down to San Diego to attend the annual AAZK Conference and was so happy to be able to meet so many of our supporters, to be able to thank them in person, and to be able to explain to them both what we are doing and our plans for the future. I was deeply

## **Ngare Sergoi Sanctuary Update,** *Continued*

grateful to learn from them that they plan to continue to support us in the future with "Bowling for Rhinos". While there I was the guest of Scott and Cindy Woodward and for the first time had the pleasure of meeting Andy's wife, Melissa. At the conclusion of the Conference I returned once more to Gerry and Karen's and then set off from Portland to Kansas City with an especially big thank you for that Zoo's Chapter of AAZK as it was there that "Bowling for Rhinos" originated. While there I stayed with Jacque Blessington.

The next day I flew to Chicago where I stayed with Debie Palay, the top fundraiser of this year's bowling event, and was given a wonderful welcome by all the zoo staff. There also I met up with Andy again and for the first time had the pleasure of meeting Brad Booth, who has given so much of his time and skill over the last years to the financial side of running the Support Group. Brad had driven Andy up in his van and from then on I was introduced to the joys of life on the open road in America, a rather different experience to driving in Africa. Next stop from Chicago was Toledo and another incredibly warm and happy welcome at the zoo there. Then via Columbus to Indianapolis to stay with Patty and Herbie Pearthree. Patty was not only last year's top fundraiser but is also the Coordinator for "Bowling for Rhinos". I had a very happy stay with them and was able to thank the other zoo supporters, and also meet Cara who came in second in fundraising for BFR this year. Cara took me for a ride on one of the elephants in her care, Sophie. The last time I rode an elephant bareback was in Ceylon nearly 40 years ago. From Indianapolis we returned to Columbus and then went up to Cleveland for another thank you, then back to Columbus where the Support Group started. I had such a wonderful reception there and was so very happy to meet all the people who have helped Andy over the years, and to meet up again with old friends Bill Pittenger, Dan Hunt and Susie Hanna. Before I left, Karen and Gerry joined us for final talks in Columbus.

Before returning to Kenya I spent a few days in Jersey with my trustee, Bill Hall, who has given so much of his time and expertise to help ensure the success of this project and to keep it on track. Then a last couple of days with my beloved Ricky who is now 91 but as sprightly and on the ball as ever. And then the long flight home to find that, thanks to Francis and our trackers, despite drought, all is well with the rhinos and those in need are all being fed. Now I sit typing this and looking at a sky of brilliant blue and hope that those clouds for which we long will soon appear.

Now my hopes for the future include the ability for Gerry and Karen and John Cook to get Rhino Trusts started in both the United States and Canada and to launch an educational program to raise general awareness of the plight of all five species of the world's rhinos. These animals now number no more than 10,000 altogether. It was thought until the middle of this year that there were still 3,000 black rhino of which half were in Zimbabwe. However, recent figures from Zimbabwe reveal that they have only 350-500 left, not 1,500. The Sumatran rhino numbers between 500-700. They have no sanctuary, all are widely scattered and probably not viable unless a sanctuary or sanctuaries can be created for them. The Javan rhino number between 50-70 animals. Fifty are in one sanctuary which has reached saturation point; another is badly needed. Time is running out for these animals; if they are to be saved we have to act now.

In February of this year Andy was with us along with a National Geographic film crew to make a film about his work for the Support Group. This film is expected to be released in February 1993; hopefully a massive membership drive for the Support Group can be launched then. Everyone who becomes a member will receive copies of our quarterly newsletter H.O.R.N. (Help Our Rhinos Now) published by Andy in Columbus. Each edition will contain an update from me as to what is happening here, other articles of interest, and updates of the work of the Support Group and AAZK's "Bowling for Rhinos". At a later date Gerry and I hope to get out another edition of "Rhino" with the text updated and a lot more of Gerry's wonderful photos. Some of the first edition are still for sale with Andy and Rafiki Books. We also hope to make a children's book out of the chapter called "Samia's Diary" and, in conjunction with that, to form a "Samia Club" for schools complete with an educational package. I would like to also get this package translated into Swahili for use here in Kenya.

## Ngare Sergoi Sanctuary Update. *Continued*

Spurred by my unending need for money for our rhinos here, I have written a second book about my life in Ghana and my travels in the Sahara and the Hindu Kush with Karl. It is called "Golden Dunes and Desert Mountains" and is to be published here by a company recently started by Francis' father, Tony Dyer. It is due out at Christmas and can be ordered directly from me or via Andy or Gerry and hopefully at a later date via Rafiki Books.

I hope that all of you had a Happy Christmas and New Year and that we can make '93 the year when the trend towards extinction is not only halted but reversed for all five species of rhino. Please help us to help them. Please become members of the Support Group and get your friends to join. Please talk to all with whom you come into contact about what is happening. Please make people realize that extinction is forever. Please write to us with your ideas as to what we can do. And remember, the choice is not between caring for people and caring for animals, all life is one and we are bound together on this beautiful planet. The real choice is between caring and not caring.

My deep gratitude to all who have helped, are helping and will help us.

---Anna Mertz



## Offspring of Slain Mountain Gorilla Mrithi Discovered in Rwanda

Mrithi, the popular 24-year-old silverback Mountain gorilla featured in the movie "Gorillas in the Mist" has a offspring named Cyabirego (Cha-be-reego) born to the female Inyuma. Mrithi, shot and killed in May 1992, is the only known Mountain gorilla casualty of the civil unrest in Rwanda and the first gorilla death of this nature since 1984. He was the dominant silverback of Group 13 at the time of conception of Cyabirego, leading researchers to believe Mrithi is the father.

The infant was first seen by trackers on 22 November 1992. Dr. Melvyn Richardson, DVM, Director of the Volcano Veterinary Center (VVC) is continuing to monitor the health of both mother and infant but has been unable as yet to get close enough to determine the baby's sex. The Morris Animal Foundation founded the VVC in 1986 to provide health care to Mountain gorillas.

Latest information from the Dian Fossey Gorilla Fund (formerly the Digit Fund) note that a 12-year-old blackback male named Ukwacumi has apparently assumed successful leadership of Group 13 although the group is still somewhat unstable and the Rwandan government has suspended tourist visits in view of the uncertain political situation.



**Inyuma is shown with her new baby Cyabirego in the Volcano National Park in Rwanda. The infant is the offspring of Mrithi who was killed in May 1992.** (Photo by Dawn Garcia)



# The 'Alala of Hawaii

By

Linda Santos and Susan Arbuthnot, Keepers  
Honolulu Zoo, Honolulu, HI

This past summer three bird keepers from the Honolulu Zoo had the rare opportunity to assist with the hand-rearing of a Hawaiian Crow.

The Hawaiian crow (*Corvus hawaiiensis*) or 'alala, is one of the most endangered birds in the world. 'Alala are endemic to the island of Hawaii. The Hawaiian name, 'alala, may have either of two derivations. 'Alala is to cry like a young animal. Or it could be a combination of ala, to rise up, and la, the sun; hence, to arise with the sun. (George C. Munro, BIRDS OF HAWAII, 1971). Although their ancestral origin is unknown, it has been speculated that they probably are derived from colonization of a *Corvus* ancestral species from the Australian region.

History shows that the 'alala were once numerous and abundant in the late 19th century but had rapidly declined to approximately 78 birds by 1982. The rapid decrease in numbers has been attributed to:

1. Diseases (both introduced)
  - a. Avian malaria
  - b. Avian pox
2. Loss of native habitat
  - a. Logging
  - b. Clearing of pastureland and agriculture
  - c. Grazing by introduced mammals
3. Predation
  - a. Indian mongoose
  - b. Roof rat and Norway rat
  - c. Polynesians (hunted birds for feathers for kahilis and dressing idols)
4. Human Colonization
  - a. Introduction of pesticides
  - b. Hunting bird as agricultural pests

The 'alala differ from North American crows in being a duller black in color and in having the wings tinged with brown. The feathers of the throat are stiff, with hairlike webs and grayish shafts. The bill and feet are black except that the ventral surface of the toes is grayish, flesh-color. The iris is dark brown. Total length is given as 18-20 inches. (HAWAIIAN BIRDLIFE, Sec. Ed., Berger, 1981).

At present, the total count is 23 birds, 11 of which are in captivity at the Olinda Endangered Species Captive Propagation Facility (OESCPF) on the Island of Maui. The remaining wild population of 12, which includes one 1992 hatchling, are on the 64,000-acre McCandless Ranch, located on the Island of Hawaii.

On 27 May 1992, OESCPF had a Hawaiian crow chick hatch--the first successful hatching since 1990. Both parents are wild-caught. The egg was artificially incubated to allow the parents to lay a second clutch.

Keepers from the bird department of the Honolulu Zoo were asked to assist with the hand-rearing. Linda Santos, Susan Arbuthnot, and Verla Atkins rotated going to Maui over a five-week period. Their sole responsibility was to work with the hatchling.

The chick was named "Lanakila" which means "victory". After hatching, the chick was moved into an infant incubator for approximately three weeks. Following this, Lanakila

**The 'Alala of Hawaii, Continued**



*Photos by Susan Arbuthnot*



At top left, Judy Pangelinan Subaitis is shown feeding "Lanakila", the Hawaiian Crow hatched at the Olinda Endangered Species Captive Propagation Facility on the Island of Maui. At top right, "Lanakila" is shown in a incubator at the Olinda facility. The chick, the offspring of two wild-caught birds, hatched on 27 May 1992 after being artificially incubated.



Above photo shows "Lanakila" as a fledgling, still displaying a downy pelage. At right, "Lanakila" at approximately seven weeks of age shows more mature feathering. The name "Lanakila" is Hawaiian for "victory". There are currently only 23 individuals of this species, 11 in captivity and 12 on a ranch on the Island of Hawaii.



## The 'Alala of Hawaii, *Continued*

was removed from the incubator and placed in a woven nest basket. A few days before fledging, the nest basket was moved from an indoor room to the outdoor crow facility where Lanakila had audio and visual contact with another crow. At 42 days of age, Lanakila left the nest basket and, within two weeks, was capable of flight. 'Alala fledglings are not strong flyers and spend most of the time climbing in vegetation or on the ground. It is at this time that they are highly susceptible to predators.

The diet for hand-rearing consisted of bee larvae, rat pinkies, applesauce, native berries and crow mix which is a blended version of the adult diet. During the daylight hours, the chick was fed at one-hour intervals which progressed to two-hour intervals as it matured. At each feeding, taped recording of begging juvenile crows was played to stimulate appetite. A hand puppet was used when spoon feeding to lessen chick imprinting on humans. Parents will supplement feedings up to eleven months. At present, Lanakila is eating on its own and is being supplemented once a day.

The U.S. Fish and Wildlife Service and the State Department of Forestry and Wildlife are developing a strategy for managing the remaining birds.

Plans for a field site for artificial incubation and rearing of the first clutch from the wild population are being discussed. Currently, it has been agreed to bring only eggs in for incubation and if successful, OESCPF may gain new breeding stock by this method. At this time, no wild birds will be brought into captivity, and none in captivity will be introduced back into the wild.

The future of the 'Alala is uncertain, and one can only hope for a miracle to ensure its survival.



# Columbus Zoological Gardens Gorilla Nursery Protocol

*Compiled by Columbus Children's Zoo Staff*

Over the last three decades the nursery staff of the Columbus Zoo has been repeatedly challenged with the task of hand-rearing infant Lowland gorillas (*Gorilla gorilla gorilla*). What follows is a brief description of the procedures Columbus has developed to successfully hand-rear these infants with the goal of returning them to functional family units.

If the probability of having to hand-rear an infant gorilla is high, it is practical to have a satisfactory nursery area prepared long before the impending birth.

### We suggest you prepare:

1. An easily cleanable area
2. An area where temperature and humidity can be easily maintained
3. An area that is relatively "gorilla-proof" (as you will discover, they eventually find a way to get into everything).

## Columbus Zoo Gorilla Nursery Protocol, *Continued*

### At Columbus we have:

#### I. A nursery that is divided into two rooms.

##### A. Room 1:

1. The main entrance to the nursery is equipped with a foot bath filled with A-33.
2. The 1st part of Room 1 is a non-sterile area where the keeper leaves his/her shoes and street clothes and changes into nursery garb.
3. This non-sterile area also contains all supplies not needed immediately.
4. The main area of Room 1 contains all equipment needed for successful nursery procedure, i.e. refrigerator, microwave, scale, incubator, washer, dryer, all daily supplies.

##### B. Room 2:

1. This is the main nursery area where all activity (playing, sleeping, feeding) takes place.
2. This room contains all playing apparatus and everything needed to prevent keeper from going stir-crazy.

### We greatly recommend:

1. A smooth floored nursery - rubber, cement, etc. to facilitate cleaning and reduce areas where microorganisms can establish themselves.
2. Daily cleaning of all surfaces - floors, appliances, climbing structures and toys with 0-Syl®, Stat III® or similar substance.
3. That necessary nursery appliances such as heaters, air conditioners, humidifiers, thermostats, sinks and wiring be appropriately protected. (Gorilla infants have incredibly strong jaws and lots of curiosity.)
4. Mattresses on floor so keeper and infant can sleep together - this provides warmth and contact for baby and eliminates crib which becomes quickly obsolete and dangerous anyway!

### Our keepers wear:

1. Hospital scrubs and gown.
2. Head cover, rubber gloves, surgical mask and foot covers.
3. When baby's health is stabilized, mask and head cover is optional (mask always used when keeper is sick).
4. Gloves are also optional once baby is introduced to outside play yard.

Our main goal is to raise the infant in a manner similar to how his/her mother would and to prepare the infant for reintroduction.

1. For the first few weeks of life the infant is carried constantly to provide all-important warmth and contact.
2. As the infant becomes more aware and curious, he/she is placed on the ground for short periods.

## Columbus Zoo Gorilla Nursery Protocol *Continued*

3. As the infant becomes more mobile and comfortable with its surroundings, it will begin to crawl/scoot around. You will see that an infant's "investigations" will increase in distance and duration as its bravery and security increases.

### Feeding Procedure:

1. Our first choice of formula is a human baby formula made by Ross Labs called Similac®. However, some of our infants have experienced lactose intolerance and Isomil®, a soy-based formula, has been used. We have also had an infant with a sucrose intolerance and a formula called Isomil SF (Sucrose Free) worked for him. If needed we supplement with Pedialyte® in between feedings.
2. Our feeding schedule (every 3 hours) was modeled after how a wild infant gorilla would feed, i.e. several short feeding bouts.
3. The infant was fed every three (3) hours for approximately 3 months. As the infant becomes accustomed to the routine it is possible to stretch the feedings to once every four (4) hours.
4. As the infant's sleeping pattern becomes regular, it may be possible to eliminate the early A.M. feeding.

What follows is the feeding schedule we used for the infant we are currently raising in our nursery.

#### Day 1:

1st feeding = 30 mls Pedialyte  
2nd feeding = 30 mls Pedialyte (depending on hydration of baby)  
3th & 4th feedings = 15 mls Similac/15 mls Pedialyte  
After 12 hours = 23 mls Similac/7 mls Pedialyte

1st feeding second full day-Day 9 = 30 mls Similac full strength  
Days 9 - 13 = 40 mls Similac/feeding  
Days 13 - 20 = 50 mls Similac/feeding  
Days 20-27 = 65 mls Similac/feeding  
Days 27-34 = 70 mls Similac/feeding  
Days 34-41 = 75 mls Similac/feeding  
Days 41-48 = 90 mls Similac/feeding  
Days 48-69 = 95 mls Similac/feeding  
Days 69-90 = 100 mls Similac/feeding  
Days 90 - = 120 mls Similac/feeding

Any time stool becomes "loose" we decrease the amount of formula and add Pedialyte to prevent dehydration. This mixture is continued until the stool returns to normal.

### Actual feeding procedure:

1. Infant is held close to breast and fed slowly to prevent aspiration.
2. At first, infant is fed approximately 10 mls and then burped.
3. As infant's sucking ability and volume of milk increases, larger amounts can be given between burps and encourage infant to crawl towards bottle.
4. Even at 120 mls feedings were separated into two 60 ml feedings.

### Feeding time is also vitals time:

- respiration, pulse, temperature and girth taken before each feeding.
- changed to once every eight (8) hours as infant matures.

## Columbus Zoo Gorilla Nursery Protocol, *Continued*

### Solid Food:

- The infant is introduced to solid foods when the first teeth erupt.
- No baby food is given because infant would never get soft food in the wild.
- At first baby is only allowed to smell and gnaw on food.
- Cooked sweet potato and carrot are offered first.
- As infant's number of teeth and chewing ability increase, new foods are added (banana, orange, green bean, lettuce, etc.) and raw foods and monkey chow are provided *ad libitum* throughout the nursery play area.

During feeding, keeper makes feeding vocalizations and encourages baby to eat - with solids this may involve keeper also eating food to inspire infant's curiosity. NOTE: All vegetables are offered first to familiarize the infant with these new tastes. Fruits are not offered until the infant is eating vegetables since fruits become 1st choice feeding items.

### Other Behaviors:

The keeper staff is obligated to encourage the infant to develop its motor skills and to promote species-specific behaviors.

- The nursery is filled with climbing structures and a variety of "toys" to allow the infant to teethe and to develop his/her motor skills.
- Species specific wrestling and play biting is an important activity.
- Gorilla-like discipline is also employed. A gorilla "no" cough or actual physical intervention (arm or leg grab) is used to terminate inappropriate behavior.
- Other species specific behaviors like back-riding is also encouraged.

\*Remember - the nursery staff's main objective is to raise a baby gorilla not a baby human! Reintroduction is success!

To promote further species specific behavior, trips to the ape house are implemented:

The infant is taken back to the Ape House as soon as it is "stabilized" in the nursery - usually by Day 2 or 3 after pulling - for two (2)-hour visits. By one to two weeks after pulling, the infant is spending four (4) hours a day. The keeper sits in the cage with the infant at all times. By three (3) months the infant is spending up to eight (8) hours a day in the Ape House. An introduction can be done by six (6) months provided the surrogate mother and the group dynamics are stable.

- These daily visits familiarize the infant with the sights, sounds and smells of its future home.
- The initial visits are composed simply of holding the infant and letting him/her "experience" the surroundings.
- As the infant becomes more comfortable with the Ape House it is important to move into one of the actual animal enclosures. Here the infant can investigate its future home while also observing gorillas in the adjacent cages.
- Depending on group logistics - decisions must be made as to which group the infant will be introduced.



# International Training Center for the Captive Breeding of Endangered Species

**Purpose:** to train individuals in the techniques of captive breeding of a variety of endangered species so that they can advance the cause of wildlife preservation in their respective countries.

**Background:** The Wildlife Preservation Trust is an international nonprofit organization dedicated to the support of captive breeding of endangered species. It supports projects in captive breeding, field surveys, reintroduction, research and education. The zoological facility for the Trust's work is located on the island of Jersey, Channel Islands, British Isles. This facility is both a zoo and breeding-research facility for endangered species, and has a collection of over 100 species of birds, mammals and reptiles. The International Training Center is an educational facility for training in captive breeding and species conservation; it combines dormitory, classroom and research facilities for students, staff and visiting scientists.

**Program:** the training program consists of ten or sixteen weeks of intensive work in all divisions of the zoo. Trainees work in close contact with zoo staff in all phases of animal keeping and breeding. Each trainee spends two weeks in each section and a final two weeks on an independent project. Daily duties are supplemented with weekly seminars on a variety of topics. The program is flexible in terms of length and focus.

**Eligibility:** the program is designed for individuals with previous practical experience with animals: zoo and animal center staff and postgraduates in conservation-related fields.

**Application:** applications may be obtained from the address below. Selection is made in August of each year. Applications should be submitted by **1 July** for training beginning the following year.

**Location:** Jersey, Channel Islands, British Isles   **Dates:** starting date by arrangement

**Fees:** Tuition is £145 (approximately \$247). Full room and board costs are £125 (approximately \$213) per week. Trainees are responsible for air fare to and from Jersey, Channel Islands, as well as personal expenses.

**For application and further information write or call:**



Training Program  
Wildlife Preservation Trust International  
3400 West Girard Avenue  
Philadelphia, PA 19104  
(215) 222-3636 - telephone  
(215) 222-2191 - FAX

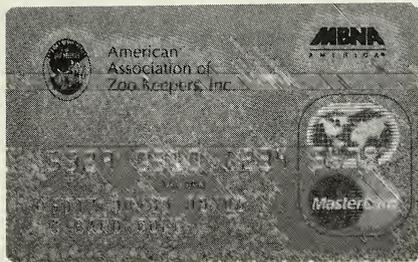
**\*\*\*Deadline for application for 1994 positions is 1 July 1993\*\*\***

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Or if you prefer, complete the application below and mail to: MBNA America, P.O. Box 15464, Wilmington, DE 19885-9440.

## APPLY TODAY!

24 hours a day, 7 days a week

# 1-800-847-7378, ext. 5000

Be sure to use the priority code when calling: KRCJ.

\*Certain restrictions apply to these benefits. The summary of credit card benefits accompanying the credit card Premium Access Checks® describes coverage terms, conditions and limitations. MBNA America® and Premium Access Checks® are federally registered Service Marks of MBNA America Bank, N.A. The account is issued and administered by MBNA America Bank, N.A. MasterCard® is a federally registered Service Mark of MasterCard International, Inc., used pursuant to license.

### PRIMARY APPLICANT SECTION (Please print)

**Yes!** I wish to apply for the AAZK MasterCard® cards with all the benefits described above. Should my application for the Gold MasterCard not be approved, this request constitutes my application for the Silver MasterCard.

KRCJ  
65-203  
65-554

POSITION \_\_\_\_\_  
YEARS THERE \_\_\_\_\_ ANNUAL INCOME \$ \_\_\_\_\_  
OTHER INCOME\* \$ \_\_\_\_\_

CHECK ONE  Gold MasterCard  Silver MasterCard  
(Please print)

SOURCE \_\_\_\_\_  
\* (Alimony, child support, or separate maintenance income need not be revealed if you do not wish it considered as a basis of repayment.)  
PREVIOUS EMPLOYER \_\_\_\_\_  
(If less than 3 years at current employment.)

NAME AS YOU WOULD LIKE IT TO APPEAR ON CARD  
FIRST \_\_\_\_\_ MIDDLE INITIAL \_\_\_\_\_ LAST \_\_\_\_\_  
ADDRESS \_\_\_\_\_

PREVIOUS ADDRESS \_\_\_\_\_  
(If at present address less than 3 years.)

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

MOTHER'S MAIDEN NAME \_\_\_\_\_  
(For use when you request special action taken on your account.)

HOME PHONE ( ) \_\_\_\_\_ BUS. PHONE ( ) \_\_\_\_\_

CURRENT CREDIT CARD ACCOUNTS  MasterCard®  Visa®  American Express®

ARE YOU:  Renting  Own  Buying Monthly Payment \$ \_\_\_\_\_

I have read this application, and everything I have stated in it is true. MBNA America Bank, N.A. is authorized to check my credit, employment history or any other information and to report to others such information and credit experience with me. I understand that the acceptance or use of any card issued will be subject to the terms of this application and the Credit Card Agreement that will be sent with the card, and agree to be responsible for all charges incurred according to such terms. (Seal)

SOCIAL SECURITY # \_\_\_\_\_

DATE OF BIRTH \_\_\_\_\_

PRESENT EMPLOYER \_\_\_\_\_

X APPLICANT'S SIGNATURE \_\_\_\_\_ Date \_\_\_\_\_

NATURE OF BUSINESS \_\_\_\_\_

### CO-APPLICANT SECTION (Please print)

Use this section to request extra cards. If you wish an additional card issued to a co-applicant over 18 years of age, complete the information below.

OTHER INCOME\* \$ \_\_\_\_\_ \* (Alimony, child support, or separate maintenance income need not be revealed if you do not wish it considered as a basis of repayment.)

CO-APPLICANT'S NAME AS YOU WOULD LIKE IT TO APPEAR ON CARD  
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SOURCE OF OTHER INCOME \_\_\_\_\_

RELATIONSHIP TO APPLICANT \_\_\_\_\_ SOCIAL SECURITY # \_\_\_\_\_

I have read this application, and everything I have stated in it is true. MBNA America Bank, N.A. is authorized to check my credit, employment history or any other information and to report to others such information and credit experience with me. I understand that the acceptance or use of any card issued will be subject to the terms of this application and the Credit Card Agreement that will be sent with the card, and agree to be responsible for all charges incurred according to such terms. (Seal)

EMPLOYER \_\_\_\_\_ YRS. THERE \_\_\_\_\_

X CO-APPLICANT'S SIGNATURE \_\_\_\_\_ Date \_\_\_\_\_

POSITION \_\_\_\_\_ ANNUAL SALARY \$ \_\_\_\_\_

WORK PHONE ( ) \_\_\_\_\_

I (We) authorize MBNA America® to investigate any facts, or obtain and exchange reports regarding this application or resulting account with credit reporting agencies and others. Upon request I (we) will be informed of each agency's name and address.

<b>† Annual Fees</b> \$40 Gold MasterCard; \$20 Silver (Fee waived first year)	<b>Grace Period For Repayment Of Balances For Purchases</b> Method of Computing the Balance for Purchases	<b>At least 25 Days from statement closing date</b> Average Daily Balance (including new purchases)	<b>Transaction Fee For Cash Advances, And Fees For Paying Late or Exceeding The Credit Limit</b>	<b>Transaction Fee For Bank and ATM Cash Advances:</b> 2% of each Cash Advance, \$2 Minimum, \$25 Maximum; <b>Transaction Fee For access check Cash Advances:</b> 1% of each Cash Advance, \$2 Minimum, \$10 Maximum. Late Payment Fee: \$15, Over-the-Credit-Limit Fee: \$15.
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The information about the cost of the card described in this application is accurate as of 3/92. This information may have changed after that date. To find out what may have changed, call 1-800-847-7378, ext. 5000.

# Hand-Rearing Procedures for Pronghorn Antelope (*Antilocapra americana*) at the Columbus Zoo

*Compiled by the Columbus Children's Zoo Staff*

Fawns are left with their mothers for approximately 24 hours after birth. At that time, they are removed from the yard and brought to the nursery. When the fawns arrive at the nursery we get an initial weight and the vets administer an injection of Bo-Se®. The navel is also treated with either Nolvasan® or Betadine® and an ear tag is attached. Navels should be checked over the next few days for infection.

Our pens are made of 2 x 4's and plywood (solid walls and doors). They are 4 ft. square with 4 1/2 ft. high sides. A piece of indoor-outdoor carpet is placed on the floor and then the pens are bedded well with good quality alfalfa hay. Two larger pens (4 ft. x 7ft., same height) are also prepared in case they are needed. There is no way for the fawns to see each other when in the pens, however, they can hear each other if they vocalize. The pens are all located in the same room and are built adjacent to one another. We attempt, at least initially, to keep noise in the pronghorn area to a minimum. However, the room in which they are kept is about 20 ft. from a main door and major keeper traffic area.

Prior to the pronghorn births we have assembled a crew of volunteers from our zoo docents to be "Pronghorn Sitters". The first day in the nursery the fawns are usually alone in their pens; the exception being the extremely flighty animals where a keeper may sit with it. On the second day we have called upon our "Sitters" and they literally sit in the pens with the fawns, touching them, speaking to them (or singing or whatever). This is done from 0800 to 1600 hrs for the first 2-3 weeks. After this sitters are present just for the morning, although if they want to come in the afternoon we rarely turn them away. "Babysitting" continues until the animals are shipped out. In this way the fawns' best friend becomes a human.

Fawns are weighed daily prior to the first bottle of the day. As they get older we may actually feed them on the scale to get them to hold still. A towel is placed on the scale to minimize slipping. Our formula is Doe Milk Replacer™ from the National Food Laboratory in Dublin, CA. Feeding protocol follows:

## Mixing Instructions

5 oz. Doe Milk Replacer (140g) per 16 oz. water (454g) Be sure to weigh powder. Mix well and refrigerate.

## Feeding Instructions

<u>Age (days)</u>	<u>Amount per bottle</u>
2 - 8	120 mls (4 oz.)
9 - 14	150 mls (5 oz.)
15 - 17	180 mls (6 oz.)
18 - 21	210 mls (7 oz.)
22 - 30	240 mls (8 oz.)
31 - 38	270 mls (9 oz.)
39 - 44	300 mls (10 oz.)

## Hand-rearing Protocol for Pronghorn Antelope, Continued

<u>Age (days)</u>	<u># Bottles per Day</u>	<u>Times for Bottles</u>
1 - 44	4	Days 1-8 0700, 1200, 1700, 2100 hrs
45 - 59	3	Days 9-44 0700, 1100, 1500, 1900 hrs
60 - 74	2	
75 - 90	1 (also reduce volume by one half)	
91	wean (wean all according to youngest age)	

### Washing Bottles

Soak bottles in water with small amount of bleach (15 mls concentrated bleach in sink full of water) for 5 minutes. Then wash with dish soap. Nipples should be dipped briefly in the bleach water and then washed with soap.

Weaning is actually done as close to Day 90 as possible depending on the age of the youngest fawn and any other extenuating circumstances. Depending on the severity of any diarrhea, formula is either cut out entirely and replaced with Pedialyte® or diluted Pedialyte® to  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$  strength. The animal is then gradually brought back to full strength formula. The nipple we use is a soft lambs nipple from NASCO (901 Janesville Ave., Ft. Atkinson, WI 53538-0901, Stock #C231N, 1-800-558-9595.) Bottles are offered as scheduled with mouths pried open if necessary. Eventually all have gotten hungry and started sucking within a day or so. A grain mixture of equal parts Calf Manna™, rolled oats and low fiber herbivore pellets (ADF 16) is offered free choice beginning at Day 7. If animals do not begin eating this on their own, a small amount is shoved into the mouth at each feeding.

At about 5 days of age fawns begin going outside into a small yard for exercise. This yard is approximately 10 ft. wide and 55 ft. long. Bright orange plastic mesh is used as fencing. A height of 4 ft. is sufficient at first, but was increased to 7 ft. when some older fawns began attempting to jump out. Babysitters are always in attendance when fawns are outside. Alfalfa hay, fresh water and the grain mixture are available in the yard. Initially, the fawns go out individually for short periods of time (about the amount of time it takes to clean, dry and re-bed their pen). Gradually the number of fawns out together and the length of time out increases until a maximum of 4 are out for 2 hours. We try to do this from 0800-1000 hrs and from 1000 to 1200 hrs when the crowds may not be too bad. Any visitors approaching are asked not to touch the fence or make sudden movements or loud noises. While the fawns are in the yard the docents keep track of what the fawns are doing - i.e. eating hay or grain, stooling (and its form), urinating. Their information is then logged into each animal's records.

Physical restraint, when needed, is usually a bear hug type hold with one arm over the back and around the body and the other arm across the chest using the hands to secure the legs.

Hand-rearing does seem to have made a tremendous difference in being able to handle the pronghorn and in shipping. This year we were able to ship out all our animals in an enclosed trailer (width same as a regular horse trailer and length about 4 ft.). All settled into bedding right away and arrived safely. Prior to this we shipped them in medium sized sky-kennels. This has worked fairly well for us if the fawns are shipped out at around 30 days of age. Fawns are crate-trained beginning at about a week of age. The crates are well-packed with good quality hay and the fawns are placed inside. Babysitters are in attendance for the first week or so of training. The time spent in the crate increases from 15 minutes to 1 hour over the course of the training. Fawns are usually encouraged to walk out of the crate on their own with a bottle reward. This year we did not crate-train our fawns as we knew they would not be shipped out in crates.

Over the last few years we feel our fawn deaths were mostly avoidable. Two deaths were related to being in sky-kennels; one died during shipping (possibly due to the crate being too small - no injuries found upon necropsy) and the other was euthanized after badly breaking its leg when put in a crate. As I said previously, we did not crate-train fawns this year and this animal fought the process. The other deaths have been due to infections of some kind, one being meningitis, the other an umbilical infection that became systemic despite our efforts.



# CHAPTER NEWS

## Oklahoma City AAZK Chapter

Our new officers for 1993 are:

President.....Ken Hovey  
Vice Pres.....Doug Latham  
Sec/Treas.....Becky Wagner

Our Conservation Parking Meter has arrived and was unveiled in January at the Omniplex which is next door to the zoo.

In October we adopted a park and will keep it picked up and hopefully plant some flowers in the spring.

In December we had a Christmas craft and bake sale and raised over \$300.00 to donate to Oklahoma's Tall Grass Prairie.

Nineteen-ninety-two was the first year that our Chapter has had the funds to help send a keeper to the National AAZK Conference and I was the lucky one who got to go. I had a wonderful time and learned so much! San Diego AAZK Chapter did a terrific job of putting it together.

--Janet Wiard, '92 President

## San Diego AAZK Chapter

December's Christmas Party...in keeping with the holiday spirit of giving, the Chapter's Christmas Dinner Party included a T-shirt auction and raffle, benefitting the Miami Metro Zoo and the AAZPA Crisis Fund. A total of \$313.95 was raised.

Thanks and appreciation to the following AAZK Chapters that donated T-shirts for the event: Columbus, Honolulu, Indianapolis, Jacksonville, Little Rock, Memphis, New Orleans/Audubon Zoo, North Carolina, Oklahoma City and Topeka.

Special thanks to Santa's elves who helped make the Christmas party a success: Turkey chefs: Nicki McGahey and Christina Simmons, Children's Zoo keepers; San Diego Zoo

Banquet Staff; Raffle Coordinator - Neil Ferrier, Lifetime Member; T-shirt Coordinator - Lance Aubrey, SDWAP Lead keeper; T-Shirt Auctioneers - Steve Castillo, Zoo Mammal keeper; Vicki Steele, SDWAP Field keeper and Chapter President.

And ALL Chapter members for their continued caring and support in 1992! It was a great year.

--Mary Dural, Chapter Liaison

## Chinook Chapter AAZK (Calgary Zoo)

Now that 1993 is here, it is time to look back over the events of 1992.

In conjunction with Zoo & Aquarium Month, our Chapter sponsored Keeper Weekend. The keepers gave a variety of talks to the public covering such topics as Reptile Rations, Gorillas in Our Midst, Wonder of Eggs, Tiger Tidbits, and many more. Other events included a Zoo Poo identification contest and wrist tags for the kids who were then allowed to enter our historic barred bear enclosure (minus the bears we hope!). A fundraising bake sale was held with monies going towards the purchase of a digital scale for the Animal Care staff.

An excellent slide program and video was presented by Carol Peterson (Zoo Docent and gorilla nut) on her trip to Zaire filming Lowland and Mountain gorillas.

September saw the 4th Annual Zoolympics! About 70 staff and docents attended this after-hours, fun-filled, wacky event.

Our very imaginative relays included...slurping up a blob of jello to extract a plastic animal embedded in it...holding a baby bottle between your knees as a team member sucked it dry, while both of you are blindfolded...popping balloons with a porcupine-like tail strapped to your waist and much more. Music, a BBQ, and an Award Ceremony were all part of the evening. Specially designed T-shirts were also available.

## Chapter News, *Continued*

Two Calgary keepers were able to attend the National AAZK Conference in San Diego. As expected it was a stupendous conference full of knowledgeable and enthusiastic people dedicated to their profession. We are fortunate to be able to have such opportunities to talk to so many people who are on the same wavelength!

In November we had another slide program presented by biologist Marty Urquhart on his field work involving Rocky Mountain Goats in Alberta. Amazing stuff!

The Chapter has renewed its sponsorship of Prakash Amte, our Indian Keeper. Although our communication with him is not the standard "pen-pal" relationship, we feel our sponsoring his membership with AAZK is informative and helpful to him.

Officers elected for 1993 are:

President.....Laurie McGivern  
Secretary.....Elaine Wilms  
Treasurer.....Bill Blaney  
Chapter Liaison.....Mona Keith

*--Mona Keith, Chapter Liaison*

### Exotic Feline Breeding Compound

Our AAZK officers for the year 1993 (Chinese Year of the Cat) are:

President.....Janice Herrin  
Vice Pres.....Gene May  
Treasurer.....Annie Nielsen  
Secretary.....Laurel Christ  
Liaison.....Johnny Merk

Happy New Year!

In December 1992, the EFBC funded yet another Invitro-fertilization program. Unfortunately, only one viable embryo was created. We proceeded with an alternative womb insemination (access through the abdominal wall) and as of this writing, two successful pregnancies are suspected. Cross your fingers!

We want to thank those from the San Diego Zoo, the University of Tennessee and all the EFBC volunteers who put in 20-hour days to make the program go as smoothly as possible. We especially thank Dr. Michael Duddey from New Orleans, who is one of the foremost human fertility specialists in the U.S., who donated his surgical time to help our research program. Team work has never been more fulfilling!

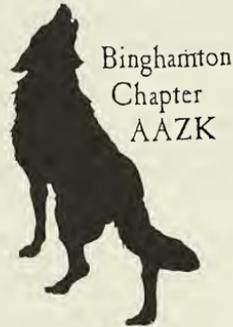
*--Johnny Merk Chapter Liaison*

### Binghamton Chapter AAZK

New officers for 1993 are:

President.....Mike Forbes  
Treasurer.....James Dunster  
Secretary.....Jackie Peeler

This past year we worked on various fundraising events with our docents. We were able to raise enough money to purchase new uniform shirts for both the staff and docents; and set up a fund for speakers at the monthly docent meetings.



At the December meeting we adopted our first logo (see insert), and started work on a new fundraiser scheduled for June - a photo contest to honor National Zoo & Aquarium month. Plans are also underway for our first Bowling for Rhinos which will be held in early April.

*--Jackie Peeler, Sec'y*

## Chapter News, Continued

### Dallas Zoo AAZK Chapter

Chapter officers elected for 1993 are:

President.....Sara Weller  
Vice Pres.....Sue Averill  
Sec/Treas.....Ann Stevens

Congratulations to Sara and Ann, serving their second terms in office, and to Sue for dedicating the next year of her life to AAZK. Kevin Lew has accepted the position as Chapter Liaison for a second straight year after the excellent job he did last year.

During the end of 1992 our Chapter adopted the chimpanzee "Goblin" from the Chimfunshee Wildlife Orphanage. Chimfunshee is a chimpanzee sanctuary located on a 10,000-acre ranch in Northern Zambia.

A holiday decorating contest was sponsored by our Chapter in December. It featured many areas of the zoo festively decorated by zoo employees. The grounds and maintenance department won the \$50 first prize; second prize was given to the primate department who received fresh baked desserts. Third prize went to the animal hospital crew who received an assortment of donuts.

We wish a fond farewell to two of our past members: former vice-president Anne Knapp who initiated our recycling projects and Dan Vitello

who provided us with much guidance learned from presiding over the Hawaii Chapter. Good luck in your endeavors Anne and Dan!

--Kevin Lew, Chapter Liaison

### Greenville Zoo AAZK Chapter

New Chapter officers for 1993 are:

President.....Janie Raxter  
Vice Pres.....Liesl Wiesen  
Treasurer.....Anke Meyer  
Secretary.....Brina Mauro  
Chapter Liaison.....Lisa Thomas

This past year the Chapter collected 370 lbs. of aluminum cans for recycling resulting in \$102.82 in revenue. To help with disaster relief in South Florida, \$200 was donated to the Hurricane Andrew Relief Fund. Also \$300 was donated to South Carolina Non-Game Heritage Trust for the preservation of wild lands within the state.

Our guest speaker in September was our own Assistant Director Richard Farinato. He spoke on his teaching trip to the Guadalajara Zoo, Mexico. In November, keeper Janie Raxter spoke on her recent trip to the 13th International Elephant Workshop in Atlanta.

--Liesl Wiesen, Vice Pres



## Orphaned Dove Formula

The following materials are reviewed from WILD BIRD REHABILITATION: SPRING CARE OF BABY BIRDS, Anne Marie Tappan, May, 1987, and reprinted with permission from Wildlife Health News, Vol. 3, No. 2, 1992:

1 jar (3 1/2 oz.) strained Baby Meats (Gerber or Beechnut) -- NEVER USE LIVER OR PORK  
1 cup dry Feline Science Diet, Maintenance Formula, finely powder it in the blender  
1/2 tsp. Super Preen™ vitamins  
1/2 tsp. Brewer's Yeast (not baking yeast)

Add enough water to the mixture to make it the consistency of apple sauce or pudding.





# Book Review

## **The Evolution of Parental Care**

Monographs in Behaviour and Ecology

By T.H. Clutton-Brock, 1991

Princeton University Press

352 pp. Cloth \$49.50 Paper \$19.95

*Review by Ann Ch. Weaver  
Mammal Department  
San Diego Zoo, San Diego, CA*

Contemporary zookeepers literally race to work...and not only in those facilities ill-bred enough to use time clocks. We race the clock of extinction, fighting breathlessly to develop skill in captive reproduction. Reproduction relates to habitat, seasonality, advertisement, courtship, pregnancy, parental care and a thousand other details. T.H. Clutton-Brock's latest contribution, The Evolution of Parental Care is a theoretical treatment of the many considerations of evolution and behavior once animals find themselves amid the soft sounds of young.

This book seeks to understand the principal costs and benefits of parental care and deals in generalities. It asks why species show such different parental behavior; whether parental responses are adjusted to evolutionary advantage; and how parental energy is doled out between sons and daughters. Fourteen chapters tease through conflict and investment; methodology and vocabulary; evolutionary stable strategies; sexual selection and more. The book presents a humbling amount of thought as well as an impressive backdrop of data on the dynamics of development.

You'll dwell deliciously for months if you enjoy the cognitive complexities of Games Theory and evolutionary trade-offs yet still glean much information of general utility as time-conscious keepers of the captive realm. The following from Clutton-Brock's erudite perspective are food for thought.

☛ The majority of animals replace parental care with large eggs...necessary resources to get young off and running.

☛ Oviparity or 'laying eggs' appears to be the ancestral state. Most oviparous species retain their eggs *in utero* for around half of their total period of development.

☛ Clutton-Brock speculates that oviparity or egg laying led to the more elaborate mechanisms of egg retention and live birth. In *egg retention*, development is aided by the internal warmth of the mother's body; the egg is retained so long in *ovoviviparity* that it hatches and is then 'born'. *Viviparity* is live-birth, like puppies. These mechanisms help more young survive and apparently evolved to offset unfavorable conditions, like harsh environments, heavy predation or parasitism, or intense competition.

☛ Harsh or unpredictable conditions favor live birth in invertebrates, and --not surprisingly--in parasitic species. Shallow water breeders and freshwater species also tend to bear live, understandable in view of such factors as variable lakeshore temperatures in the Fall.

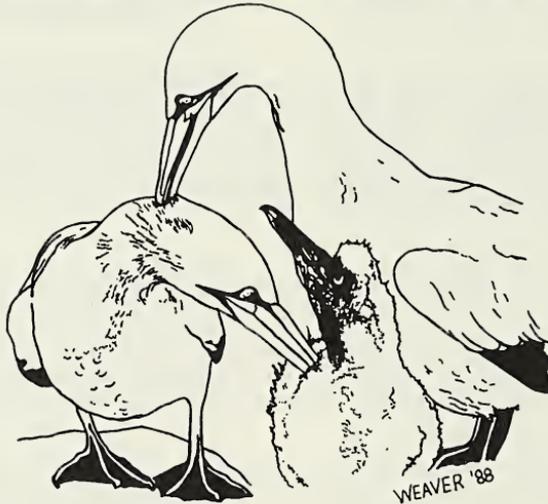
☛ Harsh conditions among reptiles include cold weather. While turtles and crocodilians are oviparous, some 15% of snakes and lizards bear live young. Live birth has developed independently nearly a hundred times in mostly ovoviviparous species.

## Book Review - Evolution of Parental Care, *Continued*

☛ In some species, females increase their protein intake during egg laying by eating more insects or mobilizing body protein. In a number of species where males guard eggs, males may compensate for a loss of physical condition during guard duty by eating a proportion of the eggs (!).

☛ The amount of heat that must be transferred to eggs is relatively high in smaller species compared to large ones, since smaller eggs lose heat more rapidly on account of their high surface-to-volume ratio.

☛ Incubation time is connected to the size of the egg as well as ecological or social factors. For instance, species with high predation have short incubations, as in pheasants or pigeons. Longer incubation periods can be explained in terms of absentee parents, as in birds that feed offshore compared to parents that feed locally and will be right back.



☛ Incubation time is also very interesting in terms of resultant lifestyle. For example, longer incubation often produces more developed individuals, as in young plovers rigorously chasing down their own insects. In the same vein, shorter incubations frequently produce behaviorally wimpy individuals who beg food off their parents or employ less active food-gathering strategies like snipe, woodcock or oystercatchers.

☛ The bigger the eggs or young, the fewer the mother can produce. Therefore, species that have relatively large eggs or neonates usually have small clutches or litters. Yet, consider this. The tiny 10-gram passerine mamma produces an egg around 12% of her body weight. A larger 50 kg ungulate mom typically produces a neonate that weighs between 8-12% of her own weight. Big mamas over 1000 kg usually produce neonates that are a scant 4-5% of their mother's weight.

\*\*\*\*\*

For those of us who do not replace parental care with a large egg yolk and a rare backward glance, there is an intricate interrelatedness among incubation, gestation and lactation. In general, there is considerable variation in the length of offspring dependency. Differences in body size account for much of the variation, but like almost every topic in this book, the issue gets complicated. The following generalities may be useful.

☛ The development of young is certainly influenced by body size. Yet, animals of the same size often have different developmental rates while related animals of different sizes often have similar rates.

## Book Review - Evolution of Parental Care. *Continued*

☛ Marsupials and placental mammals exhibit fascinating prenatal alternatives. Marsupials invest little in gestation and easily manipulate prenatal development with delayed implantation or embryonic diapause. The trade-off is extended lactation. In contrast, placental mammals invest in long and relatively inflexible pregnancies that produce large neonates that are quickly weaned...sometimes.

☛ Mortality is a provocative if unexpected explanation for developmental rates. Development is rapid in species with low life expectancies. Extended development is associated with high life expectancies.

☛ Large mammals usually show more or less high juvenile losses tempered by low adult mortality. Many small species show high mortality at all stages of life.

☛ There are at least two reasons why females of smaller species use more of their energy budget in reproduction than larger species. Rapid development of young is favored because the high surface area-to-weight ratio of the young of small animals means the faster they grow, the better. Second, early development (i.e. reproduction) is favored if you are likely to die young.



☛ Some mammals progress relatively quickly through all stages of development while others progress slowly. In some cases, environment seems particularly pertinent to developmental rate. Perhaps it is less of a challenge to live in the quiet safety of the woods, for forest-living primates appear to develop more slowly and have less of a tendency to "crank out" babies than savannah primates. And apparently, adult bird mortality is likely to be lower in forest-living species than those living in savannah.

☛ Primates tend to have longer gestation lengths for a given body weight than carnivores and artiodactyla.

☛ Here's one to chew on...relative to body size, rodents that specialize in certain foods, like the graminivores, frugivores, and insectivores, take life more leisurely. They nurse longer, develop more slowly, are pregnant longer and live longer than their folivorous counterparts.

☛ Large mothers use less energy to produce milk than smaller mothers. Whereas, the tender solicitations of mother elephant require less than 2% of her body weight in the production of sweet milk for her gigantic baby, the daily milk production of the diminutive pygmy shrew mom constitutes a gargantuan 28% of her weight. No wonder she's so nervous.

## Book Review - Evolution of Parental Care, Continued

Given that larger species contribute proportionately less in milk production, it follows that large species nurse longer and end up with a higher lifetime cost of nursing. There is no such thing as a free lunch.

☛ Low availability of rich or abundant foods during the breeding season is associated with energy-saving behavior such as slower breeding rates, less milk over longer periods and less maternal activity. Black bear, red pandas and giant panda kids, for example---culinarily confused herbivores in an omnivorous family of carnivores--grow slowly compared to their cousins. Cooperative carnivores like coyotes, red fox, dholes and meerkats, on the other hand, grow quickly in relation to mother's size.

☛ Fats and proteins are positively correlated in placental mammals, i.e., more fat means more protein; less fat means less protein. Both are negatively correlated with sugar. Calories tend to lessen across species with increasing maternal and neonatal weight (but see below).

☛ Suckling style correlates with the quality of milk. Infrequent sucklers drink more concentrated milk than young that suckle at shorter intervals. Those with steady access to the nipple, as in primates and marsupials, drink relatively dilute milk. Tricky nursing situations, as in marine mammals, maximize the opportunity with highly concentrated milk. Flying mammal milk is high in *dry* (i.e. light-weight) matter.

☛ Parental care commonly extends beyond the age at which young are capable of feeding themselves, especially in longer-lived vertebrates.

Clutton-Brock's book is about trade-offs. Highly technical and richly illustrated, this book requires a bit of concentrated reading effort but rewards the reader with insight and appreciation for thoroughness and smooth writing.



## Information Please

Utah's Hogle Zoo is interested in participating in Keeper Exchanges. Anyone interested in an exchange may contact: Kimberly G. Davidson, General Curator - Hogle Zoo, 2600 E. Sunnyside Ave., Salt Lake City, UT 84108.

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I am curious to know if any other institution has had specimens of Drill (*Mandrillus leucophaeus*), or similar species, store small pebbles in their cheek pouches for later manipulation in the mouth. Pebbles are usually discarded thereafter. Also, any theories as to why an animal would exhibit this behavior are welcome. Send comments, information to: Maria Schwalbe, Keeper, World of Primates, Philadelphia Zoo, 3400 W. Girard Ave., Philadelphia, PA 19104.

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We are interested in incorporating audio tapes as a part of our enrichment program for our lone female Nile Hippo. We would like to play a variety of Nile hippo vocalizations to see if they elicit a response. Clear recordings of solitary or group hippo vocalizations (labeled as to particular sex if possible) would be most helpful. Please include cost of audio tape and shipping for reimbursement. We appreciate any contributions! Send to: Lee Houts c/o Sacramento Zoo, 3930 West Land Park Dr., Sacramento, CA 95822-1123.



## Raising a Baby Black Bear Cub

The following material is excerpted from "Rearing and Management of Orphaned Black Bear Cubs", Albert M. Manville, as it appeared in WILDLIFE REHABILITATION, Vol. 8, 1990 and is reprinted with permission from Wildlife Health News, Vol. 3, No. 4, 1992.

Baby bears are born nearly naked and look a lot like baby pigs. Black bear cubs weigh only 6-10 ounces at birth. Even at the age of two months, the cub is still in the den with its mother. It has its eyes open and a full coat of hair but still cannot walk. It wobbles more than walks. If a cub weighs under 15 pounds, it needs to be kept in a dog kennel with supplemental heat. Remember, cubs depend on their mother's body heat to prevent chilling. Place a heating pad well padded with towels or layers of carpet squares under one end of the kennel. The cub needs to be able to seek the heat or get away from it at will.

You can use a child's baby bottle or a coke bottle with a lamb's nipple. Feed every two hours when under two months of age, and every three to four hours when two to four months old. Allow the cub to nurse as much formula from the bottle as it wishes without encouragement. DO NOT ENCOURAGE it to have just a little more when it turns away as indigestion and diarrhea may follow. After a baby black bear nurses from a bottle, gently burp it as you would an infant. If the eyes are not open yet, gently rub the genital area until the cub urinates/defecates. After the eyes are open, you can discontinue this procedure.

### BLACK BEAR FORMULAS (feed four times daily)

1 chicken egg yolk                      15ml honey\* mixed with 390ml of Esbilac™

OR

Enfamil™ with iron (human baby formula)

OR

Fresh goat's milk to which you add 3-4 drops of children's liquid vitamin to each bottle

OR

Bitch replacement milk. Use as directed on can.

When the cub is approximately two months old, add children's high protein cereal to formula. When the cub is approximately three months old, offer bowls of canned dog food with formula poured over it. Also, apple sauce is enjoyed as a snack. Mashed over-ripe bananas are enjoyed at an early age.

When attempting to wean a Black bear cub, you may wish to use stale whole wheat bread soaked in formula. Cubs will suck on this at an early age and it helps them to learn to nibble at solid foods early. It is not a good idea to feed cookies, cakes or jelly because bears have a natural sweet tooth and tend to over do on sweets.

\* Some wildlife management authorities disagree with feeding a bear honey, because too many habitats are near humans who raise bees. They feel it encourages bears returned to the wild to seek domestic bee hives. Other wildlife authorities question the high levels of mold in honey. They feel it might prove harmful to human-raised baby bears. Other wildlife authorities feel honey is a natural food for bears, and feel it is nutritious for baby bears. The decision rests with the person raising the cub.

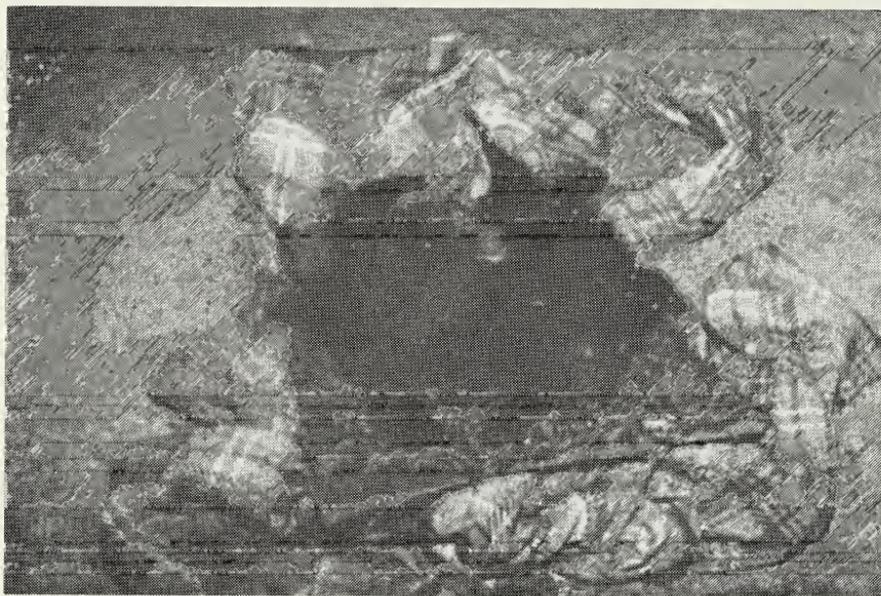


# Hand-Rearing Baby Binturongs

*By Cindy Wilson, Education Coordinator  
in consultation with Lynda Whiting, Primate and Small Animal Keeper  
Southwick's Zoo, Mendon, MA*

At Southwick's Zoo we have a pair of Binturongs (*Arctictis binturong*) who are about eight years old and have been together for about seven years. The female was hand-raised, the male was not. Together they have had four litters, averaging three kits per litter. The timing between litters is quite variable. The one constant element is that our female will not raise her offspring. Sometimes she will clean her young, other times she will not; but beyond the cleaning she simply ignores her young and will not feed or nurture them. The keepers at the zoo have raised these babies, with Lynda being the main person to do the raising with help from others.

Once the baby binturongs have been pulled and cleaned, the first thing that is done is to wash around the umbilical cord area with a povidone-iodine solution. This is done on a daily basis until the "cord" falls off.



**Litter of three one-week old Binturongs that were hand-reared by Lynda Whiting and other staff members from Southwick's Zoo in Mendon, MA. (Photo by Cindy Wilson)**

We have found that the best formula (milk) to raise them on is KMR (kitten milk replacer). They are fed using an eyedropper about every two hours, around the clock, for the first 24-72 hours. Once their sucking reflex strengthens, we switch them to a pet nursing bottle. Especially in the first one to two days, the amount of formula taken by each baby varies greatly, depending on the kit's size. After feeding the babies' genital area is gently stimulated with a warm, wet paper towel to aid in urination and defecation. Housing for the first few weeks consists of a box with a heating pad, set on low, covered with a towel. We are always sure that the babies are kept out of any drafts. If we are raising a single kit, we provide a stuffed toy for it to snuggle with; otherwise the baby binturongs will snuggle with each other. Newborn binturongs tend to have very sharp claws, so we often use gloves when feeding them. They like to "knead" at your hand while they feed, just as they would push at their mother's stomach to express her milk.

## Hand-Rearing Baby Binturongs, *Continued*

After the first few days the kits usually take 15-20cc of formula every two to three hours (around the clock). Their intake tends to increase rather quickly. By about 1½ weeks of age they increase to 30cc of formula every three hours and at 2½ weeks to about 45cc of formula every three hours. Baby binturongs tend to aspirate rather easily, especially during the first few weeks of life. We try to prevent this in three ways. First, they are fed by only one or two keepers during the first two weeks. This can get tiring for the keepers, which is why we usually have two, but consistency seems to be helpful. Second, we have found that it is best if the baby binturong takes at least 12-15 minutes to drink a bottle (we will use a new nipple and put in a smaller hole if they seem to be getting milk too quickly). Third, we try not to overfeed. Sometimes baby binturongs seem to want to drink a lot more formula than they have normally been taking. We usually keep them to their usual amount and feed them again sooner than three hours rather than overfeeding them. The kits' bellies do become visibly larger as they drink.

By about three weeks of age baby binturongs stay awake more and begin to play. By about 3½ weeks they are taking about 60cc of formula every three hours (still around the clock). By now they need a cage that is more escape-proof.

Between the ages of four and five weeks many changes take place. The babies start to play more and their play activity (i.e. chasing each other or us) seems to stimulate them enough so that they will urinate and have bowel movements without needing to be stimulated. At about this time too, the baby binturongs seem about ready to start on solid food. We usually notice that their stools become very soft and at times they go into diarrhea. This is when we start them on solid food. The first food we feed them is baby cereal, rice and bananas. This satisfies their hunger and helps to solidify their stools. We usually start by having them lick the food off a spoon at this stage. Letting them eat it out of a dish creates a mess and usually means a bath at least once a day. Once introduced to solid foods, the babies do not seem to need nighttime feedings anymore, and they will start to sleep from about 2100 hours to 0600 the next morning.



Shown above is a Binturong at approximately four months of age. (Photo by Cindy Wilson)

## Hand-Rearing Baby Binturongs, *Continued*

Soon the baby binturongs prefer solid food, and they will eat more and cut down on their "milk" consumption. By six weeks of age they start cutting teeth and can be switched to softened monkey chow and mashed (real) bananas. As soon as they have enough teeth we also start to add small pieces of banana (not mashed) and then small pieces of other fruits like apples and pears. By eight weeks they want to play all day and they start to wean off milk. They will drink for a while from a bowl, and then we switch them to water.

Our binturongs grow quickly, as do their claws. Their form of play seems to be lunging at you with their front paws while they stand on their back ones. By age four months, their play becomes very rough and gloves and long sleeves are generally needed. Each baby seems to have his own personality, and while some will follow you around like a puppy, others are more independent. Our binturongs are not generally mean tempered, but their play is rough and certainly calls for care and caution.

Baby binturongs are hard work to raise at first when a litter of three can take up to a hour to feed and stimulate, and then you have only a one hour break before they are ready to start again. Even so, the intense period of feeding is relatively short, and they can be a lot of fun to "wrestle" and play with while they are still young.

### **Equipment Mentioned in the Text**

Pet Nurser bottles - Four Paws Products Ltd., 50 Wireless Blvd., Hauppauge, NY 11788

KMR (Kitten Milk Replacer) - PetAg Inc., 201 Keyes Ave., Hampshire, IL 60140



## *Publications Available*

Management Guidelines for Bears and Raccoons - this second set of husbandry guidelines published by the Association of British Wild Animal Keepers is a 174-page soft-covered volume and is divided into two sections. The section on bears includes species profiles - each with a black-and-white photograph - with such details (where known) as identification, distribution, gestation periods, body length and litter size. Specialist authors were recruited to write about certain species. The volume includes articles on keeping and breeding polar bears; managing Asiatic black bears at Glasgow Zoo; Sun bears at Cologne; Brown bears at the Highland Wildlife Park; Spectacled bears at Jersey Zoo; and an overview of Sloth bear husbandry. There is heavy emphasis on enclosure design and environmental enrichment. Part two covers Pandas and Raccoons, with illustrated (in most cases) species profiles and accompanying text on the management of Red and Giant pandas, Coatis, Cacomistles and Ringtails. Other chapters introduce bears and raccoons to the reader, and discuss the taxonomy of these species; there is also a chapter on veterinary requirements. This volume is available at the following prices: £7.95 (ABWAK members), £9.95 (non-members). Prices include postage and handling within the UK; overseas add £1.25 (Europe) or £3.25 (elsewhere). Payment must be in pound sterling, please - orders received in other currencies cannot be handled. Please send your order to: Bear Guidelines (ABWAK), 12 Tackley Road, Eastville, Bristol BS5 6UQ United Kingdom. Orders must be prepaid and checks should be made payable to ABWAK. North American orders (price on application) to: Ralph Curtis Books, P.O. Box 349, Sanibel Island, FL 33957.



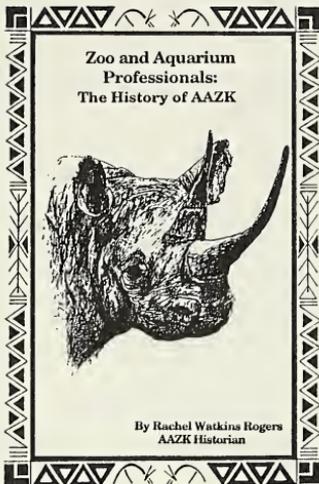
# L.I.N.K.

## (Liaison and Information Network for Keepers)

Coordinator for the LINK System: Mark de Denus, Assiniboine Park Zoo, 2355 Corydon Ave., Winnipeg, Manitoba, Canada R3P 0R5. (204) 837-2916 (h).

### Regional Coordinators

- ALABAMA** - Fred Alvey, Zoo Atlanta, 800 Cherokee Ave. S.E., Atlanta, GA 30315  
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**NORTH DAKOTA** - Bob Debets, Assiniboine Park Zoo, 2355 Corydon Ave., Winnipeg, Manitoba Canada R3P 0R5 (204) 986-4040 [w]  
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**WASHINGTON** - Elandra Aum, Woodland Park Zoo, 5500 Phinney Ave. N, Seattle, WA 98103  
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**WISCONSIN** - Wayne Hazlett, 3768 S. 89th St., Milwaukee, WI 53228  
**WYOMING** - Vacancy  
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**Province of Ontario** - Neil Porter, Metro Toronto Zoo, Box 280, West Hill, Ontario M1E 4R5 Canada  
**Provinces of Manitoba & Saskatchewan** - Bob Debets (see address under ND)  
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# Zoo and Aquarium Professionals: the History of AAZK

AAZK is pleased to announce the availability of Zoo and Aquarium Professionals: the History of AAZK. This 216-page volume chronicles the history of the American Association of Zoo Keepers from its beginnings at the San Diego Zoo in 1967. Included in the book is the early evolution of the Association, its projects, programs and committees, the histories of its 70

plus chapters, and its highly successful conservation programs - "Bowling for Rhinos" and the Ecosystem Survival Plan's Conservation Parking Meters.

AAZK is proud of the progress it has made in the past 25 years in the promotion of professionalism among zoo keepers and is pleased to share this growth through the pages of Zoo and Aquarium Professionals: the History of AAZK.

The book may be ordered by completing the form below and returning it to: AAZK History Book, AAZK Administrative Offices, 635 S.W. Gage Blvd., Topeka, KS 66606. Make checks or money orders payable to "AAZK, Inc."

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*Institutions wishing to advertise employment opportunities are asked to send pertinent data by the 15th of each month to: Opportunity Knocks/AKE, 635 Gage Blvd., Topeka, KS 66606. Please include closing dates for positions available. There is no charge for this service and phone-in 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.*

**ZOOKEEPER**...City of Albany, GA. \$6.41 to \$7.81 per hour DOE. Provides for care, feeding and handling of wild animals including elephants; and the maintenance of grounds and equipment. Must have experience working with elephants, preferably African. For application and description call (912) 431-2817/TDD (800) 255-0056 by 1 March 1993. EOE/AA/M/F/H.

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**ADMINISTRATIVE DIRECTOR**...the Wild Canid Survival & Research Center (WCSRC or Wolf Sanctuary), near St. Louis, MO, invites applications for this position. This individual coordinates the daily operations of the WCSRC involving: fundraising, financial management, relations with the center's constituents, including media, public, members, board of directors, volunteers, veterinarians and animal care personnel, students, researchers and federal agencies. The Director supervises a small staff, assists in the production of the newsletter, prepares grant proposals and performs various other duties as needs arise. The Director reports to the President of the Board. It is hoped a successful candidate will hold an advanced degree, although candidates lacking this are welcome to explain their relevant skills or experience. Strong ability in communication, personnel management and community relations are a must. Salary and other arrangements (such as released time for research or consultation) remain negotiable. The WCSRC, a small non-profit conservation organization of limited financial resources, is an equal opportunity employer. Those interested should submit resume and the names of three willing references by **31 March 1993** to: Attention: Search Committee, WCSRC, P.O. Box 760, Eureka, MO 63025.

**ZOOKEEPER**...responsible for the care, feeding, maintenance and observation for health and reproduction of a variety of zoo animals at the Chaffee Zoological Gardens of Fresno. Present vacancies are in birds and large mammals. Interest in reptiles is desirable. Requires: one year experience in the care, handling, and feeding of animals in a zoo setting. Knowledge of behavioral enhancement of exhibits, setting up breeding conditions, and specialized requirements of young; AND twelve semester units of accredited college level course work in animal science, zoology, biology, wildlife management, or closely related field is desirable. Applications may be obtained from Fresno City Human Resources, 2600 Fresno St., Fresno, CA 93721, (209) 498-1575. **Filing deadline is 5:00 p.m., Monday, 1 March 1993.** POSTMARKS ARE NOT ACCEPTED AA/EOE.

## Opportunity Knocks, *Continued*

**ZOOKEEPER/AQUARIUM**...requires high school diploma and preferably a BS in a related field with one year's work experience. Responsible for care and maintenance of fishes and aquarium exhibits. SCUBA certification desired. Starting salary \$18,220 per year with benefits. Submit resume by **28 February 1993** to: Nancy Foley, Director of Human Resources, The Toledo Zoological Society, P.O. Box 4010, Toledo, OH 43609.

**KEEPER/GUIDE**...seasonal positions available May-October. Duties include but not limited to: daily cleaning of exhibits, diet preparation, feeding mammals and birds, some maintenance, giving lectures to the public and handling non-venomous reptiles during demonstration. Good opportunity to gain paid zoo experience. Salary \$175.00 per week, lodging, utilities and uniforms furnished. Send resume to: Soco Gardens Zoo, attn: Jim Miller, Rt. 1, Box 355, Maggie Valley, NC 28751. **Deadline 1 April 1993.**



## **Environmental Enrichment Conference Set for July at Metro Washington Park Zoo**

The Metro Washington Park Zoo in Portland, OR will host a conference and workshops on environmental enrichment in zoological institutions from 16-20 July 1993. This is the first ever conference specifically focused on the subject of environmental enrichment for zoo and aquarium animals.

The conference is being organized by Drs. David Shepherdson and Jill Mellen. The first two days of the conference will take the form of formal sessions: theory/overview papers focused on specific topics, followed by quality case studies representing different taxonomic groups (primates, carnivores, ungulates, marine mammals, birds, etc.). Poster presentations are invited. The subsequent two days will take the form of workshops held at the zoo to allow for free exchange of ideas and information. The workshops (organized along taxonomic lines) will deal with practical issues and their goal will be to generate recommendations regarding the use of enrichment and its interface with zoo design and animal care and conservation programs.

### Topics to be covered include:

- \*Husbandry Techniques (feeding, training, exhibit furniture, etc.)
- \*Research
- \*Exhibit Design & Construction
- \*Psychological Well-Being
- \*Conservation
- \*Visitor Education
- \*Putting Environmental Enrichment into Practice

Registration fee is \$200.00 and includes the following: 1) Admittance to all conference presentations; 2) Participation in workshops; 3) Ice Breaker at Portland State University; 4) Salmon BBQ at Zoo; 5) Box lunches at the Zoo; and 6) Copy of conference/workshop proceedings.

### Accommodation Options:

- \* College dormitory rooms at Portland State University - very basic (bathroom down the hall) and very inexpensive at \$18.00/night.
- \* Hotel accommodations at Nedel's - \$50.00/night (single or double occupancy) An additional \$15.00/night gets you a rental car with unlimited mileage. (*prices subject to change*)

For further information contact Metro Washington Park Zoo, 4001 SW Canyon Rd., Portland, OR 97221 (503) 226-1561.



# AAZK Membership Application

Name \_\_\_\_\_ 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 U.S.A. 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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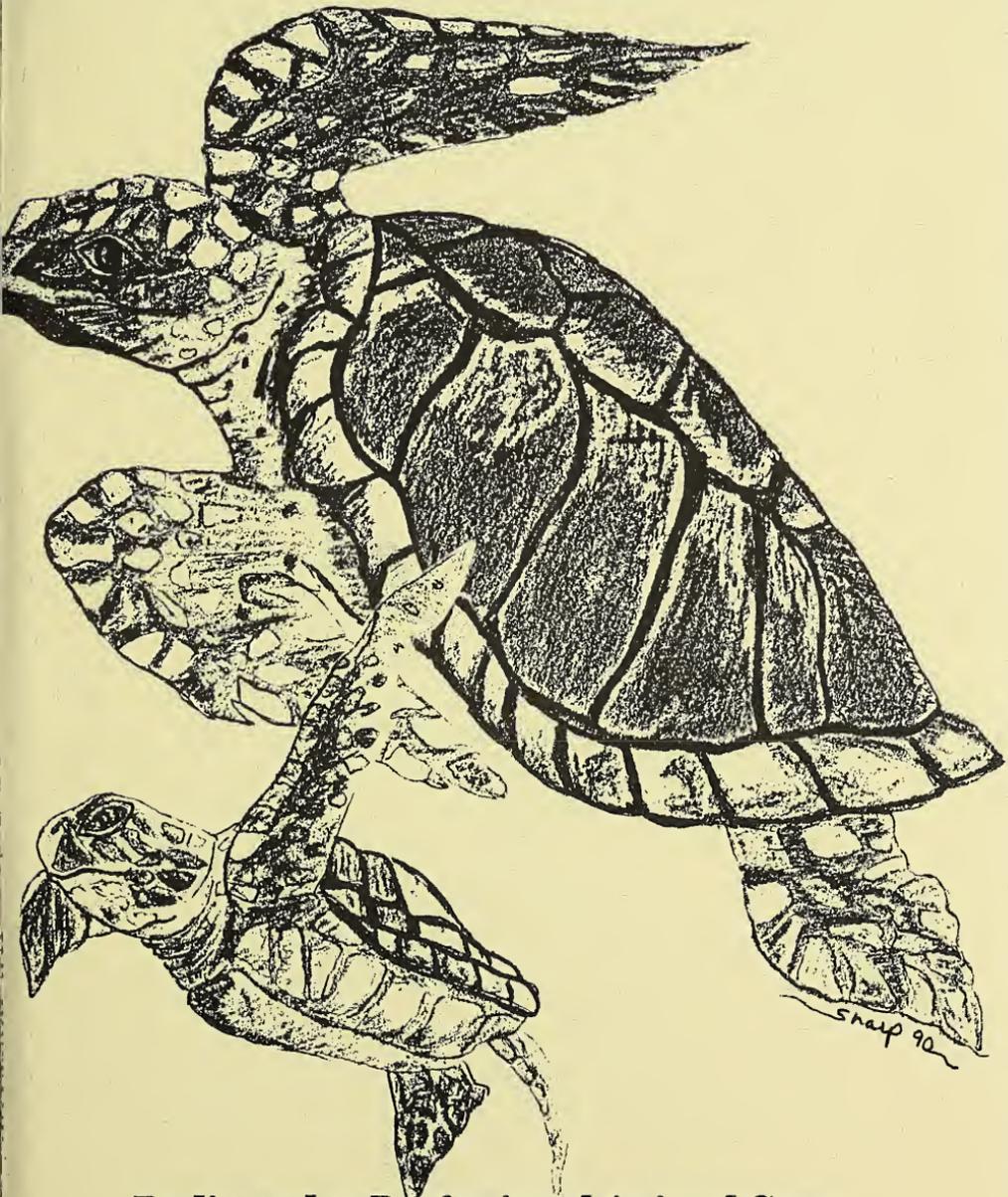
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# Animal Keepers' Forum

March 1993

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*Dedicated to Professional Animal Care*

**Editor-In-Chief:** Susan Chan  
**Associate Editors:** Kayla Grams & Gretchen Ziegler

Animal Keepers' Forum (ISSN 0164-9531) is a monthly journal of the American Association of Zoo Keepers, Inc., 635 S.W. Gage Blvd., Topeka, KS 66606. Ten dollars of each membership fee goes toward the annual publication costs of Animal Keepers' Forum. Third Class postage paid at Topeka, KS. Postmaster: Please send address changes to:

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**AAZK PUBLICATIONS : CONTINUING DATA COLLECTION**

- Zoo Infant Development Project - Harmony Frazier-Taylor, Woodland Park Zoo
- Diet Notebook, Mammals, Vol. II - Susan Bunn Spencer, Bronx Zoo
- An Approach to Zoo Keeping - Patricia Sammarco, Gainesville, FL

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### 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. All illustrations, graphs, charts and tables should be clearly marked, in final form, and should fit in a page size **no greater than** 15cm x 25 1/2cm (6" x 10"). Literature used should be cited in the text (Brown, 1986) and alphabetically in final bibliography. Avoid footnotes. Include scientific name of species (as per ISIS) the first time it 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.) Black and white photos **only** are accepted. Color slides should be converted to black and white prints (minimum size 3 x 5 inch) before submission. Clearly marked captions should accompany photos. Please list photo credit.

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 envelope. Telephone or FAX contributions of late-breaking news or last-minute insertions are accepted. However, long articles must be sent by U.S. mail. The phone number is (913) 272-5821 Ext. 31.

### DEADLINE FOR EACH EDITION IS THE 15TH OF THE PRECEDING MONTH

Articles printed do not necessarily reflect the opinions of the *Animal Keepers' Forum* editorial 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 \$2.00 each.

This month's cover art features the Green Turtle (*Chelonia mydas*), one of seven species of marine turtles. All are either endangered or threatened primarily due to man's activities including net fishing and habitat encroachment. The cover was drawn by Carol Sharp, a keeper at the Hogle Zoo in Salt Lake City, UT. Included in this issue of AKF is an article about the Green Sea Turtle written by Carol (p. 98) as well as some sidebars on marine turtle nesting status. Thanks, Carol!

# Scoops and Scuttlebutt

## Environmental Enrichment Conference: Call for Papers

The Metro Washington Park Zoo in Portland, OR will host the first conference on environmental enrichment for zoo and aquarium animals. The conference will be held 16-20 July 1993. Individuals interested in presenting a paper at this conference are encouraged to submit an abstract to the Environmental Enrichment Program Officers, Drs. David Shepherdson and Jill Mellen. Two types of papers may be presented: 20-minute oral presentations and poster papers. The Program Committee will attempt to accommodate requests for the type of paper you wish to present, however, due to time constraints, they reserve the right to make the final determination on which format you will present. Inquiries concerning the conference, requests for registration forms and or abstract submittal forms should be directed to Drs. David Shepherdson and Jill Mellen. Registration fee is \$200 and space is limited but still available. Phone (503) 220-2446, FAX 503-226-0074 or write to First Conference on Environmental Enrichment, Metro Washington Park Zoo, 4001 S.W. Canyon Road, Portland, OR 97221. Final deadline for receipt of abstracts is **1 April 1993**.

## Grass Seed/Plants Available Through USDA Plant Center

The USDA Tucson Plant Materials Center is offering limited quantities of grass seeds and some plants for use in zoos and botanical gardens. Grass examples are: *Bothriochloa barbinoides*, *B. ischaemum*, *Digitaria californica*, *Panicum coloratum*, and *Tetrachne dregei*. Shrub examples: *Atriplex lentiformis*, *Cowania mexicana*, *Eriogonum wrightii* and *Plea verrucosa*.

For more information about these and other plant materials, please contact:

Mr. Bruce Munda, Manager OR Mr. Mark Pater, Assistant Manager  
U.S.D.A. Tucson Plant Materials Center  
3241 N. Romero Road, Tucson, AZ 85705  
Phone - (602) 670-6491 FAX - (602) 670-5127

## Bowling for Rhinos Update

Many Chapters are gearing up for what promises to be the best year yet for "Bowling for Rhinos" (BFR). Please be sure everyone is aware of the new rules for winning the trip—see page 16 of the January issue. Last year's winners, Cara Lance from Indianapolis with \$4,976.00 and Debbie Palay from Lincoln Park with \$1,743.00 will visit the Sanctuary this month. Set your mind to it now and you too will be a winner! Remember, two **different** people will be going next year.



Please contact Patty Pearthree at (317) 322-8723 or P.O. Box 199026, Indianapolis, IN 46219 for bowl-a-thon information or sponsor sheets. Sample fliers, letters, etc. can also be sent at your request.

### **Zoo Studies Courses Offered in Wichita**

Friends University, in association with the Sedgwick County Zoo, offers undergraduate and graduate training in zoo studies. Both institutions are located in Wichita, KS. The Bachelor of Science in Zoo Science is a unique, fully-accredited, four-year program, which combines course work and practical work experience at the Zoo. The Masters of Science in Environmental Studies is a 21-month, fully accredited program which offers graduate training in Zoo Education, Zoo Management, and Zoo Administration. For further information write to: Dr. Alan Maccarone, Biology Department, Friends University, 2100 University, Wichita, KS 67213. For telephone inquiries call (316) 261-5890.

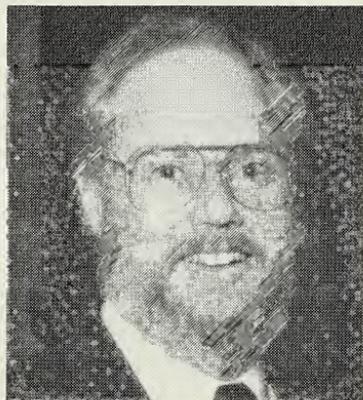
### **ADT Forms Available Upon Request**

Animal Data Transfer Forms for zoos and aquariums are available free of charge upon request. This is a professional service provided by AAZK. Contact: Bernie Feldman, Burnet Park Zoo, 500 Burnet Park Drive, Syracuse, NY 13204. If your facility is not already using the ADT form, please encourage your administration to implement its use whenever an animal is shipped.



## **Richard Block Named Executive Director of the Dian Fossey Gorilla Fund**

Richard Block, formerly Director of Public Programs at World Wildlife Fund, and a long-time supporter of AAZK, has been named as Executive Director of the Dian Fossey Gorilla Fund (formerly called the Digit Fund). Prior to his tenure at WWF, Rich served as Curator of Public Relations at the Kansas City Zoo and Curator of Education at Zoo Atlanta. Prior to his zoo employment, Rich was a faculty member of the University of Michigan's School of Natural Resources & Environment.



(Photo by Mark Kiryuk)

At the Gorilla Fund, he will work to build a larger membership, expand domestic education programs, increase coordination and cooperation with other international organizations working to save gorillas, and strengthen gorilla research.

The Dian Fossey Gorilla Fund is the only organization dedicated solely to the protection and preservation of the endangered mountain gorillas. Approximately 620 mountain gorillas remain in the world today: 320 in the Virunga Volcano Mountains of Rwanda and Zaire and 300 in Uganda's Impenetrable Forest. The Gorilla Fund operates the Karisoke Research Center, established in 1967, in Rwanda, where scientists study gorilla behavior and their rainforest habitat, and anti-poaching patrols protect the gorillas from traps and snares.

For more information about the endangered mountain gorillas, contact the Dian Fossey Gorilla Fund at 45 Iverness Drive East, Suite B, Englewood, CO 80112, USA; (303) 790-2349.



# Coming Events

## ARZAPA/ASZK Annual Zoological Conference 1993

March 29-April 2, 1993

Adelaide, Australia

Joint meeting of the Australasian Association of Zoological Parks and Aquariums and the Australasian Society of Zoo Keepers. This year's theme is "Zoos Enriching Environments". For information contact: Christina Macdonald, Conference Coordinator, Adelaide Zoological Gardens, Frome Rd., Adelaide 500, Australia. Tel: (08) 267-325 Fax: (08) 239 0637.

## International Conference on Tortoise & Turtle Conservation

July 11-17, 1993

New York, NY

Sponsored by the American Museum of Natural History's Turtle Recovery Program and the New York Turtle & Tortoise Society. For further information write to: Craig Vitamenti c/o The New York Turtle Trust & Tortoise Society, 163 Amsterdam Ave., Suite 365, New York, NY 10023 or call (212) 459-4803.

## 14th Association of Avian Veterinarians Conference

Aug. 31 - Sept. 4, 1993

Nashville, TN

For further information and Paper Criteria, contact: AAV Conference Office, 1625 S. Birch St., Ste. 106, Denver, CO 80222 (303) 756-8380, FAX 303-759-8861.

## 1993 Annual Meeting of the American Association of Zoo Veterinarians

October 10-15, 1993

St. Louis, MO

Special sessions will include government regulations, zoo veterinarian's role in conservation programs, medicine of Australasian species, and group medicine and herd health. Other program sections will include pathology, parasitology, clinical pathology; reproductive technology and contraception, immobilization, anesthesia and monitoring; case reports, exotic pets and practice tips, reptiles and amphibians; primates, carnivores and small mammals; avian species; and aquatic animals. Scheduled workshops include comprehensive pest control programs, occupational health and safety, endoscopy, ophthalmology, and basic zoo animal medicine. Individuals interested in submitting a manuscript should contact Donald Janssen, DVM, San Diego Zoo, P.O. Box 551, San Diego, CA 92112 - Phone (619) 557-3933; FAX (619) 557-3959. For other conference information contact Wilbur Amand, DVM, AAZV Executive Director, 3400 Girard Ave., Philadelphia, PA 19104-1196; phone (215) 387-9094; FAX (215) 387-8733.

## AAZPA 1993 Regional Conferences

Central Regional Conference (4-6 April 1993) - for more information contact: Angela Baier, Sunset Zoological Park, 2333 Oak St., Manhattan, KS 66502 (913) 587-2737.

Great Lakes Regional Conference (18-20 April 1993) - for more information contact: Julene Boe, Lake Superior Zoological Gardens, 7210 Fremont St., Duluth, MN 55807 (218) 624-1502.

Northeastern Regional Conference (2-4 May 1993) - for more information contact: Julia Alarcon-Lorenz, Pittsburgh Zoo, P.O. Box 5250, Pittsburgh, PA 15206 (412) 665-3762.



## **AAZK Award Nominations Are Now Being Accepted for 1993!**

The AAZK Awards Committee would like to begin accepting nominations for the **Certificate of Excellence in Exhibit Renovation (CEER)** to be presented at the 1993 AAZK Conference in Atlanta. The deadline for all award nominations is **1 June 1993**. All award nominations received after 1 June will be reviewed for 1994, so please keep this in mind when submitting your nominations.

All awards given by the AAZK do not have a minimum or maximum number offered each year. Also, if the nominees do not meet the qualifications and nominators do not follow the nomination procedures, they will not receive the award for which they were nominated. Please include scientific names of animals when they are included in the nomination of a special or outstanding breeding acknowledgment.

Please submit all nominations to:

Janet McCoy, AAZK Awards Chair  
Metro Washington Park Zoo  
4001 S.W. Canyon Rd.  
Portland, OR 97221

### **CERTIFICATE OF EXCELLENCE IN EXHIBIT RENOVATION (CEER)**

The American Association of Zoo Keepers, Inc. (AAZK) is the administering organization of the Certificate of Excellence in Exhibit Renovation (CEER) presented by the AAZK Awards Committee. 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 character of the award includes: a certificate, letter of notification to the institution's director and national recognition by professional journals. Such journals include: the American Association of Zoological Parks and Aquariums (AAZPA) 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 being published by Gale Research Company based in Wheaton, MD and found in medium to large sized libraries across the U.S. and Canada.

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.

## CEER Award Criteria, *Continued*

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, but forwarded to the Exhibit Design Committee.

### Selection Procedure:

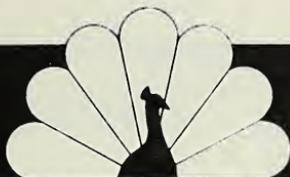
The Awards Committee, consisting of 5 keepers, will independently review each nominee.

### 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/Enrichment, 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/ENRICHMENT:**
  - 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



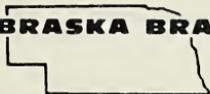


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# DOWN UNDER

By  
Judie Steenberg, Keeper  
Woodland Park Zoo  
Seattle, WA

DOWN UNDER.....is an information column about Australasian animals. While there are a number of Keepers who work in Australasian Units, or routines, off times a Keeper will have a few species

of animals from the Australasian zoogeographical region on their string or routine. It is hoped this section will contain information on birds, mammals and reptiles.

This column is intended to:

- share experiences and information to improve the care and management of Australasian animals.
- seek information and advice on problems that occur.
- serve as a forum through which to make comment, to ask questions, to critique, or to verify information.

Please send your materials (a question, a paragraph or an article) directly to *Animal Keepers' Forum*, Topeka Zoological Park, 635 S.W. Gage Blvd., Topeka, KS 66606-2066, Attn: Susan Chan.

## News Briefs from Australasia

*submitted by Hickson Fergusson*

French Island is a small island of 17,000 hectares, found off the Victorian coast, and has a thriving population of koalas. In fact, the koalas are doing so well that, if left unchecked, their numbers double every three years, exceeding the carrying capacity of the island. So, every Spring (that's September/October down here) the Victorian Parks and Wildlife Service catch up 100 animals and relocates them on the mainland in areas presently low in koalas. This keeps the number on the island down to around 1500-2000 animals, with a density of about one animal for every 5-10 hectares. This year the Navy helped transfer the koalas to an area that was devastated by bush fires in the early 1980's. The vegetation has made a comeback, but the mammalian wildlife is much slower.

One interesting point to note: when koalas were introduced to French Island around the turn of the century, only immature animals were used. Because they were too young to have mated, they did not take with them any sexually transmitted diseases. As a result, the koalas currently residing on French Island are thought to be the only population free from *Chlamydia psittaci*, the organism that causes conjunctivitis, sterility and Wet Bottoms Disease.

\*\*\*\*\*

But the really big news Down Under is herpetological. On 13 October, while surveying local reptiles in a rural part of South Australia, amateur herpetologist Graham Armstrong drove past a snake roadkill. He stopped and identified it as an adult Eastern

## DOWN UNDER. *Continued*

brown snake (*Pseudonaja textilis*), and upon palpation felt a lump in the digestive tract he assumed to be a recently eaten mouse. He cut the snake open and inside found an Adelaide Bluetongue Lizard (*Tiliqua adelaidensis*), still intact and thought to have been eaten less than 24-hours before the snake died.

It was the first Adelaide Bluetongue seen for more than thirty years. There is only a small handful of specimens of this rare lizard in museum collections, the last being taken near Adelaide in 1960. It has since thought to be extinct, despite many searches by both professional and amateur herpetologists. Consequently very little is known about its biology. One interesting observation: *T. adelaidensis* was always thought to inhabit mallee country, yet the roadkill was found in the middle of a wheat growing area - ideal habitat for a snake that would feed primarily on rodents, but definitely not for the lizard.

As of 28 December, it was reported that scientists had subsequently located a colony of the lizards living under grass tussocks. A group has been transported to Adelaide Zoo as part of a captive breeding program.

\*\*\*\*\*

And now a story that should sound familiar to those of you living in the States. The same year that the U.S. Endangered Species Act comes up for reauthorization, Commonwealth Legislation to nationally protect native wildlife has been introduced into the Australian Parliament. The controversial Endangered Species Protection Bill provides for nationally agreed lists of endangered and vulnerable species, recovery plans for those species listed, and conservation orders on wildlife threatening projects. There are believed to be about 300 species and sub-species of threatened plants and animals that will benefit from the legislation, although it is too late for many species, including a population of the endangered Ghost Bat who had their cave dynamited last year by a business who wanted to quarry the limestone.

While conservation organizations applaud the move as a leap in the right direction, some sectors of industry don't believe there is a need for such legislation at all.

Heard a similar story elsewhere?



## Information Please

I am interested in information about those facilities exhibiting the following species: Eastern chipmunk (*Tamias striatus*), Golden Mouse (*Ochrotomys nuttalli*), and any Virginia native shrew such as Least shrew (*Cryptotis parva*), Southern short-tailed shrew (*Blarina carolinensis*), Northern short-tail shrew (*Blarina brevicauda*), or Pygmy shrew (*Sorex hoyi*). Please send information to: Jonathan Bronson, Virginia Living Museum, 524 J. Clyde Morris Blvd., Newport News, VA 23601.

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Information is needed on goat training. Please send all information to: Sheri Levitt, Houston Zoo, Children's Zoo, 1513 N. MacGregor, Houston, TX 77030.

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Anyone having information regarding the mating and/or nesting behaviors of the Red Bill Toucan, please call Lisa Tate at (208) 384-4260 (days) or (208) 376-7914 (nights); or send information to: Lisa Tate, 11716 Fairview Ave., Boise, ID 83704. I am particularly interested in aggressive behavior in males towards their mates. I will be happy to share any information I receive.

# Early Birth in East African Hedgehog (*Atelerix albiventris*)

By  
Gilbert Perez and Robert Evans  
San Antonio Zoo, San Antonio, TX

The San Antonio Zoo began keeping East African hedgehogs (*Atelerix albiventris*) in 1984. Since that time there have been 54 births in 13 litters. Ages of females at the time of their first litters has ranged from 16 months to 26 months with an average of 21 months (it should be noted that the institution exercised more control over the age at first parturition than the animals did). Gestation estimates have ranged from 30-40 days. No direct observation of copulation has ever been recorded here.

Our hedgehogs are fed a mix consisting of seven parts Nebraska Brand® commercial canine diet and one part bran. This is supplemented with occasional mealworms. Since this species is "roly poly" by nature, it is important to watch their intake to prevent obesity.

We house our females in 244cm x 61cm x 46cm (96" x 24" x 18") compartments bedded with pine shavings. Each compartment contains a small, opaque, plastic hide box measuring 21.5cm x 16.5cm x 7.5cm (8½" x 6½" x 3"). For breeding the males are placed in the female's compartment for 30 days. During this time both animals share the hide box. The male is removed after 30 days since his presence at parturition has, in our experience, caused the female to abandon and/or cannibalize the young. After the male is removed the compartment is covered with a piece of plywood. This is done to prevent any disturbance of the female during gestation or for the first two weeks after parturition. It has been our experience that even slight disturbance during this period will cause the female to abandon and/or cannibalize her young.

Young are left with the dam for approximately 40 days. At this time they are weaned by removing the entire litter and placing it in a separate 19" x 10" x 6" compartment. After weaning, the litter is housed together in this single compartment until they are approximately 10 months old.

On 29 March 1992 a litter of 0.0.3 was born to a 120-day-old female. Based on a gestation period of 30-40 days, this female was only 80-90 days old at the time of conception. Equally as unusual; this female had been housed only with her 2.0 siblings from weaning until the birth of this litter, obviously then, the sire of this particular litter was also 80-90 days old - surprisingly early for mature spermatocyte to be present. Not surprisingly, the dam cannibalized the young within the first 24 hours.



## Rats May Be Top Dog in China

China's Farmer's Daily newspaper is encouraging the citizens of the world's most populous country to "develop rat resources"--no kidding. The official newspaper says that "rat meat is a high-protein, low-fat food, with calcium, iron and other nutrients". It is also encouraging the use of rat fur, rat skin and rat tails, noting that rat whiskers can make high quality hair and writing brushes.

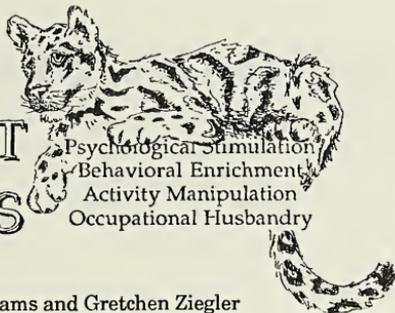
In Hong Kong and Macau processed hairless rats from China are already big sellers for use in medicinal wines. In Anhui province, fake mink coats fashioned out of rat skins are selling briskly. Plans are in the works to produce a new line of ratskin leather products for the Chinese and foreign markets.

On a final note, the Farmer's Daily noted that for farmers looking to cut their costs and increase profit margins, "Mashed live rat is a good chicken food". And so it goes.





# ENRICHMENT OPTIONS



Psychological Stimulation  
Behavioral Enrichment  
Activity Manipulation  
Occupational Husbandry

by Kayla Grams and Gretchen Ziegler  
Keepers, Topeka Zoo

We have spoken to a number of keepers from different zoos in the last few months who have mentioned some very interesting enrichment ideas that they use at their zoo. It's encouraging to hear about such great ideas, now how about submitting them for our column? You know who you are! The following items were submitted during our enrichment workshop at the National AAZK Conference in San Diego. We think they're excellent ideas!

**BEARS** - We have a large pit in the bear exhibit (dug by the bears). We filled the pit with mulch and now lace it with mealworms, seeds, etc. They spend lots of time digging out treats.

--Nancy Biggins  
Arizona-Sonora Desert Museum, Tucson, AZ

Lincoln Park Zoo has a 265,000 gallon pool for polar bears. We get feeder fish from the Shedd Aquarium in Chicago. We stop chlorination of the pool about 3 days prior to enrichment. We place approximately 40 live trout, around 10 to 15 inches long or bigger, in the pool. Polar bears are unbelievably quick and agile swimmers, and they swim underwater to catch the fish. We provided 40 fish on the first day, mid-afternoon. By the next day 12 fish were left. By stopping the chlorine, the fish lived until all were eaten by the end of the 3rd day. It may be a good idea to do this prior to draining the pool since there is some debris left over. Fish is discontinued in their regular daily diet during the time that live fish are in the pool.

--Vicki Henrie, Bear Keeper  
Lincoln Park Zoo, Chicago, IL

**ELEPHANTS** - We hang cargo nets with bales of hay in them from the roof of our elephant exhibit at night. The elephants will empty the nets by morning.

**CAMELS** - We also use hay nets suspended by cables from tree limbs to promote natural browsing. The visitors love it because our camels are visible 1 to 2 more hours per day.

--Tina Fess  
Seneca Park Zoo, Rochester, NY

**CHICKENS** - For domestic chickens in the childrens zoo area, to offer exercise and fresh greens, string lettuce cores (10 to 20 per flock of 15 to 25 birds) on a wire strung between two points. Hang about 2 to 3 feet above ground, enough so chickens have to jump to reach cores. With practice, raise the string - they become excellent jumpers! Use a protective substrate to protect their feet (i.e. Nomad® carpet). Chickens and public love it.

--Jean Ragland  
Woodland Park Zoo, Seattle, WA

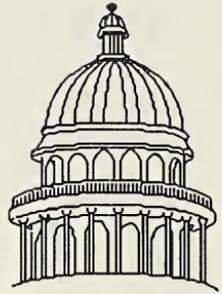
**INSECTIVORES** - Place fruit (preferably banana) inside the exhibit of an insect eating species (reptiles, etc.) to attract fruit flies.

-- Andrew Main, Mystic Marinelife Aquarium, Mystic, CT



# Legislative Outlook

Compiled by  
Phyllis Nilson-Wojcik  
Legislative Advisor



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## Endangered Species Act

The first week of February "Dear Colleague" letters went out from Rep. Gerry Studds (D-MA) asking congressional support for the Endangered Species Act Reauthorization bill due to be presented by late this month at the earliest. In 1992 there were 109 cosponsors recruited, however 32 of those are not returning to the 103rd Congress. Now is the time to write or call your representative to encourage their support.

Write - U.S. House of Representatives  
Washington, DC 20515

Call - (202) 224-3121

Get involved with a two-day conference in Washington, DC commemorating the 20th anniversary of the ESA. The conference, from March 26-28, features issue and skills workshops, a debate, and regional activist caucuses. Call the ESA Coalition conference registrar at (202) 547-9009.

*>personal phone call to the House Subcommittee on Fisheries and Wildlife Conservation and the Environment 2/5/93 and National Wildlife EnviroAction Jan/Feb 1993.*

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## Sanctions Sought Against Rhino Horn Traders Make Impact

Although international trade in rhino horn has been prohibited by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) since 1977, four consumer countries - South Korea, China, Yemen and Taiwan had done little to control the illegal trade. In response, World Wildlife Fund and National Wildlife Federation in late November petitioned the U.S. government under the Pelly Amendment to impose sanctions on the four countries. Just after the petition was filed, Taiwan announced an immediate ban on the import, export, sale and display of rhino horn.

Under the Pelly Amendment, the U.S. can ban direct imports of wildlife products from countries that undermine the effectiveness of CITES programs for species such as rhinos. Although no sanctions have ever been imposed through the Pelly Amendment procedure, conservationists credit the threat of sanctions in 1991 with influencing Japan's decision to ban all international trade of sea turtle products by 1994.

*>World Wildlife Fund FOCUS Jan/Feb. 1993, Vol. 15, No. 1*

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## Agreement Sets Timeframe for Protecting Rare Plants and Animals

The Interior Department's U.S. Fish and Wildlife Service (USFWS) reached an out of court settlement of a case involving the agency's procedures to reduce the backlog of plants and animals awaiting listing decisions under the Endangered Species Act. The settlement agreement was reached with The Fund for Animals, Defenders of Wildlife, In Defense of Endangered Species, and other individuals.

## **Legislative Outlook**, *Continued*

The agreement supports the Service's existing priority system which ranks at risk candidate species based on the degree of threat faced by each candidate, as well as the taxonomic rarity of a species. "This agreement essentially gives a seal of approval to the Service's existing method for setting priorities for these species in need of protection," said John Turner, Service Director. Under the agreement, and based on the existing priority system, the Service will decide whether to propose for listing approximately 400 "Category 1" candidate plants and animals over the next four years. Category 1 species are those for which the best scientific information supports listing but, due to other demands, the Service has been unable to develop a listing proposal. Those species with the highest priority will be proposed first.

The Service has agreed to decide whether to propose for listing approximately 95 Category 1 candidate species each year through September 1996, a commitment comparable with the past two years when the Service proposed 215 plant and animals and listed 144. In addition, the Service is to report annually on its progress through 1997. The agreement also formalizes a service commitment to emphasize, where possible, multiple species listings or proposals that address entire ecosystems, instead of a species-by-species approach. In addition to being more cost-effective, these methods allow the Service to focus on the needs of plant and animal communities as a whole, not individually.

Species petitioned for listing, that are determined by the Service to be warranted for listing but precluded by species currently of higher priority, will be classified only as Category 1 species, instead of Category 1 or 2. Category 2 candidates are those for which insufficient information exists to conclude that listing is warranted but continued monitoring will be carried out.

*>Department of the Interior News Release 15 December 1992*

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## **Greece Joins CITES**

GLAND, Switzerland -- After an intensive lobbying campaign, Greece has officially joined the treaty responsible for regulating international wildlife trade, said WWF-World Wide Fund For Nature.

"This is a positive step forward for Greece," said Tom De Meulenaer, director of TRAFFIC Europe, who helped lead the joint WWF/TRAFFIC campaign. "However, the country still has a number of legislative hurdles to overcome to ensure that the regulations under the treaty are enforced," he said.

Greece will become the 117th party to the Convention on International Trade in Endangered Species (CITES) agreement, which has its Secretariat in Lausanne. Considered one of the world's most important conservation agreements, it came into force in 1975.

Up until now, Greece has lacked the adequate domestic legislation through which to enforce the international regulations effectively. The situation is further hampered by general unawareness or indifference to wildlife trade issues and by poor internal and border controls.

As a member of the European Community, Greece is obliged to conform to EC regulations. In a WWF-sponsored report issued last year, TRAFFIC revealed major Greek violations of the EC CITES regulations and continuing trade in products banned from international trade, including furs of spotted cat, elephant ivory and sea turtle items.

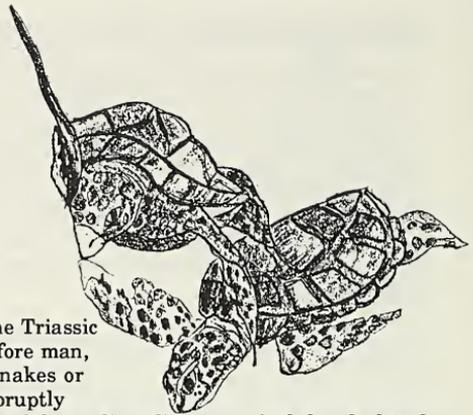
"The Greek authorities have a tremendous challenge before them, and the CITES Secretariat will continue to work with them to help meet the treaty's requirements, especially regarding national legislation," said CITES Infractions Prevention Officer Jean Patrick Le Duc. WWF and TRAFFIC will also monitor the Greek enforcement efforts, as part of their campaign to halt illegal wildlife trade.

*>GreenDisk, Dec./Jan 1993*



# The Green Sea Turtle

By Carol Sharp, Keeper  
Hogle Zoo, Salt Lake City, UT



## History, Origin and Status

The first turtles (Cheloniidae) appeared in the Triassic Period, over 200 millions years ago. Eons before man, before there were mammals, birds, lizards, snakes or crocodiles - turtles with fully formed shells abruptly appear in the fossil records as contemporaries of the earliest dinosaur. And they look today much as they did so long ago. At one time, possibly hundreds of species of sea turtles existed; today there are only seven including the Loggerhead, Green, Leatherback, Hawksbill, and Ridley. And most, if not all, are considered either threatened or endangered. An appropriate name for them would be *The Magnificent Seven*.

## The Skull

The main characteristic used to classify reptiles concerns the bones of the skull. In the earliest and most primitive types, the skull forms a complete roofing behind the eyes. These early reptiles, the Anapsida, first appeared in the late Carboniferous Period as small lizard-like forms called the Cotylosauria

The tortoise and turtles in the order Cheloniidae are also Anapsids and because they have anapsid skulls, originated from the same ancestral or "stem" reptile, the Cotylosaur.

In the enclosed anapsid skull there are no fenestrae or "windows", so muscle swelling is restricted, and the jaws remain weak. In the species alive today, the jawbones are covered not with teeth as their Cotylosaurian ancestors were, but with sharp horny edges.

The evolution of fenestrae in a skull allows for the development of more powerful jaws and gives a wider choice of potential foods. When muscles contract they swell laterally, and the fenestrae allow the jaw muscles to bulge out of the skull, producing a more powerful bite.

## The Shell

The shell or the exoskeleton, as it is often referred to, has two parts: the upper dome called the carapace, and the lower floor is called the plastron. They are joined to each other by a section of shell known as the bridge. Most marine turtles, including the Green turtle (*Chelonia mydas*) have shells that are more flattened and streamlined, and are much lighter than the ones that protect their land swelling relatives.

The shell sets the turtles so distinctly apart that one would find it hard to confuse them with other animals. Moreover, turtles are probably the only reptiles that most humans view without prejudice. In fact the number of people who positively like turtles is surprisingly large.

The shell is the most characteristic feature of the turtle and affords it protection, but at the same time the shell has severely limited the possibilities of major evolutionary change. Neither the large massive head or the legs can be pulled under the shell, therefore they belong to the family Cryptodira. It should also be noted that the concentric rings on the carapace are not reliable evidence of age as some people believe.

## The Green Sea Turtle, *Continued*

### **Limbs and Body Structure**

The bones of both the fore and hind limbs are also flattened and covered with a continuous web of skin obscuring the individual digits, thus producing a flipper-like appendage. Swimming in these forms is analogous to the flight of birds. The front paddles move up and down, rather than to and fro. The hind feet provide little propulsion and serve chiefly as rudders. Turtles are fast and highly maneuverable in water. These adaptations to life in the water have made them among the fastest moving modern reptiles. It has been said of them that they can swim as fast as a man can run. The lifespan and body size and weight of sea turtles are impressive and they are believed to be the longest lived creature on earth.

### **Sexes**

The male has a longer, narrower carapace than the female and the tail is greatly elongated, extending beyond the hind limbs. The vent is well toward the tip of the tail and the tail is prehensile and tipped with a nail. The front flipper claws are enlarged and curved in the male. The male plastron is slightly concave to aid in mounting the female carapace during mating.

The female is smaller; her tail may scarcely reach beyond the edge of the carapace. There are no curved claws on her front flippers.

### **Green Turtles**

Green turtles are distinguished from other marine species by two large pre-frontal shields on the head between the nostrils and the center of the eyes, horny shell scutes that do not overlap, and only four pair of lateral scutes.

### **Migration for Mating**

Marine turtles spend most of the year scattered around the world's oceans. To deposit their eggs on land these animals undertake prolonged journeys over enormous distances. Green turtles that live off the Brazilian coast migrate to Ascension Island, about 1,400 miles east of Brazil. How they navigate in the open sea to locate a pinpoint of land so far from a fixed reference is not yet known.

The ability to navigate in open ocean is hard to investigate. Tagging studies have shown that the green turtle has a strong homing urge and must rely on an inborn navigation system. One theory is that smells of certain localities are carried by local ocean currents and that a sun-compass sense is used to help point the way. Another theory is that the green turtles travel up and down the coast of Brazil until they locate by smell and certain visual clues the place where they made their first landfall in youth. Then a compass sense, combined with an ability to orient from the position of the sun as it moves across the sky, brings them close to Ascension Island. And finally olfactory and visual messages guide them in.

Green turtles are not sexually mature until the early twenties, so it is significant that they can remember the clues for this long trip for almost twenty years. Experimental evidence indicates that seasonal variances in water temperature are not the stimulus that triggers the turtles' migratory urge. The mysteries of migratory guidance are still far from being clearly understood.

At mating time, green turtles all begin to move to the nesting site, first gathering in small groups and then gradually merging until a great number are traveling together. It is always the same animals that form each group. They accompany one another all the way onto the beach. How the animals recognize each other, how they manage to meet, what factor synchronizes their three-year breeding cycle, are all little understood.

## The Green Sea Turtle, *Continued*

### **Breeding**

As green turtles only breed every two to four years they must compensate for the forfeit of annual reproductive periods by laying several batches of eggs in succession during their nesting year. Females can lay eggs three to seven times in a nesting period, with 100-200 eggs each time. The number of eggs laid usually increases with the age of the female. As many as five clutches can be laid in one night. In their off years, some green turtles are known to hibernate.

The female will rarely change her nesting beach. The male remains in the water. When the female returns to the water the male will resume breeding. The male rides the female during copulation, clamping his legs and strong curved claws so firmly around her shell that its edges may be severely damaged. Copulation itself lasts only 5-10 minutes but the preceding courtship by the male may last several hours. In the male the sexual organ consists of a smooth simple penis; at rest it is withdrawn inside the cloaca. The green turtle is the most prolific reptile known.

### **The Nest**

The nests of marine turtles are built in two stages. First the female prepares a broad trench, throwing the sand out in all directions, with all four legs. A supply of "tears" keep the turtle's eyes clear of sand. The large pit functions only to hide the animal during egg laying. Once the female is thus protected, she begins to dig a real nest chamber at the bottom of the pit. When the female turtle has completed her preparations, she holds her tail in the entrance to the egg chamber and then lays her eggs one by one. She catches the eggs first with one hind leg and then the other and carefully lets them slide to the floor of the nest. The sand is softened from time to time with water from her anal sacs.

After the eggs are laid she shoves the excavated sand back onto the nest, smooths the surface with her plastron to cover her cache and hide her tracks. All this is done at night and may take several hours. After laying the eggs the female does not concern herself with them at all. Incubation is entirely dependent upon the warmth of the sand.

### **Hatching**

After 60 days incubation, the baby turtles break out of the golf ball-size egg in the early morning hours. The young turtles hatch by breaking through the egg with a sharp horny thickening at the tip of the upper jaw, which later falls off. Now they must work their way up to the surface of the ground. Freshly hatched marine turtles cannot manage this risk by themselves, but must work together to force their way through the sand. For them dry land is an alien habitat and they must get down to the water as soon as possible if they are to avoid the attacks of various predators.

As we know it is neither the characteristic smell of salt water nor the orientation to gravity which guides them down to the sea, nor do they orient towards the featureless horizon above the water. The freshly hatched turtles find the right direction because of the relative brightness above the surface of the sea which provides a clue even when they emerge at night.

### **A Warning**

Despite the green turtles provident egg-laying behavior, its greatest enemy is man. Marine turtles are particularly vulnerable to over-exploitation due to their stereotyped nesting behavior and their regular seasonal appearance in large numbers on traditional beaches. It is a flaw in their evolution which allows predators, including humans, to harvest large numbers of eggs and females over relatively short periods of time. These animals are passive, defenseless, slow, lumbering creatures on land which makes them susceptible to human predation at all times.

## The Green Sea Turtle, *Continued*

In many areas man has drastically reduced their numbers and are leading them to extinction by thoughtlessly changing their natural habitat, by accidentally catching them in fishing nets, by harvesting their eggs, and by making green turtle soup with the bodies of adults. Fortunately, the initial steps are now being taken to restrict this senseless exploitation of marine turtles.

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## *Fewer Green Turtles at Tortuguero in '92*

Green turtle nesting was down by half at Costa Rica's Tortuguero National Park in 1992, but researchers are not yet worried about the drop since nesting numbers naturally fluctuate from year to year.

In 1992, only 1,327 nests were reported in CCC's survey area on five miles of the 22-mile long beach at Tortuguero, the rookery for the largest population of endangered green turtles in the Atlantic. In 1991, researchers counted 2,634 nests, double the 1992 number. An average of about 1,700 green turtle nests are usually counted each year in the area.

Green turtles only nest every two to four years, so nesting numbers normally change each season, said Chris Starbird, CCC's director of programs. In 1986, for example, more than 3,000 green turtle nests were counted in the Tortuguero survey area. Of the turtles that laid nests there in 1992, 268 had tags showing they had nested at Tortuguero sometime in the past; 526 were new nesters and 533 nested more than once in the season, which runs from June through October.

Of the 1991 nesting turtles, 1,153 were new nesters, 746 had been tagged in previous seasons and 735 nested more than once in the same season. Interestingly, a turtle that had been tagged in 1972 returned 19 years later to nest there.

Researchers have been tagging green turtles at Tortuguero for more than 30 years. Tagging helps track sea turtle movements, monitor nesting habits and identify individual turtles for research. Continued tagging is helping researchers compile long-term information about the green turtle and its habitat. "Tagging also provides valuable information on the level of turtle exploitation, as indicated by tags returned to us by fishermen through the Caribbean," said Dr. Karen Bjorndal, director of the Archie Carr Center for Sea Turtle Research at the University of Florida. Fishermen receive \$5 for each tag they send back to the center to encourage them not to discard the tag when a turtle is captured.

About 80 percent of the nesting turtles tagged at Tortuguero also spent part of their lives feeding in seagrass beds in Nicaragua's Miskito Cays. Sanctuaries such as the Miskito Cays Protected Area and Tortuguero are helping to provide comprehensive protection for green turtles' major breeding and feeding grounds, Starbird said.

--from VELADOR newsletter of CCC 12/92



## Offshore Fishermen Now Must Use Turtle Excluder Devices

The National Marine Fisheries Service has strengthened government efforts to protect endangered sea turtles by approving new rules requiring shrimp fishermen to use turtle excluder devices in their nets. The devices, known as TEDs, prevent turtles from becoming fatally snared in the nets by using a trapdoor system that allows turtles to escape before they drown.

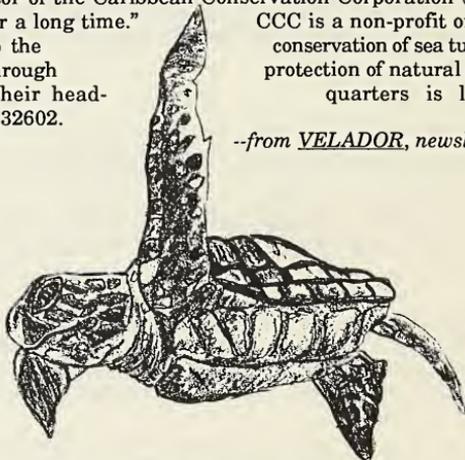
Under the rules announced on 1 December of last year, most shrimp fishermen operating in offshore waters are now immediately required to use TEDs year round. Fishermen in smaller boats in offshore waters or those fishing in inshore estuaries and bays will have to use TEDs within two years.

"This is an important step in preserving our dwindling number of sea turtles," said David Carr, executive director of the Caribbean Conservation Corporation (CCC). "We've worked and waited for this for a long time."

1959 and dedicated to the and marine wildlife through training and training. Their head-2866, Gainesville, FL 32602.

CCC is a non-profit organization founded in conservation of sea turtles and related coastal protection of natural areas, research, education quarters is located at P. O. Box

--from *VELADOR*, newsletter of CCC 12/92



## Florida's Last Undeveloped Beach Draws Lots of Nesting Loggerheads

Turtle Species	1988	1989	1990	1991	1992
Loggerhead	10,550	11,500	16,404	16,167	12,265
Green	105	208	588	191	451
Leatherback	0	4	0	7	5
Hawksbill	0	1	0	1	0

The Archie Carr National Wildlife Refuge, the first sea turtle preserve in the continental U.S., protects one of the world's largest nesting loggerhead populations and the largest endangered green turtle population in America. As of 1992, 242 acres of the approximately 860-acre refuge along the last undeveloped stretch of Florida's east coast is reserved or involved in purchase negotiations. A marker was placed at the northern boundary of the 13-mile long refuge in 1992. The chart shows the number of nests counted in the refuge in recent years.

--from *VELADOR* newsletter of CCC 12/92





The Zoo Atlanta AAZK Chapter  
Invites You to Join Us for the  
20th National AAZK Conference  
October 10 - 14, 1993  
Sheraton Colony Square Hotel  
Atlanta, GA



1993 National AAZK Conference

October 10-14

Hosted By: Zoo Atlanta AAZK Chapter  
800 Cherokee Avenue  
Atlanta, GA 30315

Conference Registration Form:  
(Please one per registrant)

Name: \_\_\_\_\_

Street Address: \_\_\_\_\_

City, State/Province: \_\_\_\_\_ Zip \_\_\_\_\_

Zoo Affiliation: \_\_\_\_\_

Name & Title for Badge: \_\_\_\_\_

Primary field of interest: \_\_\_\_\_

	Yes	No	
AAZK member .....	_____	_____	
Committee Member .....	_____	_____	
Submitting a paper .....	_____	_____	
Vegetarian .....	_____	_____	Type: _____
Participating in Zoolympics .....	_____	_____	
Bringing an auction item .....	_____	_____	
Interested in a T-shirt .....	_____	_____	Size: <u>  </u> S <u>  </u> M <u>  </u> L <u>  </u> XL

Please check boxes of fees you will be paying and events you plan to attend:

Full Conference rates	Daily Conference Rates
Member \$95 _____	Monday - \$25 _____ Wednesday - \$25 _____
Member spouse - \$95 _____	Tuesday - \$30 _____ Thursday - \$25 _____
Non-Member - \$110	Icebreaker-\$10 _____ Banquet - \$35 _____
Late Fee* - \$10	Late Fee* - \$3

\*Late Fees charged after 9/1/93 Total Amount Due \_\_\_\_\_

Daily registrants MUST register 48 hours prior to day or event.

Full Conference rates include all activities, meals and transportation.

Daily registrants must register for the Icebreaker and Banquet separately.

Conference Trips: Please check the trip you are interested in joining.

   A one day trip to Chattanooga Aquarium on Saturday, October 9.

   A weekend trip to Cumberland Island and White Oak Plantation, Friday through Monday, October 15-18.

PLEASE MAKE PAYMENTS TO: ZOO ATLANTA AAZK CHAPTER

Indicate form of payment:    Check    Visa    Mastercard    Discover    AMEX

Card Number: \_\_\_\_\_ Expiration Date: \_\_\_\_\_

Signature: \_\_\_\_\_

## HOTEL REGISTRATION FORM

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE/PROVINCE \_\_\_\_\_

ZIP CODE \_\_\_\_\_ PHONE ( ) \_\_\_\_\_

ARRIVAL CODE \_\_\_\_\_ CHECK-OUT \_\_\_\_\_

I WILL BE PAYING BY: \_\_\_\_\_ CHECK \_\_\_\_\_ CREDIT CARD  
(First Night's Deposit or Credit Card Required)

ROOM GUARANTEED BY: \_\_\_\_\_ VISA \_\_\_\_\_ MC \_\_\_\_\_ AMEX \_\_\_\_\_ DISC

CREDIT CARD NUMBER: \_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_ EXP. DATE: \_\_\_\_\_

NAME AS IT APPEARS ON CARD \_\_\_\_\_

AUTHORIZED SIGNATURE FOR APPROVAL: \_\_\_\_\_

\*\*\* CONFERENCE ROOM RATE (INCLUDING 13% ROOM TAX)\*\*\*

\$92.66 per night      1 to 2 PEOPLE PER ROOM

\$103.96 per night      3 to 4 PEOPLE PER ROOM

Rooms for AAZK Conference are being held until September 16, 1993. Any reservations made after that date will be on a space available basis only.

\*\*\* A 72-hour cancellation is required for a deposit refund \*\*\*

CHECK-IN TIME IS: 3:00 p.m.

CHECK-OUT TIME IS: 12 NOON

TO MAKE RESERVATIONS BY PHONE, DIAL 1-800-422-7895

Most rooms have two double beds. King-size rooms are available on a request basis only.

Parking at the Sheraton Colony Square Hotel is \$7.50 per day for self park. Valet parking is \$10.00 per day.

Non-smoking rooms available upon request.

Please return this form to:

Sheraton Colony Square Hotel  
188 14th Street, NE  
Reservations Department  
Atlanta, GA 3036174



# **Boomer Ball®**

## **1993 Second Annual Photo Contest**



### **WINNERS**

**Miller Park Zoo, Bloomington, IL - Jan Outlaw, Zookeeper  
Sumatran Tigers "Masuji" and "Katie"  
Indian Lions "Ishmael" and "Paletana"**

**have won 2 Jungle Balls  
2 Bobbins  
2 10" Challengers**

**Topeka Zoological Park, Topeka, KS - Kayla Grams,  
Lead Cat Keeper  
Siberian Tiger "Lenny"  
African Lion "Arusha"**

**have won 2 10" Challengers**

**Sacramento Zoo, Sacramento, CA - Lee Houts,  
Ungulate Keeper  
Nile Hippo "Jewel of the Nile"**

**has won a 20" Jungle Ball**

**Gorilla Foundation, Woodside, CA - Natasha Yankoffski  
Editorial Staff**

**Lowland Gorilla "Michael"**

**has won a 20" Jungle Ball**

**We wish to thank all of the winners - their awards are on the way to them. Look for pictures at our table at the July 1993 Environmental Enrichment Conference given by the Metro Washington Park Zoo in Portland, OR.**

**Boomer Ball®  
P.O. Box 83, Grayslake, IL 60030**

# Are you Computer "Green?" by Don Rittner

More than 75 million Americans own a personal computer and this number is rapidly climbing as computers become more affordable. Many more use computers in their workplace (more than 40 million intel-based PCs and 7 million laserwriters use 18.2 billionkilowatt/hours of electricity per year)!

Most people think of computers as relatively pollution free, but the ACT of computing is not. Here are a few tips to help make your computing a bit more environmentally correct.

## The Computer

If you work in an office where they are many terminals and you leave your monitors on, turn OFF your heat in the room during winter months. There is enough heat coming from the monitors to keep the room warm. If you are working at home or with one computer at a time, turn off the monitor if you can when not using it, or use a screensaver that will dim or turn off the monitor when it is idle. This will extend the life of your monitor by preventing phosphor burn-in.

## Electronic Mail

If your office does not have your computers networked together, do it! The use of electronic mail for interoffice correspondence can save a tremendous amount of paper. American offices last year generated more than 775 billion pages of paper -- read that 14 million tons of paper a year, or 238 million trees.

## Floppy disks

Do you have 3 1/2 inch floppies that just don't hold data any more? Well, don't throw them away. They make great coasters for your morning coffee!

## Disk Storage

Don't go out and buy those wooden disk storage boxes. If you or a friend has a newborn child (or know someone who has), the rectangular "baby wipes" makes great disk storage containers. You can get about 50 disks in a box. Soak off the labels and you can write on the box using a magic marker. Printers! If you use a dot matrix or laserwriter there are a few things you can do. First, be sure to use recycled paper (and envelopes) in both types of printers, and remember to use the "back" side of sheets that you print as drafts. There is nothing wrong with using the second side of the sheet. This cuts your consumption of paper in half. PROOF your work before you print. Most wasted paper are from stupid typos!

If you use cloth type ribbons in your dot matrix printer, you can re-ink those ribbons. In fact you can get up to 15-20 re-inks per ribbon and the quality of the print is usually darker than newer ribbons. This also reduces the cost per ribbon. Many computer user groups have re-inkers and charge \$1 to re-ink (vs \$5-15 per new).

## Labels

Of course you should be using recycled paper labels for envelopes. MACO from Hillside, New Jersey makes self sticking computer labels, file folder labels, and more.

For Laserwriter users, many of the toner cartridge manufacturers are now recycling those cartridges and donating money to environmental organizations. Some pay you! They pay for the UPS shipping too. Also, there are companies that will recharge your toner cartridge for considerably less than the cost of a new one (\$40 compared to \$90). Considering that more than 98% of the 15 million cartridges sold in 1991 ended up in landfills, and only a fraction recycled, you can see how important it is to recycle those toner cartridges.

## -Toner Cartridge Recycling

### Apple Clean Earth Campaign

(800) 776-2333

Donates 50 cents to National Wildlife Federation and Nature Conservancy per cartridge.

Call them and they send you a prepaid UPS shipping label.

### Canon Clean Earth Campaign - Canon has the same deal as Apple

(800) 962-2708.

## **Are You Computer Green?** *Continued*

Dataproducts Imaging Supplies Division  
(800) 423-5095

Dataproducts will pay you \$10 for each Canon SX cartridge plus the shipping if you send 28 or more cartridges at a time.

Lexmark Operation Resource  
(800) 848-9894

Recycles the six IBM laser Printer models in its 4019 and 4029 series. Will send you a postage paid container. They give the returned cartridges to a workshop for the handicapped which makes money by selling the parts to recycling companies.

Qume Corp.  
(800) 421-4326

Large organizations designate an employee fund or charity to receive the money from their recycling effort.

### **-Rechargers**

Recycleneur Institute  
(305) 539-0701

For every used cartridge collected from local organization, they donate \$2 to a scholarship fund to help entrepreneurs break into the recycling business. The institute will mail you a list of cartridge recycling companies in your area.

### **Computer Magazines**

Don't throw away those read computer magazines. You can recycle those too. Donate them to your local public library, user groups, doctors office, health clubs, even laundrys.

Don Rittner is the author of *EcoLinking - Everyone's Guide to Online Environmental Information*, by Don Rittner. It is published by Peachpit Press (1992, Berkeley, CA. 800-283-9444). Copyright ©1992 Don Rittner

--*Greendisk Dec/Jan*



## **Civil War in Rwanda Forces Gorilla Caretakers to Flee**

All efforts to protect the highly endangered mountain gorillas in Rwanda have come to a temporary halt due to civil unrest between the Rwandese Patriotic Front and the Government. Current fighting between these two political entities has moved into the northwestern town of Ruhengeri, forcing conservationists to abandon field operations. Ruhengeri is the home of Morris Animal Foundation's Volcano Veterinary Center and the Dian Fossey Gorilla Fund's Karisoke education office. The Volcano Veterinary Center is a health care facility for the mountain gorillas who live in the adjacent tropical rain forest known as the Parc National des Volcans. The Volcano Veterinary Center Director, H. Melvyn Richardson, DVM, and Veterinary Technician, Dawn Garcia have been ordered to leave the country until conditions improve.

The Karisoke education office is the communications link to Karisoke Research Center, located in a remote part of the park. Five scientists (two British, one German, and two Americans) remain at Karisoke Research Center because they are unable to leave the site until rebel fighting stops. They have sufficient supplies to hold out for an extended period. Karisoke's Director, Dieter Stcklis, PhD, is staying in the Rwandan capitol of Kigali until the remaining five staff members can be safely evacuated. He is able to maintain communications with the center only by radio. --*from a joint News Release of the Morris Animal Foundation and The Dian Fossey Gorilla Fund 10 February 1993.*

*Editor's Note:* As this issue went to press we received a FAX from Rich Block at The Dian Fossey Gorilla Fund saying that on 18 February armed military personnel had entered Karisoke Research Center causing eight remaining Rwandan staff to flee on foot. While fleeing, the staff crossed the trail of Group 5. A large quantity of blood was found along the trail heightening concern about the safety of the mountain gorillas. Military personnel have apparently ignored assurances that the Parc National des Volcans and the indigenous wildlife would not be caught up in the military actions between the Rwandese Patriotic Front and the government. Group 5 has been recognized for over 20 years, the longest documented history of the three current research groups. It's the second largest gorilla group with 36 members.





# Book Review

## Communication and Noncommunication by Cephalopods

By Martin Moynihan 1985

Indiana University Press, 10th and Morton Sts., Bloomington, IN 47405

141 pgs. \$32.50

*Review By Rick Emmer  
Keeper, Rainforest  
Cleveland Metroparks Zoo  
Cleveland, OH*

This is an interesting little book, dealing mainly with little animals about whose behavior relatively little is known. Little wonder, then, that the book contains only 87 pages of text. Author Martin Moynihan laments that cephalopods have been largely ignored in recent behavioral research and hopes that this book rekindles interest in these unusual animals.

Cephalopods are members of the phylum Mollusca, which contains snails, clams, octopuses and the like. Class Cephalopoda consists of the octopuses, squids and cuttlefishes (subclass Coleoidea) and the nautilus (subclass nautiloidea). Apart from a couple of brief paragraphs at the beginning of the book, the poorly understood nautiloids are excluded from this treatise on cephalopod communication. This is really a book about communication in coleoids, the "geniuses" of the invertebrate world, whose complex visual communication systems appear to rival those of many vertebrates.

The book begins with a brief overview of cephalopod evolution, systematic, behavior and ecology. Next, following a quick look at the sensory system of these molluscs, Moynihan presents numerous examples of cephalopod behavior patterns, which consist of a variety of combinations of stereotyped poses and color patterns (coleoids are truly the chameleons of the sea). Twenty-four pen and ink drawings and five photographs nicely complement the text here, giving the reader a good "feel" for what cephalopod communication entails. An analysis of these displays shows that most of them function in one or more of three ways: to indicate an animal's willingness to attack, flee, or engage in sex.

Moynihan next makes a linguistic comparison between coleoid displays and human speech. The author assumes a basic knowledge of linguistics on the reader's part. Anyone not familiar with this science -- this reviewer, for one -- will probably find this part of the book difficult to follow.

The book ends with numerous suggestions for further research in cephalopod behavior and communication. Specifically, more photographic and cinematographic documentation of cephalopod behavior is needed. Also, better understanding of communication in other species is needed to permit more thorough interspecific comparisons in animal communication.

Communication and Noncommunication in Cephalopods deals with a specialized subject and will not have a large readership. It will be of greatest value to those interested in cephalopod behavior, communication systems and linguistics.



## Topeka Zoo Tropical Rain Forest Exhibit Devastated by Early Morning Fire

On 11 November, 1992, the Topeka Zoological Park experienced a devastating fire in its Tropical Rain Forest Building. The blaze, which was discovered around 7:30 a.m. as staff arrived for work, was caused by a broken low water shutoff switch in one of the two boilers that allowed the boiler to continue firing and overheat after all of its water had boiled away. Flames burned through the boiler room roof, then ignited the clear acrylic panels of the exhibit's geodesic dome. About 30 panels, making up about one quarter of the dome roof, were either damaged or destroyed. The fire's intense heat caused the acrylic panels to melt.

With the loss of such a large portion of the dome, the interior of the building lost its heat in the 40 degree temperatures. The fire was extinguished in about ten minutes and Topeka Zoo staff moved in to rescue the animals inside. The quick actions of the keeper staff helped keep the animal death toll down to 24. Seven animals in the building's reserve area died outright of smoke inhalation. These included a pair of Blue and gold macaws, a male Fairy bluebird, a pair of Mandarin ducks and two male Indian giant fruit bats. As the hours, days and weeks have passed 17 other animals, including a Golden rumped agouti, an Asian small-clawed otter, a Nicobar pigeon chick, a Speckled pigeon, a rare Bali Mynah, five Tokay geckos and several additional Indian giant fruit bats have died.

After the animals were removed from the building, firefighters and a crew from the Parks and Recreation Dept. struggled against stiff Kansas winds to cover the gaping hole in the dome with tarpaulins. Continuing strong winds dislodged the cover by the next day and it has since been replaced with a stronger, more tightly anchored and more translucent reinforced plastic sheeting. The replacement panels in the dome will have to be custom-made which will take several more months. Permanent repairs will have to wait for warmer weather.

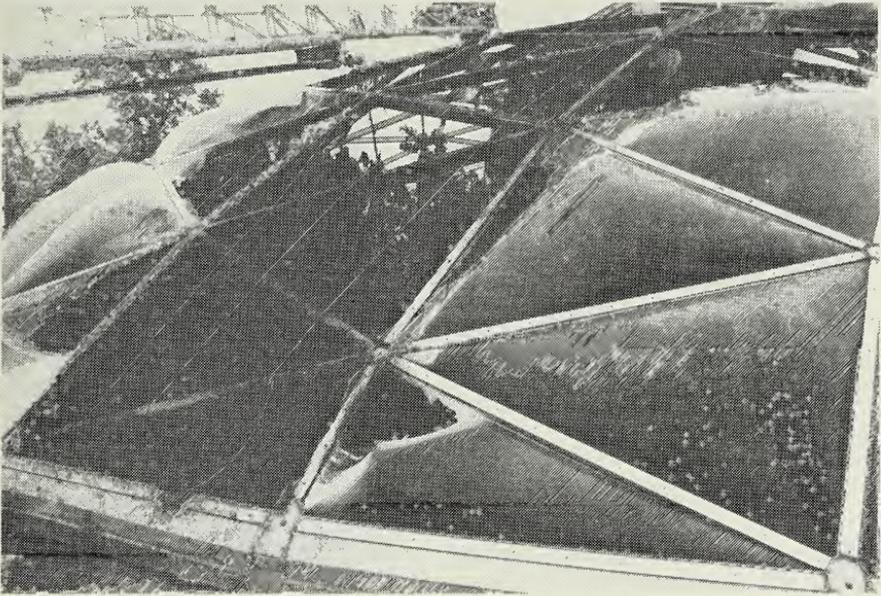
While the building was without boiler heat, temporary heating was provided by propane heaters set on timers. While the animals had been removed from the building, it was feared that many of the 150 varieties of plants in the tropical rain forest exhibit would not survive as Kansas winter temperatures began to set in. The zoo's horticulturist trimmed back most of the foliage and much of it appears to be making a comeback. Additional plantings are being added to replace some that was lost to the fire.

While the building is closed for repairs, the animal collection has been sent to other zoos that had quickly stepped forward to offer assistance and temporary housing. These included Omaha's Henry Doorly Zoo, the Kansas City Zoo, the Sedgwick County Zoo in Wichita, KS, the Sunset Zoo in Manhattan, KS and the Folsom Children's Zoo in Lincoln, NE. Offers of help also came from zoos in Emporia, New Orleans, Houston, San Antonio and Oklahoma City. Some of the collection is being housed at the Topeka Zoo in reserve facilities.

The Tropical Rain Forest was opened in May of 1974 and was the first exhibit of its kind. It was built at a cost of \$250,000. The building is 100 feet in diameter; the building is 30 feet tall and 20 feet of that is the dome's height. The dome was manufactured by Temcor, a company specializing in clear-span geodesic domes. It is a self-supporting structure of extruded aluminum framework in which are set 230 one-quarter inch thick clear acrylic triangular panels. The panels vary in size and are curved to add strength. At the interior's center is a 17-foot tall waterfall. Of the over 100 animals kept in the building, most are in free-ranging conditions.

Estimates for repair of the facility are not completely determined, but will undoubtedly run into the thousands of dollars. The Topeka Zoological Foundation has established a Rain Forest Repair Fund and has been receiving generous support from the community. No date for reopening the exhibit has been set.

**Topeka Zoo Rain Forest Fire, *Continued***



The photo above shows the extensive damage to the acrylic panels of the geodesic dome of the Tropical Rain Forest exhibit at the Topeka Zoological Park. Firefighters on a hook and ladder rig are shown stringing supports for a temporary tarpaulin cover. The fire destroyed about one quarter of the dome. *(Photo by Ron Kaufman)*



The Rain Forest exhibit's interior suffered extensive plant damage from a combination of heat, dripping melted acrylic from the dome's panels, toxic fumes and the extreme change in temperature caused by loss of heat through the dome's cover. The building housed approximately 150 varieties of plants as well as many species of fauna. Approximately 25 animals died as a result of the fire. *(Photo by Ron Kaufman)*

# Chapter News

## NEW CHAPTERS

AAZK is pleased to welcome two new Chapters to the Association. They are:

Walk in the Wild Chapter, Walk in the Wild Zoo, P.O. Box 14258, Spokane, WA 99214. The Chapter's officers are:

President.....Donna V. Cohen  
Vice Pres.....LeAnne Brady  
Secretary.....Camille Horner  
Treasurer.....Marilyn Omlor  
Liaison.....Donna V. Cohen

### AAZK Chapter of the Pike's Peak Region

This Chapter includes members from the Pueblo and Cheyenne Mountain Zoos. Their address is 4250 Cheyenne Mt. Zoo Rd., Colorado Springs, CO 80906. The Chapter officers are:

President.....Kristine S. Hassler  
Vice Pres.....David Fraser  
Secretary.....Kendra Hohmann  
Treasurer.....Andrea Bernee  
Liaison.....Tracey Anderson

### San Diego AAZK Chapter

At the January meeting, Georganne Irvine, SDZ Public Relations Manager, treated Chapter members and guests to slides/video of her recent adventures in Burundi and Zaire.

Georganne visited the Halfway House in Burundi which is a chimpanzee orphanage and one of many projects of the Jane Goodall Institute. Sixteen chimps housed at the temporary facility range in age from 1-11 years. They were confiscated from illegal vendors or poachers who had slaughtered their mothers. Others were donated by people who discovered too late that chimps don't make good pets.

The chimpanzees arrive at the Halfway House physically and psychologically ill. Georganne told of one chimp's horrid background. Uruhara's (means "bold" in Kirundi) mother was shot by a Zairian hunter. He was captured and smuggled into Burundi. Deep wounds

from a belt kept around his waist had cut through his skin. A Belgian hotelier bought him for a few shillings and kept him in a box. He became almost hairless from malnutrition and stress, and exhibited rocking behavior.

Uruhara was rescued by the Jane Goodall Institute's Halfway House. With proper nutrition and medical care he was returned to good health - as are all the chimpanzees at the Halfway House. They are also resocialized so they may eventually live with the other chimps as part of a social group. Plans to construct a four hectare Sanctuary on the shores of Lake Tanganyika are in the making.

Georganne also presented some incredible slides of eastern lowland gorillas (breeding!) at Kahuzi Biega National Park, Zaire, where there are four habituated groups.

A hike to the pygmy village was quite an adventure. Unfortunately, Georganne dislocated and fractured her knee cap. She didn't let that cut her trip short though. What a trooper!

For interested individuals, you may obtain membership information for the Jane Goodall Institute by writing the institute at 15 Clarendon Park, Lymington, Hants S041 8 AX, U.K. Tel/Fax: 0590 670887.

*--Mary Dural, Chapter Liaison*

*Editor's note: Congratulations to the San Diego Chapter and also to Andrew Simmons, editor, on the great new look of their newsletter, The Keeper! Great color and format!*

### Metro Toronto Zoo AAZK Chapter

Officers for 1993 are:

President.....Charles Guthrie  
1st Vice Pres.....Maria Franke  
2nd Vice Pres.....Mark Bongelli  
Secretary.....Karyn Tunwell  
Treasurer.....Neil Porter  
Chapter Liaison.....Eric Cole  
Conservation Officer...Dan Pearson

After much delay, the MTZ finally acquired Black-footed ferrets as part of the species' recovery program. In

## Chapter News, Continued

conjunction with this, the Chapter designed Black-footed ferret T-shirts which proved particularly popular at last year's AAZPA Conference. With more on order they will be available to the general membership by the time this goes to print.\*

Our Chapter also got involved in assisting Emma Salked, a vet student/summer keeper in the recovery of old and surplus tools and equipment for shipment to Lima Zoo in Peru, where she spent a month as a working volunteer.

In January of this year, to counter the mid-winter doldrums, our year's first membership meeting was a 'beer and pizza' bash where our own Franc Faigal gave an amazing slide presentation on the search for the Liberian mongoose expedition to West Africa, during which he served as the official photographer.

The \$5 entrance fee included membership in the Chapter for the year for those who signed up with National.

The Metro Toronto Zoo and our Chapter regret to report the death of keeper and AAZK member Doug Knuff. Doug, who began work at MTZ in 1976, died at his home of an aneurism. He will be greatly missed.

\*T-shirts are available by sending \$15 (US) to Ariel Shamir, Metro Toronto Zoo AAZK Chapter, P.O. Box 280, West Hill, Ontario, Canada M1E 4R5. Price includes shipping. Please specify Small, Med., Lg., or X-Lg.

*--Eric Cole, Chapter Liaison*

### Bronx AAZK Chapter

Our new officers for 1993 are:

President.....Peter Psillas  
Secretary.....Sara Rounseville  
Treasurer.....Bob Edington  
Liaison.....Pam Hedding

This past year our Chapter had many excellent speakers at our meetings including George Schaller who spoke about the Tibetan plateau and Mary Perl from Wildlife Conservation International who spoke on the Proboscis monkey.

In August we held our Chapter Bar-B-Q and silent auction which went very well. In December we had a Christmas fundraiser, selling Rain Forest Crunch™ and our Chapter T-shirts.

The biggest news is that we are no longer called the Bronx Zoo. We will be known as The International Wildlife Conservation Park. Our Chapter is now discussing renaming ourselves accordingly. A new Chapter patch is also being designed by Lisette Ramos.

In 1993 we hope to have many interesting speakers, along with field trips and other activities. We will keep you posted.

*--Pam Hedding, Chapter Liaison*

### Central Florida Chapter

The calendar of upcoming events for this AAZK Chapter include the following: March - "Project Puffin" at Sea World; April - "Sea Turtle Preservation Society" at Sea World; May - "Bowling or Rhinos/Save a Horny Friend"; June - Tour of Discovery Island and Cook-out' July - Fundraising event for AAZK National.

*--Chapter Flier*

### Topeka Zoo AAZK Chapter

Our Chapter held our yearly elections at our December meeting. New officers for 1993 are:

President.....Darrin Webb  
Vice Pres.....Ragan Fairchild  
Secretary.....Warren Waters  
Treasurer.....Kathy Waters  
Liaison.....Mel Starr

Our Chapter offered to pay for three memberships for anyone interested in joining AAZK as an incentive to increase chapter membership. We had two full-time keepers take advantage of this offer. We would like to welcome the new members, increasing our membership by 33%!!

In the last eight months our chapter has been very busy with a variety of activities. For Earth Day we set up a booth to sell elephant footprints, Rain Forest Crunch™, and raffle tickets.

## Chapter News, Continued

With each raffle ticket purchase, we gave the buyer a green ribbon to put on their car antenna representing earth awareness. We raised \$150.00 from this activity and elected to donate it to National AAZK to use as they see fit.

Our Chapter also participated in "Bowling for Rhinos", raising \$699.66 towards this very worthy cause.

As a Chapter we felt it was necessary to support the Zoo Crisis Fund and we were able to contribute \$50.00 to this hurricane relief fund.

In September, three of our Chapter members went to the 1992 National AAZK Conference in San Diego. Gretchen Ziegler and Kayla Grams gave an Environmental Enrichment Workshop.

In the Topeka Zoo's Animals and Man Building, our Chapter has a showcase that we use to display a variety of organizations whose goal is to help the earth and its wildlife. In front of the display we also have a Twirl-a-Coin™ used to raise funds towards the organization featured in the showcase. The most recent organization we supported was Cheyenne Bottoms, a wetlands wildlife preserve in Central Kansas. Cheyenne Bottoms is located in the middle of a major migratory flyway for several species of birds. While the display was up, we were able to collect \$586.56 to donate to this very important and precious preserve.

Our new showcase features our zoo's Tropical Rain Forest. Last November the exhibit was devastated by a fire that destroyed about a quarter of the geodesic dome, a significant portion of the vegetation, killed 24 animals and injured several more. Our Zoological Foundation has established a Rain Forest Repair Fund. A portion of the money our Chapter raises from the showcase and Twirl-a-Coin™ will be donated to this fund.

--Mel Starr, Chapter Liaison

## Greater Houston AAZK Chapter

Our new officers for 1993 are:  
President.....Ric Urban  
Co-Vice Pres.....Colette DeGrange and  
Michelle Becker  
Secretary.....Sheila Phillips  
Treasurer.....Michele Ozuna  
Liaison.....Christina Smith

Our Chapter has many projects planned for the year. In May we will have our third "Bowling for Rhinos". Last year we made \$2661.00 for the rhino cause.

The Texas Nature Conservancy and the North Woods Presbyterian Church donated a Conservation Parking meter to our AAZK Chapter. Plans are underway to set it up.

The Houston Zoological Society has given us four aluminum can recycling bins that give a penny to the zoo visitor for each can donated. We are looking forward to a generous response.

We are collecting items and money to send to East Zaire to help the park guards protecting the Eastern lowland gorillas.

Our main goal for this year is to increase our local AAZK membership. We would like to see a variety of professionals join our organization. It would be very beneficial to have docents, zoo maintenance, local teachers and professors, wildlife rehabilitators and all others interested in conservation joining our organization. Such diversified input would be useful.

--Christina Smith, Liaison

## Indianapolis Chapter AAZK

Our officers for 1993 are:  
President.....Patty Pearthree  
Vice Pres.....David Hagan  
Secretary.....Kathy Fischer  
Treasurer.....Bill Potter  
Liaison.....Maria McManus

Our Chapter raised \$4,800.00 during the "Christmas at the Zoo" Hot Chocolate Sale. Part of this money may go to purchase a Conservation Parking Meter. We are now gearing up for our "Bowling for Rhinos" event on 17 April.

--Maria McManus, Chapter Liaison



# Elephant Set

*(Editor's Note: Over the next several months, this column will contain material on elephant morphology and physiology; external diseases including parasites; internal diseases including systemic, gastrointestinal and respiratory; and use of anesthesia. These articles were part of an extensive research manuscript written by Ursula Bechert, DVM of Corvallis, OR.*



## Morphology and Physiology

*By Dr. Ursula Bechert, DVM  
Corvallis, OR*

Elephants have 68 spinal vertebrae (Adams, 1981). Their limb bones contain no marrow but are filled with spongy bone. The forelimbs and hindlimbs are arranged vertically to best support body weight. Elephants can run up to 39 kph, but only for short distances (Wexo, et al. 1986). Their normal walking speed is 7 kph.

Both species and sexes have tusks which are modified upper incisors used for digging, peeling bark from trees and fighting between bulls. Female Asiatic elephants have relatively small tusks. One third of the tusk is held within the large alveolar process of the skull. The dental formula of the elephant is: 1 1/0 C 0/0 PM 3/3 M 3/3, total 26 (Schmidt, 1986). Temporary tusks are present at birth; the permanent tusks erupt in 1-2 years and continue to grow throughout life. The molars are pushed anteriorly and replaced each decade for 60 years (roughly the lifespan of an elephant) (Fig. 1). Pressure from the new molar decreases the blood supply to the old molar causing it to fracture and resorb its root (Roth and Shoshani, 1988). Molar 1 erupts at 1-2 months, M 2 at 2-3 years and M 3 at 4-5 years.

Figure 1

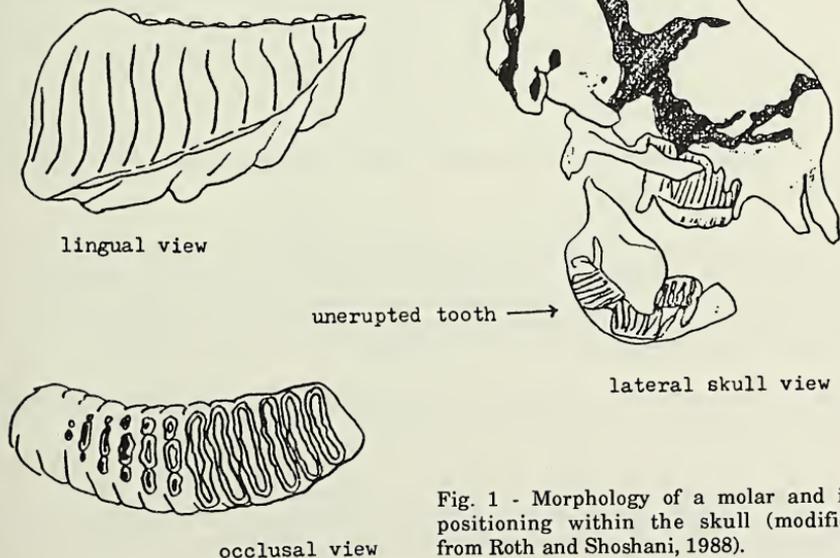


Fig. 1 - Morphology of a molar and its positioning within the skull (modified from Roth and Shoshani, 1988).

## Elephant Set: Morphology and Physiology, *Continued*

Age of an elephant can be determined by dentition using three or more measurements such as length and width of a tooth, lamellar counts and the morphology and state of eruption (Roth and Shoshani, 1988). Assessing the age of an individual elephant can be important in determining onset of sexual maturity or skeletal maturity with epiphyseal fusion, which is complete between 30-40 years of age.

Heart rates range from 25-46 beats per minute, increasing to 60 per minute with strenuous exercise (Fraser, 1986; Wallach and Boever, 1983). Usually heart sounds cannot be heard due to the large size of the elephant, but a pulse rate can be detected by palpation of the arteries supplying the ears. Electrocardium recordings are best made with Lead 1 (Fig. 2). (Wallach and Boever, 1983). Large venous plexuses and free anastomoses exist in superficial and deep temporal, pharyngeal, pectoral, anterior and internal femoral, popliteal, axillary and brachial regions (Schmidt, 1986).

Figure 2

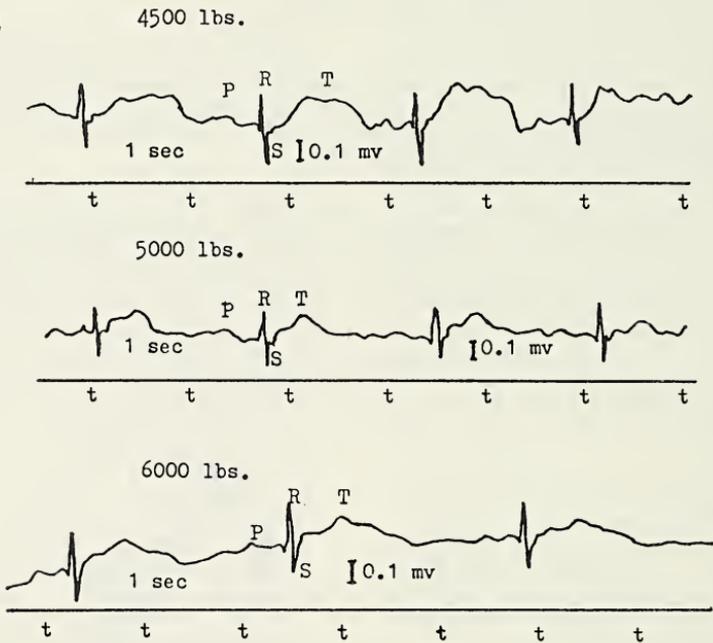


Figure 2 - Electrocardiograms of three adult elephants (lead 1) (Modified from Wallach and Boever, 1988).

Respiratory rates are 10-12 breaths per minute but drop to 4-5 per minute during sleep. Elephants have no pleural cavity. Their lungs are attached directly to the ribs by fibrous connective tissue, making respiratory movement entirely dependent on the movement of thoracic musculature. Animals in sternal recumbency quickly become dyspneic due to additional abdominal pressure against the diaphragm (McGavin, et al., 1983).

Tables 1 and 2 present normal hematologic, blood chemistry and cerebrospinal fluid (CSF) values.

Normal rectal temperature ranges from 36.4-37.2° C (97.5-99° F) and is 0.7°C higher than rectal body temperature if taken from fresh fecal material (Klos & Land, 1976). Body temperatures of 37.8° C (100° F) are significant and considered fever (Schmidt, 1986). Elephants can tolerate cold temperatures very well due to their large mass-to-surface area ratio but high temperatures and direct sunlight are not well tolerated.

**Hematological Values**

	<u>African</u>	<u>Indian</u>
Rbc ( $10^6$ /ul)*	2.9-3.8	2.86-3.5
Hb (g/dl)	13.6-14.5	11.4-12.8
PCV (%)	39.6-48	32.4-34.9
Platelets ( $10^3$ /mm <sup>3</sup> )	-	637 (491-975)
MCV ( $\mu^3$ )	106-122	113.7-122.1
MCH ( $\mu$ g)	-	33.6-48.0
MCHC (%)	31-39	25.2-36.9
Wbc ( $10^3$ /ul)	9.5-16.4	5.4-16.7
Neutrophil (%)	40	37.6-43
Lymphocyte (%)	58-77	49.3-56.1
Monocyte (%)	-	1.8 (1.5-2.0)
Eosinophil (%)	0-1	1.7-3.0
Basophil (%)	0.1 (0-0.7)	-
Fibrinogen (mg/dl)	345 (100-600)	-

\*Red blood cells are large; 8.8-10.6  $\mu$ m in diameter and 9.3  $\mu$ m in thickness (Schmidt, 1986).

**Serum Chemical Values**

	<u>African</u>	<u>Indian</u>
Glucose, mg/dl	93.5 (71-116)	113.7 (75-258)
Bilirubin, mg/dl	0.1 (0.1-0.2)	0.3 (0-2.2)
BUN, mg/dl*	7.9 (5-13)	10.2 (1-17)
Cr, mg/dl	1.1 (0.6-1.5)	1.7 (1.3-2.5)
Uric acid, mg/dl	0.3 (0.2-0.7)	0.33 (0-11.3)
TP, g%	8-9	8.6 (7.1->10)
Albumin, g/dl	3.1 (2.3-3.7)	2.5 (1.4-3.4)
Globulin, g/dl	3.9 (2.7-6.2)	-
Cholesterol, mg%	121 (63-71)	56.5 (39-90)
Serum iron, mg/dl	67 (42-93)	-
Na, mEq/L	128 (119-143)	133.6 (127-155)
K, mEq/L	5.3 (4.6-6.9)	4.83 (3.8-6.6)
Cl, mEq/L*	87 (74-106)	90.4 (84-103)
Ca, mg/dl@	10.4 (9.1-12)	10.4 (4-12.4)
P, mg/dl@	5.7 (3.7-7.4)	4.9
Mg, mEq/L	3.4	2.2 (1.5-3.3)
SGOT, IU/L	28.6 (15-54)	44.2 (7-319)
LDH, IU/L	535 (358-825)	391.3 (170->700)
ALP, IU/L	210 (71-478)	125.6 (60-334)

\*With increasing age, Cl increases and BUN decreases (Allen, et al. 1985).

@Gromadzka-Ostrowska, et al. (1988) found seasonal variations of Ca, P and Mg in both species of elephant with Ca being higher in the winter ( $P < 0.05$ ) and P and Mg, higher in the summer.

**Table 1 - Blood and serum chemistry values in African and Asian elephants (Wallach and Boever, 1983; Allen et al., 1985; Gromadzka-Ostrowska, et al. 1988; Schmidt, 1986).**

**Table 2 - Cerebrospinal fluid values in an Asian elephant (Schmidt, 1986).**

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Rbc	18/mm <sup>3</sup>
Wbc	0
Total protein	7.8 mg/dl
Glucose	156 mg/dl
K	3.2 mEq/L
Na	133 mEq/L
Cl	105 mEq/L
Bilirubin	0.1 mg/dl
IgC	3.7 mg/dl

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A separate distensible pharyngeal pouch superior to the larynx allows the elephant to control the flow of food or fluid into the esophagus (Schmidt, 1986). The elephant has a simple stomach and gastrointestinal system similar to that of a horse with hindgut fermentation. There is: 2.1m of small intestine, 12.8m of large intestine, and 0.6-1.5m of cecum. A large and sacculated bile duct takes the place of a normal gallbladder.

Defecation rates are higher in wild elephants during the wet season (1.32 scats/hour) than the dry season (0.40/hour) (Barnes, 1982). For elephants fed primarily hay in captivity, an average of 12-20 defecations/day is normal (Schmidt, 1986). Fecal consistency is similar to that of horses.

The kidneys are multilobed. Normal elephant urine is straw colored, slightly acidic, and passed more frequently during the night than the day. Turbidity is usually due to large quantities of crystals, particularly calcium oxalate (in acidic urine), calcium carbonate (in alkaline urine), and amorphous phosphates (various pHs) (Schmidt, 1986). Voided volumes range from 5-11 liters and the average daily output in captivity is 50 liters. Urination frequency averages 8-12 times per day. Specific gravity ranges between 1.004-1.003 with an average of 1,019 (Fetner, 1987; Schmidt, 1986). Large volumes of water (130-160 liters per day) are required daily to replace urinary losses, vaporization losses from skin and lungs (20 L per day) and to balance urea in the system (only true ruminants normally recycle their ures) (Fetner, 1987).

The trunk is a modified nose and upper lip with great dexterity and strength due to the "40,000" muscles which compose it (Wallach and Boever, 1983). It is made entirely of muscular and membranous tissues versus the insectivorous snout, which develops from the nasal cartilage (Miall, 1878). Calves require time to practice using their trunks before they learn all its uses and develop coordination (Kunkel, 1989).

Elephants have poor eyesight and depend heavily on their sense of smell and hearing. The "elephant has a paurangiote retina which appears as a pale retine with a few large vessels surrounding a pale optic disc" (Schmidt, 1986, p.887). There is no lacrimal apparatus so the harderian gland on the inner surface of the third eyelid supplies moisture and lubrication for the eye.

The large ears of the elephant (each ear of the African elephant weighs about 110 pounds) serve as effective thermoregulators, cooling blood temperature 5°C through one cycle. Water and mud baths help cool elephants and maintain the condition of their skin. Dust baths protect them from insect bites. Their skin is thinnest over the ears, making this a good site for venipuncture. "Pachyderm" means "thick skin" in Latin, and the skin is 2.5 to 3.5cm thick on the lateral aspects of the limbs and body. For intramuscular injections, 6.5 to 10cm long needles must be used (Wallach and Boever, 1983). There are no sebaceous glands present with the hair follicles (Nowak and Paradiso, 1984). Sweat glands are present throughout the skin but are sparse except just above the toenails (Schmidt, 1986).

## Elephant Set: Morphology and Physiology, *Continued*

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## *Publications Available*

Putting Biodiversity on the Map: Priority Areas for Global Conservation, published by the International Council for Bird Preservation, identifies 221 sites which host most of the world's endemic birds. These endemic bird areas are compared with known endemisms of other fauna and flora, examined to determine their overall diversity, contrasted with protected area coverage, and analyzed in reference to diverse parameters (habitat types, area extension, percentage of species, latitudinal distribution, etc.). This is a very important tool for conservation since 25% of the world's bird species occur in 5% of the planet's land surface. These areas are also equally important as centers of diversity for other life-forms. To obtain a copy, write International Council for Bird Preservation, 32 Cambridge Road, Girton, Cambridge CB3 0PJ England (12.50 pounds sterling) or ICBP, P.O. Box 57242, Washington, DC 20037-7242, USA (\$23.50).

Institutional Animal Care and Use Committee Guidebook, published by the U.S. Dept. of Health and Human Services. Historically, regulations concerning the care and use of animals in laboratory research have been derived from two main sources: the experimental scientists themselves and the local humane societies formed to protect pets, farm animals and work animals from abuse. Since 1986, when the National Institute of Health originated, it has taken an active role in encouraging proper care and use of laboratory animals. This 124-page book sells for \$13.00/order by Stock # 017-040-00520-2 from the Superintendent of Documents, Washington, DC 20402-9325; or to order with Visa or MasterCard call (202) 783-3238.



**L.I.N.K.**  
**(Liaison and Information Network for Keepers)**

Coordinator for the LINK System: Mark de Denus, Assiniboine Park Zoo, 2355 Corydon Ave., Winnipeg, Manitoba, Canada R3P 0R5. (204) 837-2916 (h).

**Regional Coordinators**

**ALABAMA** - Fred Alvey, Zoo Atlanta, 800 Cherokee Ave. S.E., Atlanta, GA 30315

**ALASKA** - Vacancy

**ARIZONA** - Bruce Eneboe, Reid Park Zoo, 1100 S. Randolph Way, Tucson, AZ 85716

**ARKANSAS** - Debbie Jackson or Ann Rademacher, Little Rock Zoological Gardens,  
#1 Jonesboro Dr., Little Rock, AR 72205

**CALIFORNIA (Northern)** - Jean Lai, Oakland Zoo, 9777 Golf Links Rd., Oakland, CA 94605

**CALIFORNIA (Southern)** - Johnny Merk, EFBC, HCR #1, Box 84, Rosamond, CA 93560

**COLORADO** - Suzanne Chacon-Brennan, Denver Zoo, City Park, Denver, CO 80205

**CONNECTICUT** - Jeanette Nadeau, Roger Williams Park Zoo, Providence, RI 02905

**DELEWARE** - Theresa Maas, Philadelphia Zoo, 34th & Girard Ave., Philadelphia, PA 19104

**FLORIDA** - Rick Smith, 5752 Stoneridge, Orlando, FL 32839

**GEORGIA** - Fred Alvey, Zoo Atlanta, 800 Cherokee Ave. S.E., Atlanta, GA 30315

**HAWAII** - Michelle Suenishi, Hilton Hawaiian Village, 2950 Ena Rd., Honolulu, HI 96815

**IDAHO** - Vacancy

**ILLINOIS** - Pat Swieca, 5710 W. Cullom Ave., Chicago, IL 60634

**INDIANA** - Dan Powell, Potawatomi Zoo, 500 S. Greenlawn, South Bend, IN 46615

**IOWA** - Carla Wieser, Omaha's Henry Doorly Zoo, 10th St. & Deer Park Blvd., Omaha, NE 68107

**KANSAS** - Gretchen Ziegler, Topeka Zoo, 635 Gage Blvd., Topeka, KS 66606

**KENTUCKY** - Thomas Benner, Toledo Zoo, 2700 Broadway, Toledo, OH 43609

**LOUISIANA** - Michelle Asselin, Audubon Park & Zoological Gardens, P.O. Box 4327, New Orleans, LA 70115

**MAINE** - Jeanette Nadeau (see addresses under CT)

**MARYLAND** - Theresa Maas, Philadelphia Zoo, 34th & Girard Ave., Philadelphia, PA

**MASSACHUSETTS** - Jeanette Nadeau (see addresses under CT)

**MICHIGAN** - Dan Powell, Potawatomi Zoo, 500 S. Greenlawn, South Bend, IN 46615

**MINNESOTA** - Tim Hill, Minnesota Zoological Gardens, 13000 Zoo Blvd., Apple Valley, MN 55124

**MISSISSIPPI** - Jeannie Frazier, Jackson Zoological Park, 2918 W. Capitol, Jackson, MS 39209

**MISSOURI** - Vacancy

**MONTANA** - Vacancy

**NEBRASKA** - Carla Wieser (see address under Iowa)

**NEVADA** - Patricia Simonet, Wildlife Safaris, P.O. Box 6735, Incline Village, NV 89450

**NEW HAMPSHIRE** - Jeanette Nadeau (see addresses under CT)

**NEW JERSEY** - Theresa Maas, Philadelphia Zoo, 34th & Girard Ave., Philadelphia, PA 19104

**NEW MEXICO** - Bruce Eneboe, Reid Park Zoo, 1100 S. Randolph Way, Tucson, AZ 857716

**EAST NEW YORK** - Frank Leonard, Bronx Zoo, 185th & Southern Blvd., Bronx, NY 10460

**WEST NEW YORK** - Alan Baker, Burnet Park Zoo, 500 Burnet Park Dr., Syracuse, NY 13204

**NORTH CAROLINA** - Lucy Segerson, North Carolina Zoo, Rt. 4, Box 83, Asheboro, NC 27203

**NORTH DAKOTA** - Bob Debets, Assiniboine Park Zoo, 2355 Corydon Ave., Winnipeg, Manitoba  
Canada R3P 0R5 (204) 986-4040 [w]

**OHIO** - Vacancy

**OKLAHOMA** - Debbie Jackson or Ann Rademacher (see addresses under AR)

**OREGON** - Anna Michel, Washington Park Zoo, 4001 SW Canyon Rd., Portland, OR 97221

**PENNSYLVANIA** - Theresa Maas, Philadelphia Zoo, 3400 W. Girard, Philadelphia, PA 19104

**RHODE ISLAND** - Jeanette Nadeau (see addresses under CT)

**SOUTH CAROLINA** - Lucy Segerson, North Carolina Zoo, Rt. 4, Box 83, Asheboro, NC 27203

**SOUTH DAKOTA** - Bob Debets (see address under ND)

**TENNESSEE** - Gail Karr or Cindy Pinger, Memphis Zoo & Aquarium, 2000 Galloway, Memphis, TN 38112

**TEXAS** - Ann Marie Greco, San Antonio Zoo, 3903 N. St. Mary's St., San Antonio, TX 78212

**UTAH** - Suzanne Chacon-Brennan, Denver Zoo, City Park, Denver, CO 80205

**VERMONT** - Jeanette Nadeau (see addresses under CT)

**VIRGINIA** - Theresa Maas, Philadelphia Zoo, 34th & Girard, Philadelphia, PA 19104

**WASHINGTON** - Elandra Aum, Woodland Park Zoo, 5500 Phinney Ave. N, Seattle, WA 98103

**WEST VIRGINIA** - Theresa Maas, Philadelphia Zoo, 34th & Girard, Philadelphia, PA 19104

**WISCONSIN** - Wayne Hazlett, 3768 S. 89th St., Milwaukee, WI 53228

**WYOMING** - Vacancy

**DISTRICT OF COLUMBIA** - Theresa Maas (see address under PA)

**Province of Ontario** - Neil Porter, Metro Toronto Zoo, Box 280, West Hill, Ontario M1E 4R5 Canada

**Provinces of Manitoba & Saskatchewan** - Bob Debets (see address under ND)

**Province of Quebec** - Vacancy

**Provinces of Alberta & British Columbia** - Grant Tkachuk, 10139 157th St., #206, Edmonton, Alberta T5P 2T9

I dreamed our planet  
got well again because  
everyone who lived here  
started doing things  
to help it.



PHOTOS BY LEVY/FPG © 1992 EARTH DAY USA

Everyone started recycling,  
not throwing so much away,  
saving water, planting trees,  
driving less and walking more  
because everyone understood  
we all live in the same place.

APRIL 22  EARTH DAY

*Institutions wishing to advertise employment opportunities are asked to send pertinent data by the 15th of each month to: Opportunity Knocks/AKE, 635 Gage Blvd., Topeka, KS 66606. Please include closing dates for positions available. There is no charge for this service and phone-in 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.*

**WILDLIFE REHABILITATION MANAGER**...minimum two years zoo or wildlife rehabilitation experience with variety of species. Duties include managing day to day operations, assisting the veterinarian, and supervising staff. Vet tech skills a plus. Salary 18-20k + benefits. Resume/cover letter to: P. Rich, The Wildlife Care Center, 1061 W. Oakland Park Blvd., Ft. Lauderdale, FL 33311 (305) 565-7699.

**VETERINARY TECHNICIAN**...minimum two years zoo or wildlife experience with a variety of species. Avian experience a plus. Salary commensurate with experience. Resume/cover letter to: P. Rich, the Wildlife Care Center, 1061 W. Oakland Park Blvd., Ft. Lauderdale, FL 33311 (305) 565-7699.

**CAPTIVE WILDLIFE SPECIALIST**...to direct campaign for nation's largest animal protection organization. PhD or equivalent experience and degrees. Experience with and interest in domestic laws & policy relating to protection and stewardship of wild animals in captivity and experience influencing legislative and executive branches of government desirable. Relevant experience with wild animals in captivity is particularly helpful. Will have operational responsibility for HSUS' involvement in captive wildlife issues, with the emphasis on zoos, aquaria, and menageries. Salary \$28,000 minimum, negotiable, based on qualifications. Resumes to: CAPTIVE WILDLIFE, Wildlife and Habitat Protection, the HSUS, 2100 L Street NW, Washington, DC 20037.

**BIRD KEEPER**...requires experience working with captive exotic birds. Responsibilities include the care, feeding and cleaning of an extensive collection geared towards the breeding of rare species. Warm outdoor Florida working environment in a private breeding facility closed to the public. Looking for that special someone for long-term employment. Salary commensurate with experience. Send resume to: Dr. Richard L. Miller, 5700 S.W. 130 Avenue, Fort Lauderdale, FL 33330. Phone: (305) 434-8599 FAX: (305) 434-4889.

**ADMINISTRATIVE DIRECTOR**...the Wild Canid Survival & Research Center (WCSRC or Wolf Sanctuary), near St.Louis, MO, invites applications for this position. This individual coordinates the daily operations of the WCSRC involving: fundraising, financial management, relations with the center's constituents, including media, public, members, board of directors, volunteers, veterinarians and animal care personnel, students, researchers and federal agencies. The Director supervises a small staff, assists in the production of the newsletter, prepares grant proposals and performs various other duties as needs arise. The Director reports to the President of the Board. It is hoped a successful candidate will hold an advanced degree, although candidates lacking this are welcome to explain their relevant skills or experience. Strong ability in communication, personnel management and community relations are a must. Salary and other arrangements (such as released time for research or consultation) remain negotiable. The WCSRC, a small non-profit conservation organization of limited financial resources, is an equal opportunity employer. Those interested should submit resume and the names of three references by **31 March 1993** to: Attention: Search Committee, WCSRC, P.O. Box 760, Eureka, MO 63025.

**WILDLIFE TECHNICIANS/BIOLOGISTS**...Wildlife International Ltd. seeks wildlife technicians/biologists. Private consulting firm hiring temporary technical positions for work in Florida, Georgia, Washington and other areas. Requires BS or MS in Wildlife Biology, skilled undergraduates OK, field sampling techniques in aquatic and terrestrial environments helpful. Salary \$1200-\$1600/month + living expenses. Send resume, cover letter and phone numbers of three references to: Sue Rattie, Personnel, Wildlife International, 8598 Commerce Drive, Easton, MD 21601. FAX 410-822-0632.

## Opportunity Knocks, Continued

**KEEPER/GUIDE**...seasonal positions available May-October. Duties include but not limited to: daily cleaning of exhibits, diet preparation, feeding mammals and birds, some maintenance, giving lectures to the public and handling non-venomous reptiles during demonstration. Good opportunity to gain paid zoo experience. Salary \$175.00 per week, lodging, utilities and uniforms furnished. Send resume to: Soco Gardens Zoo, attn: Jim Miller, Rt. 1, Box 355, Maggie Valley, NC 28751. **Deadline 1 April 1993.**

*The following two (2) positions are available at the El Paso Zoo, El Paso, TX. Send or phone inquiries to: Leo Ceniceros, (915) 541-8090, City of El Paso Personnel Dept., 3rd Floor, #2 Civic Center Plaza, El Paso, TX 79999 by 29 March 1993.*

**ARCHITECT**...graduation from an accredited college or university with a Bachelor's Degree in Architecture and four years of professional experience in the practice of architecture. (Experience in Zoo Architecture desired.). Salary is \$34,867.04 - \$47,643.70.

**VETERINARY SERVICES MANAGER**...graduation from an accredited school of veterinary medicine as a D.V.M. or V.M.D. and six years experience in the practice of veterinary medicine, including four years of comprehensive and varied experience in exotic animal medicine and surgery and two years experience in program administration and management (functions as Assistant Zoo Director). Successful completion of AAZPA School for Professional Development for Zoo and Aquarium Personnel desired. Salary hiring range is \$41,390.59 - \$46,928.70.

**KEEPER/INTERNS**...summer of 1993, 10 weeks from May to August, starting dates flexible. Closing date **15 May 1993**. Stipend \$1,000. Funds provided by Friends of the Salisbury Zoo. Must have own transportation. Written inquiries only. Response should include three references, personal goals, interests and background. Reply to: Gary Muir, General Curator, Salisbury Zoological Park, P.O. Box 3163, Salisbury, MD 21801.

**WILD ANIMAL KEEPERS**...requires 1+ year experience working with captive wild animals including mammals, birds, or reptiles. College background preferred. Duties will include the daily care and feeding of the animal collection at the soon-to-reopen Prospect Park Wildlife Conservation Center in Brooklyn, NY. Positions may also become available at Society facilities in the Bronx, Queens, and Manhattan (Central Park). Salary \$24,400.

**VETERINARY TECHNICIAN**...requires 1+ year experience as a Veterinary Technician and/or related degree. Must also be eligible for or hold license to practice veterinary technology in New York State. Responsibilities include maintaining the Animal Health Clinic, assisting veterinarians in medical procedures and medications, and providing for the care and feeding of captive animals. Position located at the soon-to-reopen Prospect Park Wildlife Conservation Center in Brooklyn, NY. Salary in the mid \$20's. **Closing date: 31 March 1993.**

Benefits for all positions include 3 weeks vacation, health and dental insurance, and retirement plans. Send resume to: John Fairbairn, Human Resources, NYZS/The Wildlife Conservation Society, 2300 Southern Blvd., Bronx, NY 10460. Call (718) 220-5119 with inquiries.

*The following three (3) positions are available at the Fort Worth Zoo, Fort Worth, TX. Resumes should be sent to: Wanda Smallwood, City of Fort Worth Personnel Dept., 1000 Throckmorton St., Fort Worth, TX 76102. Please note closing date for each position.*

**ZOO ATTENDANT II/Bird Dept.**...requires a high school diploma or equivalent and a minimum of one year's experience in aviculture or ornithology in a zoological park setting. Additional education and experience desired. Responsibilities include feeding, cleaning, behavior observations, exhibit design, construction, and assisting in zoo research/veterinary procedures. Salary \$17,376 annually with excellent benefits. Send letter/resume by **15 April 1993**.

## Opportunity Knocks, *Continued*

**ZOO ATTENDANT III/Bird Dept...**...senior level lead position with supervisory responsibilities in an expanding bird collection. Requires high school diploma or equivalent and three years of salaried experience in the care and handling of a diverse bird collection in a zoological park setting. Reports directly to the Assistant Curator. Responsibilities include assisting in supervising and training department staff, assisting veterinarian, providing input into collection management, assisting with the design/construction of exhibits, developing work schedules, cleaning and feeding animals, and other duties as required. Experience with captive husbandry practices and egg incubation are beneficial. Salary \$20,100 annually with excellent benefits. Send letter/resume by **15 April 1993**.

**ELEPHANT KEEPER**...requires high school diploma or equivalent and one year's salaried experience in the care of elephants. Experience with multiple cow breeding program desired. Will participate in all aspects of the Asian elephant breeding program involving multiple bulls (protected) and a cow herd (free contact). Duties include normal elephant handling and maintenance as well as extensive record keeping. Starting salary \$17,376 plus excellent benefits. Send letter/resume by **28 March 1993**.

**CAPTIVE MANAGEMENT PROGRAMS DIRECTOR**...requires experience with the management of animals/birds in captivity. Individual will manage the AFA Red Siskin program, implement a national non-domesticated bird registry, advise bird clubs in the formation of avian consortiums and represent the private sector at meetings. Must relocate to Phoenix. Salary \$18,000.00. Resume should be forwarded to: Search Committee, American Federation of Aviculture, P.O. Box 56218, Phoenix, AZ 85079-6218 FAX 1-210-828-5911.

Observe EARTH DAY April 22 !



## **AAZK Announces New Professional/Contributing Members**

Chris Wilgenkamp, Bronx Zoo (NY)  
Carol Ann Gallagher, Queens Zoo (NY)  
Meghan Carr, Erie Zoological Society (PA)  
Robert C. Doyle, Baltimore Zoo (MD)  
Jeff Wines, Indianapolis Zoo (IN)  
Madeline Southard, Mesker Park Zoo (IN)  
Tony Ray Ransom, Mesker Park Zoo (IN)  
Ginjr Buente, Mesker Park Zoo (IN)  
Charles F. Webb, Blank Park Zoo (IA)  
Randy Scheer, Folsom Children's Zoo (NE)  
Connie Dieringer, Caldwell Zoo (TX)  
David Kleven, Animal Entertainment (TX)  
Gilbert Perez, San Antonio Zoo (TX)  
Renee Sowards, Reid Park Zoo (AZ)  
Deb Ryan, Wildlidge Safari (OR)

Bryan Robida, Bronx Zoo (NY)  
Valerie Williams, Ross Park Zoo (NY)  
Edward Kowalski, Philadelphia Zoo (PA)  
Kristin LaHue, Riverbanks Zoo (SC)  
William Potter, Indianapolis Zoo (IN)  
Jim Adkinson, Mesker Park Zoo (IN)  
Melanie Ransom, Mesker Park Zoo (IN)  
James Evans, Mesker Park Zoo (IN)  
Thomas Jones, Animals on the Move (MO)  
Lisa Grove, Sunset Zoo (KS)  
Julie Dunklin, Caldwell Zoo (TX)  
Susan Kleven, Animal Entertainment (TX)  
Judith Fabian, San Antonio Zoo (TX)  
Brenda Clawson, Honolulu Zoo (HI)  
Katherine Van Tuyl, Noah's Ark (OR)

Catherine Lisee, Parc Safari, Quebec, Canada

## **Renewing Contributing Members**

National Zoological Park, NZP Library, Washington, DC



# AAZK Membership Application

Name \_\_\_\_\_ check here if renewal [ ]

Address \_\_\_\_\_

City \_\_\_\_\_ State/Province \_\_\_\_\_ Zip \_\_\_\_\_

## U.S. Members

- \$30.00 Professional/U.S.  
*Full-time Keepers*
- \$25.00 Affiliate/U.S.  
*Other staff & volunteers*
- \$25.00 Associate/U.S.  
*Those not connected with  
an animal facility*
- \$50.00 or up Contributing/U.S.  
*Individuals*
- \$50.00 or up Institutional/U.S.  
*Organizations/Institutions  
(requires Board approval)*

## Canadian Members

- \$35.00 Professional/Canada  
*Full-time Keepers*
- \$30.00 Affiliate/Canada  
*Other staff & volunteers*
- \$30.00 Associate/Canada  
*Those not connected with  
an animal facility*
- \$55.00 or up Contributing/Canada  
*Individuals*
- \$55.00 or up Institutional/Canada  
*Organizations/Institutions  
(requires Board approval)*

## International Members

- \$40.00 International  
*All members outside U.S. &  
Canada regardless of category*

## Library Only

- \$20.00 Library  
*Available only to  
established libraries*

Zoo Affiliation (if any) \_\_\_\_\_

Zoo Address \_\_\_\_\_

Title \_\_\_\_\_

Work Area \_\_\_\_\_

- My check is enclosed (AAZK, Inc.)  Please charge to 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 U.S.A. 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.

of Zoo Keepers, Inc.  
635 Gage Blvd.  
Topeka, KS 66606

Address Correction Requested

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National Zoological Park 3/94  
N.Z.P. Library  
Washington, DC 20008

# Animal Keepers' Forum

April 1993

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*Dedicated to Professional Animal Care*

**Editor-In-Chief:** Susan Chan  
**Associate Editors:** Kayla Grams & Gretchen Ziegler

Animal Keepers' Forum (ISSN 0164-9531) is a monthly journal of the American Association of Zoo Keepers, Inc., 635 S.W. Gage Blvd., Topeka, KS 66606. Ten dollars of each membership fee goes toward the annual publication costs of Animal Keepers' Forum. Third Class postage paid at Topeka, KS. Postmaster: Please send address changes to:

**American Association of Zoo Keepers, Inc.**  
**Administrative Offices, 635 S.W. Gage Blvd., Topeka, KS 66606**  
**Barbara Manspeaker, Administrative Secretary**

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Production Coordinator - Harry Hofauer, Metro Toronto Zoo	- Tape Distribution through AAZK AO, Topeka

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Patty Pearthree, Indianapolis Zoo	Norman Gershenz, San Francisco Zoo

#### AAZK PUBLICATIONS : CONTINUING DATA COLLECTION

Zoo Infant Development Project - Harmony Frazier-Taylor, Woodland Park Zoo  
Diet Notebook, Mammals, Vol. II - Susan Bunn Spencer, Bronx Zoo  
An Approach to Zoo Keeping - Patricia Sammarco, Gainesville, FL



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### 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. All illustrations, graphs, charts and tables should be clearly marked, in final form, and should fit in a page size **no greater than** 15cm x 25 1/2cm (6" x 10"). Literature used should be cited in the text (Brown, 1986) and alphabetically in final bibliography. Avoid footnotes. Include scientific name of species (as per ISIS) the first time it 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.) Black and white photos only are accepted. Color slides should be converted to black and white prints (minimum size 3 x 5 inch) before submission. Clearly marked captions should accompany photos. Please list photo credit.

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 AKE. 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 envelope. Telephone or FAX contributions of late-breaking news or last-minute insertions are accepted. However, long articles must be sent by U.S. mail. The phone number is (913) 272-5821 Ext. 31.

### DEADLINE FOR EACH EDITION IS THE 15TH OF THE PRECEDING MONTH

Articles printed do not necessarily reflect the opinions of the Animal Keepers' Forum editorial 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 \$2.00 each.

Featured on this month's cover is a Tufted Capuchin (*Cebus apella nigrinus*) drawn by Mary Deckert, a Docent at the Los Angeles Zoo and an AAZK Affiliate member. This little guy is participating in the L.A. Zoo's very active "Behavioral Enrichment Program". The pansies have been placed in the enclosure for the monkeys to explore, eat, play with, etc. Thanks, Mary!

# Scoops

and

# Scuttlebutt

## AAZK Position Available

The post of the AAZK HISTORIAN is available due to the resignation of the previous Historian. Any AAZK member continuing 'in good standing', who wishes to fill this vacancy is eligible. This position requires good reporting and records keeping skills; also a desire to maintain a history of the AAZK and advise the Board Overseer and/or membership about historical information. Computer skills are desirable in executing this position, but not required. For information about submitting your name for approval, please write to AAZK Administrative Offices, 635 S. W. Gage Blvd., Topeka, KS 66606-2066.

## Conference Proceedings Mailed/Limited Copies Still Available

The 1992 Conference Proceedings from San Diego have been mailed to all those who ordered copies or who received gratis copies because they were speakers/workshop presenters. Only speakers who submitted their manuscripts in compliance with the Proceedings Guidelines have been sent gratis copies. We have approximately 30 extra copies of the 1992 San Diego Proceedings which may be purchased through AO. They will be sold on a first come/first served basis. They cost \$20.00 per copy plus \$3.00 additional postage for orders outside the U.S. They may be purchased by telephone if you wish to use your credit card (VISA or MasterCard accepted). Mail-in orders should send payment in U.S. Funds only made payable to AAZK, Inc. If you wish a copy of this 255-page publication, you are urged to act quickly as these copies will not last long!

## IMPORTANT CHAPTER TAX NOTICE

If your Chapter has received a 1992 Return for Organizations Exempt From Income Tax booklet from the Internal Revenue Service, PLEASE DO NOT disregard this package. All Chapters who receive this package MUST return either Form 990 EZ or Form 990. If your Chapter's gross receipts are normally not more than \$25,000.00, you may fill out Form 990 EZ. If your Chapter received this packet and you need help with the instructions for completion, please do not hesitate to call AAZK Administrative Offices at 1-800-242-4519. The Tax Forms MUST be filed no later than **15 May 1993**. After you have completed the form which is appropriate for your Chapter, be sure and retain a copy for your Chapter records and forward a copy on to AAZK Administrative Offices for your permanent Chapter file which is kept at Topeka. Please let us know if you need help, but DO NOT disregard these forms--if your Chapter received one, it MUST be filed.

**Ecosystem Survival Plan Donates \$50,000 to In-Situ Conservation**

The Ecosystem Survival Plan (ESP) has raised \$50,000 for the purchase and protection of endangered tropical habitats in La Amistad National Park, Costa Rica, and the Rio Bravo Conservation Area, Belize. Over 50 zoological institutions raised funds through the Adopt-An-Acre and Conservation Parking Meter conservation outreach programs of the Ecosystem Survival Plan. The two ESP conservation sites comprise an area of more than 600,000 acres rich in biological diversity that includes five cat species, tapir, brocket deer, giant anteater, and more than 300 bird species.

ESP is a consortium of AAZPA-accredited zoos and aquaria, AAZK Chapters, botanical gardens, natural history museums, and conservation-minded organizations dedicated to involving the public in direct action in-situ conservation. For further information, contact the ESP Offices at San Francisco Zoological Gardens, 1 Zoo Road, San Francisco, CA 94132 (415) 753-7052. *submitted by Norman Gershenz*

**AAZK Board Appreciates Recent Donations**

The AAZK Board of Directors and the staff at Administrative Offices would like to thank the Caldwell Zoo AAZK Chapter (Tyler, TX) for their generous donation of \$225.00 to the general operating budget of the Association. This money will assist in the publication of upcoming reference works by AAZK. We sincerely appreciate the Caldwell Zoo AAZK Chapter's support of the Association.

The Board would also like to thank the Columbus Zoo for their generous donation of \$125.00 which they wished designated for support of the Animal Data Transfer Form Project. They noted that the ADT Form is used for just about every mammal and bird (and some reptiles) leaving their facility. We sincerely appreciate their support of this important AAZK project.

**AAZK Now Has Capability to Accept Credit Cards**

The Association is pleased to announce that Administrative Offices now has the capability of accepting either MasterCard or VISA credit cards for payment of membership dues or for publication purchases. All membership and order forms are being revised to reflect this option and credit cards may also be used in orders placed by telephone. Members wishing to use the credit card option for dues payment or publication purchases are asked to be sure and complete all the information requested on the appropriate form. This includes the credit card number, name on the card being used, whether MasterCard or VISA and the expiration date of the card. If all necessary information is not included, the credit payment will be denied. We appreciate your cooperation.

**Dr. Birute Galdikas to Appear at Milwaukee County Zoo on May 20th**

In 1969, Birute Galdikas became the third of a remarkable trio of women chosen by the famed anthropologist Dr. Louis Leakey to study the great apes in their natural habitats. The first, Jane Goodall, studies chimpanzees in Gombe, Tanzania. In Rwanda, Dian Fossey studied the mountain gorillas until her untimely death in 1985. Galdikas established Camp Leakey in Tanung Puting in 1971. Now recognized as the world's leading authority on wild orangutans, Birute Galdikas is entering her 23rd year of continuous study of the orangutans in the rain forest of Indonesian Borneo. In 1988, Galdikas and other concerned naturalists founded the Orangutan Foundation International.

The Milwaukee County Zoo AAZK Chapter is hosting the appearance of Dr. Galdikas at their facility on 20 May, 1993, and invite anyone who will be in the area to attend. Lecture tickets are \$7.00 each. A reception with Dr. Galdikas will be held prior to the lecture in the zoo's new Primates of the World Complex. Cost for reception tickets is \$20.00 each. Light refreshments and preferred seating are included. For tickets and more information, contact: AAZK, Milwaukee County Zoo, 10001 W. Bluemound Rd., Milwaukee, WI 53226.



## **AAZK Award Nominations Are Now Being Accepted for 1993!**

The AAZK Awards Committee would like to begin accepting nominations for the **Jean C. Hromadka Excellence in Zookeeping (EZ) Award** to be presented at the 1993 AAZK Conference in Atlanta. The deadline for all award nominations is **1 June 1993**. All award nominations received after 1 June will be reviewed for 1994, so please keep this in mind when submitting your nominations.

All awards given by the AAZK do not have a minimum or maximum number offered each year. Also, if the nominees do not meet the qualifications and nominators do not follow the nomination procedures, they will not receive the award for which they were nominated. Please include scientific names of animals when they are included in the nomination of a special or outstanding breeding acknowledgment.

Please submit all nominations to:

Janet McCoy, AAZK Awards Chair  
Washington Park Zoo  
4001 S.W. Canyon Rd.  
Portland, OR 97221

### **Jean C. Hromadka AAZK Excellence in Zookeeping (EZ) Award**

The American Association of Zoo Keepers, Inc. (AAZK) is the administering organization of the Jean C. Hromadka Excellence in Zookeeping Award presented by the AAZK Awards Committee. 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 character of the award includes: a plaque, letter of notification to the institution's director and national recognition by professional journals. Such journals include: the American Association of Zoological Parks and Aquariums (AAZPA) 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 being published by Gale Research Company based in Wheaton, MD and found in medium to large sized libraries across the U.S. and Canada.

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 C. 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.**
- 2. The nominee must have been employed at least two 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.**

## Excellence in Zookeeping Award *Continued*

### 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, 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.

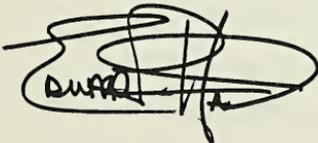


## **Message From the President.....**

The AAZK Board of Directors, on behalf of the membership, was pleased to contribute \$250.00 to the Conservation Treaty Support Fund in February of 1993. This donation was given to help sponsor a reception to commemorate the 20th anniversary of the signing of CITES -- the Convention on International Trade in Endangered Species of Wild Flora and Fauna. The reception, held on 3 March, recognized both the significance of the treaty and the 118 participating nations. The Association is proud to contribute to this historic event which leads up to the 9th Conference of Parties to be held in the U.S. in 1994.

For the next few months, your elected Board Members will be taking the opportunity of this platform to communicate with the membership. I have asked each Board Member to convey their responsibilities to the membership and communicate to you their goals and objectives for the Association.

It is also that time to gear up for the annual Bowling for Rhinos event. This internationally recognized fundraiser is responsible for contributing over \$350,000.00 to the Ngare Sergoi Rhino Sanctuary and the Ngare Ndare Forest Preserve. You have heard direct results of your contributions from Andy Lodge, President of the Ngare Sergoi Support Group and from Anna Merz, Founder of the Ngare Sergoi Rhino Sanctuary. You also may have seen the National Geographic Special "Keepers of the Wild" which detailed the accomplishments of the Sanctuary and the participation of AAZK. Simply stated, this program is working because of the time our membership has dedicated and the funds we have raised in the pursuit of saving a diversified ecosystem in Kenya. This program is perpetual. The Sanctuary needs the support of AAZK chapters, institutions and keepers to maintain their efforts and to establish educational programs in the United States to help nurture our children in the area of conserving endangered species and natural resources both here and abroad.



Ed Hansen  
AAZK President  
Reid Park Zoo, Tucson, AZ



## Your Help Is Desperately Needed !

Charlene Jendry, Great Ape Keeper at the Columbus Zoo is organizing a petition campaign urging the Rwandan government and the Rwandan Patriotic Front to come to a peaceful resolution of their conflicts, thus benefitting the mountain gorillas and other Parc National des Volcans wildlife. Currently the Karisoke Research Center has been abandoned by all researchers and Rwandan staff and has been entered by military forces (see March 1993 *AKF*). If you would like a petition form please contact the Great Ape Staff at (614) 645-3426.

You can also call Western Union at 1-800-641-1818 and ask for Hotline #9357. A personalized message urging protection of the Park and the mountain gorillas will be sent to the Rwandan Ambassador, Ugandan Ambassador and Vice-President Al Gore. The cost is \$8.45 for all three messages and will be charged to your telephone bill.



### AAZK Announces New Professional/Contributing Members

- |  |   |
|--|---|
| Shira Hinsley, Capron Park Zoo (MA)          | Christopher Ruedin, Seneca Park Zoo (NY)          |
| James Whitener, Friends for Life, Inc. (AL)  | Richard L. Miller, Private Breeding Facility (FL) |
| Grant Harris, Lion Country Safari (FL)       | Lynn Ash, Busch Gardens (FL)                      |
| Michael Zeloski, Busch Gardens (FL)          | Linda Burdick, Busch Gardens (FL)                 |
| Stephanie L. Dill, Busch Gardens (FL)        | Jennifer Hackshaw, Lowry Park Zoo (FL)            |
| Richard Schwartz, Nashville Zoo (TN)         | Tammy Hudson, Knoxville Zool. Gdns. (TN)          |
| Robert Sylar Jr., Knoxville Zool. Gdns. (TN) | Sherrie K. Hardin, Knoxville Zool. Gdns. (TN)     |
| Charles Abney, Monkeys & Friends (KY)        | Fred Nicklaus, Columbus Zoo (OH)                  |
| Ann Gates, Kings Island WAH (OH)             | Dawn Strasser, Cincinnati Zoo & Bot. Gdns. (OH)   |
| Brian Wilson, Henry Vilas Zoo (WI)           | Patricia Wille, Wille's Wildlife Zoo (WI)         |
| Kevin Rubbelke, Roosevelt Park Zoo (ND)      | Ronney Merritt, Roosevelt Park Zoo (ND)           |
| Brandi Bjork, Roosevelt Park Zoo (ND)        | Bill Wiczorek, Spring Brook Nature Center (IL)    |
| Steven Jensen, Louisiana Purchase Zoo (LA)   | David Benson, Little Rock Zoo (AR)                |
| Bruce Roberts, Little Rock Zoo (AR)          | Jan M. Taylor, Little Rock Zoo (AR)               |
| Edmundo Rios, Abilene Zool. Gdns. (TX)       | Kim Smith, Arizona-Sonora Desert Museum (AZ)      |
| Diana Hiibel, Animal Ark (NV)                | Wendy Stotts, Animal Ark (NV)                     |
| Lydia Frazier, Los Angeles Zoo (CA)          | Bryan Hargreaves, Sea World of CA (CA)            |
| Keith Mason, Sea World of CA (CA)            | Cindy Carter, California Living Museum (CA)       |
|  | Steven Unwin, Metro Toronto Zoo (ONT)             |

### New Contributing Members

Lynn Peckham, Los Angeles Zoo, Los Angeles, CA

### Renewing Contributing Members

Richard Buthe, Philadelphia Zoo, Philadelphia, PA  
Mr. and Mrs. Justin Finser, Finser Exotics, Umatilla, FL  
Bonnie Jacobs, Lincoln Park Zoo, Chicago, IL  
Dr. William C. Sadler, Purina Mills, Inc., St. Louis, MO





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# Coming Events

## **International Conference on Tortoise & Turtle Conservation**

July 11-17, 1993

New York, NY

Sponsored by the American Museum of Natural History's Turtle Recovery Program and the New York Turtle & Tortoise Society. For further information write to: Craig Vitamenti c/o The New York Turtle Trust & Tortoise Society, 163 Amsterdam Ave., Suite 365, New York, NY 10023 or call (212) 459-4803.

## **1993 Western Conference of Association of Fish and Wildlife Agencies and Division American Fisheries Society**

July 23-30, 1993

Sacramento, CA

For further information contact: Tim Farley, Dept. of Fish and Game, 1416 9th St., 12th Floor, Sacramento, CA 95814 (916) 653-6194.

## **14th Association of Avian Veterinarians Conference**

Aug. 31 - Sept. 4, 1993

Nashville, TN

For further information and Paper Criteria, contact: AAV Conference Office, 1625 S. Birch St., Ste. 106, Denver, CO 80222 (303) 756-8380, FAX 303-759-8861.

## **First International Conference on Orang-utans: The Neglected Ape**

March 5-8, 1994

Fullerton, CA

The First International Conference on Orang-utans: The Neglected Ape will be co-hosted by the California State University, Fullerton; the Zoological Society of San Diego; and the Atlanta/Fulton County Zoo Inc. Paper and poster presentations are scheduled for 5-7 March, in Fullerton, CA, followed by a post-conference trip to the San Diego Zoo on 8 March, with attendees participating in workshops and tours. For registration information and abstract guidelines, please contact: Norm Rosen, Dept. of Anthropology, California State University, Fullerton, CA 92634-9480, FAX: 310-798-0576.



## **New York Zoological Society Changes Name**

At their annual meeting held in February at Lincoln Center, the New York Zoological Society announced the adoption of a new corporate name - NYZS The Wildlife Conservation Society. Additionally, the corporation's sub-organizations have also been renamed. They are as follows:

- \* New York Zoological Park (Bronx Zoo) to The International Wildlife Conservation Park
- \* Central Park Zoo to Wildlife Conservation Center - Central Park
- \* Prospect Park Zoo to Wildlife Conservation Center - Prospect Park
- \* Flushing Meadows Zoo to Wildlife Conservation Center - Queens
- \* The New York Aquarium to The Aquarium for Wildlife Conservation
- \* The Wildlife Survival Center to Wildlife Conservation Center - St. Catherine's
- \* Wildlife Conservation International to NYZS The Wildlife Conservation Society International

All the addresses remain the same but the telephone area codes for Queens and Bronx have been changed **from 212 to 718.**



# Births & Hatchings



**Omaha's Henry Doorly Zoo (Omaha, NE)**...reports the following significant B&H for 1992:

**Mammals** - 3.1 Snow leopard (*Panthera unica*) [E/SSP]; 1.0 Clouded leopard (*Panthera nebulosa*) [E/SSP]; 3.0 Siberian Tiger (*Panthera tigris altaica*) [E/SSP]; 1.0 Gaur (*Bos gaurus*) [E/SSP]; 4.4 Scimitar-horned oryx (*Oryx dammah*) [T/SSP]; 0.0.1 Black howler monkey (*Alouatta caraya*) [U]; 1.0 White handed gibbon (*Hylobates lar*) [E]; 0.0.1 Black handed spider monkey (*Ateles geoffroyi*) [E]; 1.0.1 Ringtailed lemur (*Lemur catta*) [E]; 1.0 Grey legged douroucouli (*Aotus trivirgatus griseimembra*) [1st for HDZ]; 2.1 Red panda (*Ailurus fulgens fulgens*) [SSP]; 0.0.1 Brush tailed porcupine (*Atherurus africanus*) [1st for HDZ]; 0.0.5 Vampire bat (*Desmodus rotundus*) [1st for HDZ]; 11.8.1 Black-footed ferret (*Mustela nigripes*) [E/SSP].

**Birds** - 0.0.1 Red billed leiothrix (*Leiothrix lutea*) [1st for HDZ]; 0.0.1 White-breasted waterhen (*Amaurornis phoenicurus*) [1st for HDZ]; 0.0.4 Black crane (*Limnornis flavirostris*) [1st for HDZ].

**Amphibians** - 0.0.40 Oriental fire-bellied toads (*Bombina orientalis*) [1st for HDZ]; 0.0.10 Dyeing poison arrow frogs (*Dendrobates tinctorius*) [1st for HDZ]. submitted by Elizabeth Pyle, Chapter Liaison.

**Jacksonville Zoo (Jacksonville, FL)**...reports the following B&H for 1992:

**Mammals** - 1.0 Pygmy marmoset (*Callithrix pygmaea*) [1st for Zoo]; 1.0 Diana monkey (*Cercopithecus diana*) [E]; 1.0 Lion-tailed macaque (*Macaca silenus*) [E]; 0.1 (*Papio sphinx*) [E]; 1.0 Siamang (*Hylobates syndactylus*) [E]; and 0.2 Caracal (*Felis caracal*) [1st time for Zoo].

**Birds** - 1.1.1 Scarlet macaw (*Ara macaco*) [E]; 1.2.2 Lilac-breasted roller (*Coracias caudata*) [1st time for Zoo]; 0.0.2 Marabou stork (*Leptoptilos crumeniferus*) [U].

**Reptiles** - 0.0.5 Guatemalan jumping viper (*Bothrops nummifer occidvus*) [1st time for Zoo]. submitted by Jennifer Gerez, Jacksonville Zoo, Jacksonville, FL.

**Philadelphia Zoological Garden (Philadelphia, PA)**...reports the following significant B&H for July-December 1992:

**Mammals** - 1.0.1 Six-banded armadillo (*Euphractus sexcinctus*) [DNS due to cannibalism]; 0.0.5 Red kangaroo (*Macropus rufus*) [T]; 0.0.91 Naked mole rat (*Heterocephalus glaber*) [U] [0.0.57 DNS]; 2.0.2 Lesser slow loris (*Nycticebus pygmaeus*) [2.0 were pulled and hand-reared successfully, the dam was not lactating, and reintroduction to parents was uneventful, unfortunately 0.0.2 DNS]; 0.0.2 Geoffroy's marmosets (*Callithrix geoffroyi*) [CITES II]; 1.0 Prevost's squirrel (*Calloscirus prevosti*) [DNS due to cannibalism]; 0.3 Rodrigues fruit bat (*Pteropus rodricensis*) [pulled for hand-rearing after falling from dam/DNS] [E, CITES II]; 0.1 Spectacled langur (*Presbytis obscurus*) [CITES II]; 0.1 Bornean orangutan (*Pongo pygmaeus pygmaeus*) [E, SSP, CITES I] [1st offspring from pair, dam is a top ranked SSP female].

**Birds** - 0.0.2 Blue-crowned hanging parrot (*Loriculus galgulus*) [CITES II]; 0.0.1 Victoria crowned pigeon (*Goura victoria*) [CITES II]; 0.0.2 West African crowned crane

## Births & Hatchings, *Continued*

(*Balearica pavonia pavonia*) [CITES II]; 0.0.1 Nicobar pigeon (*Caloenas nicobarica*) [CITES I]; and 0.0.1 Eclectus parrot (*Eclectus roratus*) [II].

Reptiles - 0.0.2 Florida softshell turtle (*Trionyx*) and 0.0.1 Spotted turtle (*Clemmys guttata*). *submitted by Sandra Robbins, Chapter Liaison, Philadelphia Zoo AAZK Chapter.*

Milwaukee County Zoo (Milwaukee, WI)...reports the following significant B&H from 1 October 1992 through 16 February 1993:

Mammals - 0.0.3 Asiatic black bears (*Selenarctos thibetanus*) [CITES I]; 1.0 Black rhinoceros (*Diceros bicornis minor*) [E/SSP].

Birds - 0.0.2 Bali-Rothchild's mynah (*Leucopsar rothchildi*) [E/SSP]; 0.0.1 Rupell's griffon vulture (*Gyps rueppellii*) [CITES II]. *submitted by Wayne J. Hazlett, Chapter Liaison, Milwaukee County Zoo AAZK Chapter, Milwaukee, WI.*

Zoo Atlanta (Atlanta, GA)...announces the successful metamorphosis of 0.0.23 rare AAZK's toads (*Bufo aazkii*) on 22 February. These endangered toads are found in one isolated canyon in the Mongollon Mountains of southern New Mexico. The male (Elvis) was placed on loan from the San Diego Zoo in October, 1992 to pair with the zoo's female (Hoser). A special environmental rain chamber was constructed to house the toads. This chamber was programmed to simulate the rain cycle that occurs in the natural habitat. Courtship and amplexus were observed on 28 November after two days of continuous rain. The male's call was a high pitched trill similar to that of other *Bufo* sp. Eggs were deposited in 50cm long gelatinous strings and each egg measured approximately 6mm in diameter. The eggs were maintained in an aquarium in shallow water at an ambient temperature of 26-30° C. Tadpoles were observed emerging from the gelatin strings on 18 December; a total of 67 tadpoles emerged. The 20mm long tadpoles were omnivorous and ate a variety of vegetable matter and algae, Frog Brittle® (NASCI, Fort Atkinson, WI), and each other. The tadpoles grew rapidly on this diet and 23 toadlets metamorphosed. The toadlets measure nearly 16mm snout-vent length and are fed a diet of baby crickets dusted with a calcium/phosphorus supplement. We believe that this is the first successful reproduction of *Bufo aazkii* in the world and that Zoo Atlanta has the only individuals of this species currently in captivity. (*Thanks to Lisa Littlefield, Zoo Atlanta, for this bit of April Fool's whimsey!*)

Metro Toronto Zoo...reports the following significant B&H since the fall of 1992:

Mammals - 1.0 Malayan tapir (*Tapirus indicus*) [E]; 1.0 Pygmy hippopotamus (*Choeropsis liberiensis*) [E]; 0.0.1 Polar bear (*Ursus maritimus*) [E] [1st time cub survived at MTZ].

Birds - 0.0.2 Victoria crowned pigeon (*Goura victoria*) [E] [exhibit change for one pair; 1st time birth for the other pair]; 1.1 Temminck's tragopan (*Tragopan temminckii*) [E] [1st for facility]; 0.0.1 Double-striped thicknee (*Buchinus bristratus*) [1st from pair].

Reptiles - 0.0.17 Emerald tree boa (*Corallus caninus*) [T] [1st for institution].  
*-submitted by Eric Cole, Chapter Liaison*

## **Publications Available**



Green Products by Design - Choices for a Cleaner Environment - as the U.S. and other nations begin to get serious about a new array of potentially significant environmental threats, from global climate change to local groundwater contamination, traditional formulas of environmental management are being reassessed. The remediation or "end-of-the-pipe" strategies of the past 20 years are unlikely to provide satisfactory, cost-effective protection of ecosystems and human health in the future. Systematic change is needed. 128 pgs. illustrated/Paper \$6.50. Stock # 052-003-01303-7/ISBN 0-16-038066-9. Send prepayments to: Superintendent of Documents, Washington, DC 20402-9325; or order with Visa or MasterCard by phoning (202) 783-3238.



# Houston Zoo Announces Birth of 1.1 Francois Langurs

The Houston Zoological Gardens is proud to announce the births of 1.1 Francois langurs (*Presbytis f. francoisi*). The first infant was born on 31 July 1992. Unfortunately, the infant became steadily weaker and lethargic throughout the day. The combination of the extreme heat in the building, and the fact that the infant was not observed nursing, were thought to be reasons for his decline. Due to his health status, the infant was pulled for examination.



The dam was netted and hand restrained to check for lactation and was found to be lactating normally. The infant was given 20ml subcutaneous fluids, 1.8ml of Pedialyte®, then 5ml Similac® about every two hours throughout the night by the Curator of Primates Barbara Lester.

In the morning the infant's status was greatly improved and he was reintroduced to the group. Measures were taken to cool the temperatures in the facility.

**Dam *Presbytis F. Francoisi* and male infant**

By that afternoon, he had not been observed nursing and the other adult female in the group had been holding him for over a hour. Langurs, and other Colobines, will take and hold the infants of the other females in the group. (This is known as "aunting behavior".) The infant was becoming very lethargic by that evening, and after consulting with other zoos that house Francois, the decision was made to pull the dam with the infant and house them in a metabolism cage (aluminum squeeze cage) by themselves for dam/infant bonding. In addition, the cool indoor climate of the zoo animal hospital was thought to lessen the infant's rate of dehydration.

To relocate these animals, the dam was sedated so that the infant could nurse, which he then did vigorously. When she awoke from the sedation she exhibited good maternal skills, and the infant continued to nurse well. They were separated from the group for a total of four nights and three days. On the 4th day, they were moved into an adjacent cage from the pair, separated by a chain link wall which had been reinforced with mesh to prevent the infant from being pulled through by the other female. The interactions through the wire were positive and the group was reintroduced the next day. Upon reintroduction, the other female picked up the infant, but the dam eventually retrieved him. He has been in good health and developing well ever since.

The more recent birth was from the other female in the group on 30 January 1993. This infant is a female and has been in good health. Except for one previous miscarriage from this female, these are both first-time mothers. The older male infant is very interested in his sibling, and the group is doing well.

--submitted by Elyse Farrell, Dena Strange and Lynn Killam, Primate Staff, Houston Zoo, Houston, TX



# Defenders of Wildlife Identifies Top 10 Wildlife Conservation Decisions Facing Clinton

WASHINGTON, Jan. 18 -- Defenders of Wildlife has released a list identifying what they see as the 10 leading wildlife conservation decisions facing President Bill Clinton.

"Homo sapiens are not the only species with a large stake in the policies of the new administration. Species such as the spotted owl, the black rhinoceros and countless others are counting on the new president to help ensure their very survival," said Rodger Schlickeisen, president of the national wildlife conservation group.

As president, Bill Clinton immediately faces an unprecedented number of major decisions concerning wildlife conservation. These obligatory decisions stem from a combination of factors including statutory reauthorizations, pending litigation, other legal constraints and campaign promises. "No previous incoming president has been obliged to confront as many major wildlife conservation decisions as now await President Clinton," Schlickeisen said. "Bill Clinton's wildlife conservation agenda obviously will and should be much larger than this list, which only highlights certain key actions," he said. "However, the way in which the new president reacts at these key decision points will clearly set the tenor of this administration's attitude toward wildlife concerns," he added.

"To some extent, the new president's wildlife agenda has already been set for him by legal mandates, litigation by environmental groups or the Bush administration's abdication of leadership," Schlickeisen said. "But in other cases, we are pleased to note, Bill Clinton has made affirmative commitments to tackling thorny issues," he added. Obligations relating to the Arctic National Wildlife Refuge, the North American Free Trade Agreement and ancient forests are among the new president's campaign promises relating to wildlife.

"Signing the biological diversity treaty and developing an aggressive national policy on biodiversity is one principal way in which the new president could begin to restore U.S. world leadership on wildlife conservation issues," observed Schlickeisen.

## Defenders of Wildlife's List of 10 Leading Wildlife Conservation Decisions Facing President Clinton (Not Necessarily in Order of Importance)

### Biodiversity

-- Key Decision Point: As president, Bill Clinton must decide whether or not to sign the Convention on Biological Diversity that 158 other nations agreed to sign at the Earth Summit held in Rio de Janeiro last June. The treaty attempts to stem the tide of global species extinctions by requiring that contracting parties identify, monitor and conserve their biological resources. Scientists now estimate that as many as 50-100 species go extinct per day. Opponents of the treaty, including former President Bush, claim that U.S. intellectual property rights in the biotechnology field would be harmed. However, proponents argue that this can be addressed by a new protocol, a common and accepted practice with such international conventions.

### Endangered Species

-- Key Decision Point: The new administration must decide whether or not to support a stronger Endangered Species Act during Congressional reauthorization. The U.S. Endangered Species Act requires that federal agencies conserve species in particularly dire straits and makes it illegal for any party to kill, harm or harass threatened or endangered wildlife. Critics of the Act assert that it slows economic development and unfairly punishes individual offenders. Conversely, environmental groups are urging President Clinton to support a stronger Endangered Species Act during the congressional reauthorization this year. Issues include economics and the listing process, protection from harmful agency actions for listed species abroad, incentives, and increased funding.

## **Top 10 Wildlife Conservation Decisions Facing Clinton, *Continued***

### **Ancient Forests**

-- Key Decision Point: The new administration must decide how it will handle the Pacific Northwest Forest Summit. Fulfilling a Clinton campaign promise, Vice President Al Gore will preside over a "Pacific Northwest Forest Summit" in early 1993. The summit will attempt to find solutions to the continuing gridlock over the spotted owl and the future of the Northwest's old growth forests. Certain logging interests claim that the Endangered Species Act and public land statutes have taken away their livelihood, all for the sake of saving the spotted owl. Environmentalists counter that the spotted owl is a scapegoat for a much deeper economic problem in the Pacific Northwest -- namely, below cost raw log exports to Japan, movement of the industry to the Southeast where trees grow faster, and unreasonable timber quotas which have promoted unsustainable harvests. Conservation groups point out that declining salmon runs in the Northwest are also attributable to excessive logging.

### **Trade and the Environment**

-- Key Decision Point: The new president must decide whether or not to sign the North American Free Trade Agreement (NAFTA). Candidate Clinton promised to support NAFTA only if major environmental problems could be resolved. Depending upon his action on NAFTA, the President Clinton will be under pressure to also add increased environmental protection measures to the General Agreement on Tariffs and Trade (GATT). GATT is a separate but related multilateral agreement currently being considered for revision in the so-called "Uruguay Round." Both trade agreements are expected to have tremendous impact on environmental and wildlife protection. Under GATT alone, over 4 trillion dollars worth of goods and services are exchanged in international commerce, much of which is dependent upon natural resources. The key for President Clinton will be to make both GATT and NAFTA vehicles for environmentally responsible behavior. For example; when the Mexican tuna industry -- which kills about 15,000 dolphins per year -- was shut out of the U.S. market because their fishing practices violate U.S. Marine Mammal Protection Act standards; a GATT panel ruled that the restriction was an illegal trade barrier.

### **Wildlife Trade**

-- Key Decision Point: The new administration must respond to a petition filed in November by environmental groups to help save the critically endangered black rhinoceros. The total world population of the five species of rhinoceros has dropped to less than 10,000 -- down from more than 70,000 only 20 years ago. This petition calls on the administration to certify that China, Taiwan, Korea and Yemen are still engaging in trade in endangered rhino horns despite a ban on such trade under international treaty law, called the Convention on International Trade in Endangered Species or CITES. Once certified, the president would have to decide within 30 days whether to ban imports of all or some wildlife from these countries. This same, certification process was used successfully against Japan in 1990 to stop their trade in endangered sea turtles. (see Legislative Outlook, March 1993 *AKF*)

### **Wetlands**

-- Key Decision Point: The new administration must decide whether or not to support strengthening the wetlands protection provisions in the Clean Water Act, which is due for reauthorization by Congress. Section 404 of this act provides primary federal regulatory control over activities affecting wetlands. Legislation will be introduced by proponents as well as opponents of wetlands protection. The outcome of this reauthorization battle may largely determine the fate of many wetland-dependent endangered and threatened species, along with declining waterfowl populations. Environmental groups say that President Clinton should support legislation to strengthen wetlands protection through changes including: expanding the harmful activities subject to permit, such as draining, flooding, and excavating; giving the U.S. Fish and Wildlife Service and the National Marine Fisheries Service stronger roles in the permit process; requiring the Corps of Engineers to

## **Top 10 Wildlife Conservation Decisions Facing Clinton, *Continued***

explain in writing its reasons when rejecting the recommendations of these agencies; strengthening EPA's oversight of the general permit program; and requiring the Corps to account for wetlands losses resulting from general permits.

### **Wildlife Refuges**

-- Key Decision Point: The administration must respond to three major lawsuits regarding uses harming the National Wildlife Refuge System. In October and November of 1992, a coalition of environmental groups filed lawsuits challenging the Interior Department's decision to permit Navy planes to use Copalis National Wildlife Refuge for bombing practice and the department's decision to authorize construction of jetties at Oregon Inlet, off North Carolina's Outer Banks. A third suit challenges the continuation of various secondary uses, including grazing, watersports and recreational activities occurring throughout the National Wildlife Refuge System. One approach the administration could take is to admit that these harmful activities have been allowed to continue and agree to take immediate remedial action. As a possible precedent; environmentalists look to Environmental Protection Agency-designee Carol Browner's response to litigation brought against the state of Florida over the Everglades while she was head of the Florida Department of Environmental Regulation. Browner admitted the problems and settled the lawsuit.

-- Key Decision Point: The new administration must decide whether or not to actively champion enactment of legislation to designate as wilderness the coastal plain of the Arctic National Wildlife Refuge. Bill Clinton is on record as supporting wilderness for the coastal plain. Richard Lehman (D-Calif.) introduced H.R. 39 to accomplish this objective on 5 Jan. 1993.

### **Natural Resource Subsidies**

-- Key Decision Point: In his first budget to Congress, President Clinton must decide whether or not to continue water, grazing, mining and timber subsidies and, if so, the extent of those subsidies. Environmental groups estimate that almost \$1 billion is lost every year because of below-cost timber sales, below-market grazing fees, and royalty-free mineral extraction on public lands. What is more, these activities are usually highly disruptive to the ecosystems on which they occur -- a large number of endangered species need protection precisely as a result of these economically inefficient and ecologically dysfunctional activities. Environmental groups point out that by ending these subsidies President Clinton can reduce the size of the budget deficit and protect the environment simultaneously. Reversing natural resource policy, however, will surely anger those benefitting from the federal handouts.

### **Wolf Reintroduction**

-- Key Decision Point: The new president must decide whether or not to reintroduce the endangered Northern Rockies gray wolf to Yellowstone National Park. An environmental impact statement now being developed by the Department of the Interior will bring to a head a highly publicized issue that has been a political football in the Northern Rockies for 14 years. Those opposed to reintroduction say wolves will decimate livestock and collapse the local economies; environmentalists point to a recent government study in the Yellowstone area that predicts the presence of wolves will stimulate \$19 million a year in sales and services from ecotourism. Public hearings will be held throughout the summer, and are likely to draw a vast outpouring of support for the wolf.

For further information, contact: Robert Dewey or John Fitzgerald of Defenders of Wildlife, 202-659-9510 or 202-364-4915 (weekend)

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# AAZK Book Sale

Just in time for your spring reading, the Beardsley Zoo AAZK Chapter is pleased to announce the following books are available at approximately 20% of the suggested retail price. To order any of these books, send a check or money order to: AAZK Book Sale, Beardsley Zoo, 1875 Noble Ave., Bridgeport, CT 06610. Orders must be received at the zoo **by 30 April**. Shipping charges are \$2.00 for the first book and \$1.00 for each additional book.

The Amateur Naturalist - Gerald Durrell takes the reader on a walking tour through the full range of natural environments from the home to the tropical forest. Then he takes the reader back home for some comprehensive instruction on everything from a microscope to plant pressing. Sug. ret. price \$18.95 /AAZK price \$15.25 paperback.

Owls: Their Life and Behavior - Julio de la Torre, with photographs by Art Wolfe. All 19 species of North American owls are covered with up-to-date data on natural history and tips on where to look for them. Art Wolfe's dramatic color photos include usual and unusual behavior. Sug. ret. price \$35.00 /AAZK price \$28.00 hardcover.

The Bluebird Book - Donald and Lillian Stokos. This beautiful guide tells you how to attract these birds to your own backyard (or zoo!). It explains how to build a nest box, how to attract bluebirds with appropriate landscaping as well as information on the natural history of these threatened birds. Sug. ret. price \$9.95/AAZK price \$7.95 paperback.

The Sandhill Crane - Steve Grooms. This stunningly illustrated book covers the life history of one of America's largest and most interesting birds. Sug. ret. price \$16.95/AAZK price \$13.50 paperback.

Butterflies: How to Attract Them to Your Garden - Marcus Schneck. 250 North American species are illustrated in color, and arranged by color and not alphabetically by family as in most books. Each species also has information on the mature butterfly as well as the chrysalis and caterpillar stages. Sug. ret. price \$24.95/AAZK price \$19.95 hardcover.

The National Arboretum Book of Outstanding Garden Plants - Jacqueline Heriteau. A landmark reference from the nation's premier horticultural research center. A unique directory of more than 1700 flowers, herbs, trees, shrubs, aquatics, ground covers, vines and ornamental grasses with over 450 stunning full color photographs. Sug. ret. price \$39.95/AAZK price \$32.00 hardcover.

Growing and Propagating Wild Flowers - Harry Phillips. "With this book in hand any gardener can effectively have a wildflower garden without robbing a single plant from nature...You will find this book helpful no matter where you garden." Southern Living. Sug. ret. price \$16.95/AAZK price \$13.50 paperback.

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Battle for the Elephants - Oria and Ian Douglas-Hamilton. World recognized as authorities on the African elephants, this is Douglas-Hamiltons' harrowing and controversial report on what amounts to full scale war that pits all of the key players at odds with the elephant in the middle. Sug. ret. price \$35.00/AAZK price \$28.00.

Living Snakes of the World - John M. Mohrtens. 540 full color photographs illustrate the 413 species and 454 subspecies covered in this book. Included is a one page description of the natural history and captive requirements. Sug. ret. price \$50.00/AAZK price \$40.00 hardcover.

Racks: The Natural History of Antlers and the Animals That Wear Them - David Petersen. Skillfully blending anecdote and science, Petersen describes these marvelous sculptures worn by moose, caribou, elk and deer. An engrossing and sometimes surprising explanation of antlers growth and shedding, use as a weapon and sexual attribute during rutting season. Sug. Ret. price \$12.95/AAZK price \$10.35 paperback.





# DOWN UNDER

By  
Judie Steenberg, Keeper  
Woodland Park Zoo  
Seattle, WA

DOWN UNDER.....is an information column about Australasian animals. While there are a number of Keepers who work in Australasian Units, or routines, oft times a Keeper will have a few species

of animals from the Australasian zoogeographical region on their string or routine. It is hoped this section will contain information on birds, mammals and reptiles.

This column is intended to:

- share experiences and information to improve the care and management of Australasian animals.
- seek information and advice on problems that occur.
- serve as a forum through which to make comment, to ask questions, to critique, or to verify information.

Please send your materials (a question, a paragraph or an article) directly to *Animal Keepers' Forum*, Topeka Zoological Park, 635 Gage Blvd., Topeka, KS 66606, Attn: Susan Chan.

## Update on Adelaide Bluetongue Lizard (*Tiliqua adelaidensis*)

*submitted by Hickson Fergusson  
Mosman, N.S.W., Australia*

Mark Hutchinson, Curator of Reptiles and Amphibians at the South Australian Museum, is now heading the research team that is investigating *T. adelaidensis*, and he recently filled me in with what they have learned about the species since its rediscovery last October (see *Down Under*, p. 92, March 1993 AKF). To date, 21 live animals have been caught, and six dead specimens have been recovered. Two of those dead animals were killed by raptors, the other four were found inside Eastern brown snakes (*Pseudonaja textilis*).

Of the 21 live animals captured, 18 have been marked and released, while the remaining three are at the Adelaide Zoo; 1.1 have been put together off-display to observe behavior and (hopefully) breeding. The individual on-display, while not being an exciting exhibit, is there to increase community awareness.

Virtually nothing is known about the Adelaide bluetongue so the research team is currently gathering baseline data on the species: basic ecology, population size, home range, etc. One of the released animals had a radio transmitter attached to it, but that was discontinued because the transmitter was too big and jeopardized the lizard's welfare. However, a lot of interesting information has been collected.

The preferred habitat of the species is native tussocky grassland, not mallee as was previously thought. There is very little tussocky grassland left anywhere as most of it has been turned into farmland. The introduced grasses die off in the summer, leaving no ground cover for the lizards. The native grasses can survive the heat which has recently been as high as 42° C (108° F).

## **DOWN UNDER.** *Continued*

The Bluetongue is diurnal, both in the wild and in captivity. They are heliothermic (basking) and so need plenty of ground cover to escape predators that might spot them when they are exposed. As soon as dusk comes along, they slow down and spend the night in a burrow - a spider burrow.

During the thirty-odd years the species was thought to be extinct, many herpetologists searched for them. But I doubt if any of them thought of looking in a spider burrow. They're not called Pygmy bluetongues for nothing. Apparently there are two large species of Lycosid spiders (Wolf Spiders) found in the area, and the lizards fit into the burrows as snugly as a finger in a glove.

Nothing is known about their reproductive biology, but it is probably similar to other bluetongues. One of the dead animals was a female and she was carrying four small ova.

## **Also from Down Under....**

A man lost his arm while feeding a crocodile in the North Queensland town of Innisfail. The 25-year-old was an employee of the Johnstone River Crocodile Farm and was reaching out to pet the five meter (16-foot) long Estuarine crocodile (*Crocodylus porosus*) when it snapped at him, catching his left arm. The crocodile performed a death roll, severing the arm at the shoulder and then swallowed it. The man was rushed to a nearby hospital and then airlifted to Cairns Base Hospital where he is recovering.

The 100kg male crocodile, named Gregory, is the largest and best known attraction at the park. Crocodiles are a very real danger in the northern part of Australia, where they occasionally attack and kill people swimming in rivers. Just how terrifying it can be was graphically illustrated to a number of horrified tourists who witnessed the incident.



## ***Marine Aquaria: An Ecological Approach*** *Study Course Offered in Jamaica*

All interested marine aquarists are encouraged to participate in this nine-day learning experience which will concentrate on the ecological principles and physical parameters that apply to coral reef habitats and the application of these principles to the marine aquarium. Numerous collecting trips using seines, hand nets and snorkeling are an essential component of the experience that will give a first hand look at how these complex systems operate. Ecology of tropical marine environments, animal and plant diversity, water chemistry and quality, filtration, diseases and their treatment, nutrition, and lighting will be discussed in relation to maintaining a successful marine aquarium.

The course will be held at Hofstra University Marine Laboratory located at Columbus Beach Cottages, Priory from 24 July through 1 August 1993. Cost of the course, including airfare from JFK Airport (NY), 8 nights at the Hofstra University Marine Science Laboratory's own waterfront hotel, all meals, maid service, boat and bus use, room tax, and bus transfer to and from the laboratory is \$1,300.00. This course is limited to 30 people so early registration is advised.

The course is presented by Dr. Dennis A. Thoney, PhD., Associate Curator at the New York Aquarium and Frank Greco, an Aquarist at the New York Aquarium. Dr. Thoney has done extensive research on marine animals and is an internationally recognized fish pathologist. Greco is a former Contributing Editor to Freshwater and Marine Aquarium Magazine and has lectured extensively on the subject of marine aquarium husbandry.

Any interested parties should contact Frank M. Greco (516) 536-6231 (evenings) or Dennis Thoney at (908) 381-3414 (evenings).





The Zoo Atlanta AAZK Chapter  
Invites You to Join Us for the  
20th National AAZK Conference  
October 10 - 14, 1993  
Sheraton Colony Square Hotel  
Atlanta, GA



1993 National AAZK Conference

October 10-14

Hosted By: Zoo Atlanta AAZK Chapter
800 Cherokee Avenue
Atlanta, GA 30315

Conference Registration Form:
(Please one per registrant)

Name: \_\_\_\_\_

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Zoo Affiliation: \_\_\_\_\_

Name & Title for Badge: \_\_\_\_\_

Primary field of interest: \_\_\_\_\_

AAZK member ..... Yes \_\_\_\_\_ No \_\_\_\_\_
Committee Member ..... \_\_\_\_\_
Submitting a paper ..... \_\_\_\_\_
Vegetarian ..... \_\_\_\_\_ Type: \_\_\_\_\_
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Interested in a T-shirt ..... \_\_\_\_\_ Size: \_\_S\_\_M\_\_L\_\_XL

Please check boxes of fees you will be paying and events you plan to attend:

Full Conference rates Member \$95 \_\_\_\_\_ Non-Member - \$110 \_\_\_\_\_
Daily Conference Rates Monday - \$25 \_\_\_\_\_ Wednesday - \$25 \_\_\_\_\_
Tuesday - \$30 \_\_\_\_\_ Thursday - \$25 \_\_\_\_\_
Icebreaker-\$10 \_\_\_\_\_ Banquet - \$35 \_\_\_\_\_
Late Fee\* - \$10 \_\_\_\_\_ Late Fee\* - \$3 \_\_\_\_\_

\*Late Fees charged after 9/1/93 Total Amount Due \_\_\_\_\_

Daily registrants MUST register 48 hours prior to day or event.
Full Conference rates include all activities, meals and transportation.
Daily registrants must register for the Icebreaker and Banquet separately.

Conference Trips: Please check the trip you are interested in joining.

\_\_ A one day trip to Chattanooga Aquarium on Saturday, October 9.
\_\_ A weekend trip to Cumberland Island and White Oak Plantation, Friday through
Monday, October 15-18.

PLEASE MAKE PAYMENTS TO: ZOO ATLANTA AAZK CHAPTER

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# AAZK 1993 CONFERENCE

ATLANTA, GEORGIA

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**TENNESSEE AQUARIUM**  
SATURDAY, OCTOBER 9, 1993  
(ONE DAY TRIP)

REGISTRATION IS LIMITED - RESERVE EARLY!!!

SEND COUPON BELOW TO:  
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ADDRESS \_\_\_\_\_

PHONE \_\_\_\_\_ # OF PEOPLE RESERVED \_\_\_\_\_

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## POST CONFERENCE TRIP

**Cumberland Island National Seashore, Okefenokee Swamp,  
White Oak Plantation Breeding Facility**  
Friday, October 15 - Monday October 18, 1993

Explore the history and ecology of an unspoiled barrier island.  
Talk with wildlife researchers about studies in progress.  
Canoe with an expert guide through ancient swamp canals.  
Discuss animal management techniques with breeding facility experts.

**Price of \$325 per person (double occupancy) includes:**

Transportation from Atlanta to/from St. Mary's Georgia  
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**20th Annual AAZK Conference -- Zoo Atlanta  
October 10 - 14, 1993**

**SECOND CALL FOR PAPERS**

Now is the time to claim your spot on the 1992 conference program. Proposed paper, poster and workshop topics will be accepted on all aspects of zookeeping.

- Papers will be limited to 15 minutes followed by five minutes of questions.
- Workshop sessions will be provided for programs, discussions, and debates ranging from 30 minutes to three hours.

Guidelines for preparing manuscripts for the AAZK Conference Proceedings will be published in a future issue of AKF.

PLEASE SUBMIT A SHORT ABSTRACT FOR ALL PROPOSED PAPER, WORKSHOP, AND POSTER PRESENTATIONS BY JULY 1, 1993. ABSTRACTS SHOULD INCLUDE THE NAME OF PRESENTER, ZOO AFFILIATION, TITLE OF PAPER, PROPOSED FORMAT (PAPER, WORKSHOP, ETC.) AND EQUIPMENT NEEDED.

- We would like to offer a few panel discussions and breakfast roundtables in order to promote exploration of important issues, challenges and controversies surrounding the future of zookeeping. We welcome any suggestions or requests for specific topics and/or potential panelists. Help ensure that the 1993 conference program serves your needs.

Send abstracts and other program suggestions to:  
Craig Piper or Sue Barnard, Program Committee, 1993 AAZK Conference, Zoo Atlanta,  
800 Cherokee Avenue, SE Atlanta, GA 30315

# Elephant Set

*(Editor's Note: Beginning with last month's, issue this column will contain material on elephant morphology and physiology; nutrition; external diseases including parasites; internal diseases including systemic, gastrointestinal and respiratory; and use of anesthesia. These articles were part of an extensive research manuscript written by Ursula Bechert, DVM of Corvallis, OR.)*



## Elephant Nutrition

*By Dr. Ursula Bechert, DVM  
Corvallis, OR*

Elephants are exclusively herbivores and hindgut fermenters, digesting most of their food in the large colon (Fetner, 1987). Gastrointestinal transit time is 24-50 hours (half that of the ruminant), resulting in only 45% utilization of the cellulose present in the diet. Large quantities of food are therefore required to meet the nutritional needs of the elephant.

In the wild, elephants eat mainly grass and leaves during the wet season while in the dry season they eat more woody browse (Barnes, 1982). The ratio of urinary hydroxyproline (an amino acid derived from collagen breakdown) to creatinine can be used as a measure of the rate of growth in elephants (McCullagh, 1969). Seasonal variation in growth occurs as well as seasonal variation in fertility and conception rates, both being higher during the wet season.

For an adult elephant, eighteen hours per day is typically spent feeding and approximately 280kg of food is usually consumed (Schmidt, 1986). Since eating is such an integral part of the life of an elephant and occupies the majority of each day, captive elephants should be fed continuously throughout the day. Since elephants do not have a rumen and therefore cannot benefit from the synthesis of amino acids and vitamins by rumen bacteria, they must feed upon a broad variety of plants to provide the necessary range of nutrients.

Elephants require approximately 12-13 calories per kg body weight per day for maintenance (Schmidt, 1986). Dietary adjustments need to be made for age, pregnancy, lactation, illness, or if environmental conditions cause an increase in energy requirements. Working, pregnant or lactating females and weanlings need 50-100% more energy above the maintenance requirements.

Elephants are more sensitive than ruminants to toxic secondary plant compounds. By diversifying their natural diet and spending, on average, less than three minutes per plant species, elephants are apparently able to prevent ingestion of a lethal dose of toxins from any one species (Barnes, 1982). Wood plant parts concentrate less toxin than vulnerable parts like leaves. Grasses normally contain low concentrations of toxins. Therefore, in the dry season, elephants spend more time per plant and feeding is less evenly distributed (Barnes, 1982).

Timothy hay most closely matches the composition of the diet of elephants in the wild (Schmidt, 1986). Stomach contents analysis of a wild elephant was 43.5% carbohydrate, 35.7% fiber, 11% minerals, 8.4% protein and 1.5% fat. Timothy hay is composed of 45.4% carbohydrate, 30.1% fiber, 6.3% protein and 2.8% fat. A typical daily diet fed to an adult cow elephant at the Washington Park Zoo in Portland, OR includes 45kg (one bale) timothy hay, 1.5kg rolled oats, 23kg lettuce, 23kg carrots, 180g commercial vitamin-mineral supplement (7mg Se, 80,000IU vitamin A, 20,000IU vitamin D, 800 IU vitamin E), 325mg iron and 0.5kg rock salt placed outdoors three times a week.

## **Elephant Set. - Nutrition** *Continued*

Another typical diet in captivity includes grass hay free choice, 10-25% mixed prairie or legume hay, 8-20 liters grain supplement (50% equine pellets, 50% dairy conditioner) and 3-5kg yellow vegetables and fruit (Wallach and Boever, 1983). Rechcigl (1981) recommended 25% horse and pony diet, 7% grass cubes, 45% clover hay and 23% roots. The New York Zoological Park diet for an Indian elephant consisted primarily of alfalfa hay (318.5kg/week), supplemented with 26kg horse feed, 3.5kg apples, 3.5kg carrots, 3.5kg potatoes and 13.5kg grass hay daily (Rechcigl, 1981). Concentrated pelleted feeds can be more economical to feed but do not fulfill the behavioral requirement of elephants to feed for a large part of the day.

Approximately 130-160 liters of water intake per day is necessary. Drinking *ad libitum* outdoors and hand-watering indoors with a hose twice a day can satisfy this requirement (Wallach and Boever, 1983).

Ascorbic acid content is four times higher in elephant cow's milk than bovine milk. Adults do not require supplementation of vitamin C since normal intestinal flora produce adequate amounts (Wallach and Boever, 1983).

Insufficient levels of essential fatty acids will result in dry, scaly skin but most grain supplements contain proper levels of fatty acids. Elephants should be fed 130-167 IU vitamin E per kg diet (1-2.5 IU vitamin E per kg body weight) (Dierenfeld and Dolensek, 1988). Plasma levels of vitamin E do correlate with dietary levels.

Specific nutritional problems are occasionally noticed in elephants. Nutritional secondary hyperparathyroidism occurs frequently in young elephants raised on high phosphorus, low calcium diets. The Ca:P ratio should be 1:1. If clinical signs of this syndrome appear, they may be reversed by adjusting the dietary ratio temporarily to 1.2:1, then returning it to 1:1 (Wallach and Boever, 1983).

Hypocalcemic tetany have been reported in elephants housed indoors for long periods of time without exposure to sunlight (Schmidt, 1986). Tetany has also occurred as a result of transportation stress.

Iron-deficiency anemia has been reported in elephants housed on concrete without appropriate supplementation (Schmidt, 1986).

White muscle disease has been observed in a newborn Asian elephant which was never able to stand and died two weeks after birth (Schmidt, 1986). This can be prevented by feeding pregnant cows 0.1-0.4 mg Se per kg feed. Injecting cows with a combination of vitamin E and Se at 5 mg per 70kg body weight, at 6-8 months gestation and 1 month prior to parturition, and newborn calves at the same dosage has also worked (Schmidt, 1986).

Rickets (avitaminosis D) has been reported several times in hand-reared elephants (Wallach and Boever, 1983). Enlarged articulations and widened epiphyses are radiographic findings.

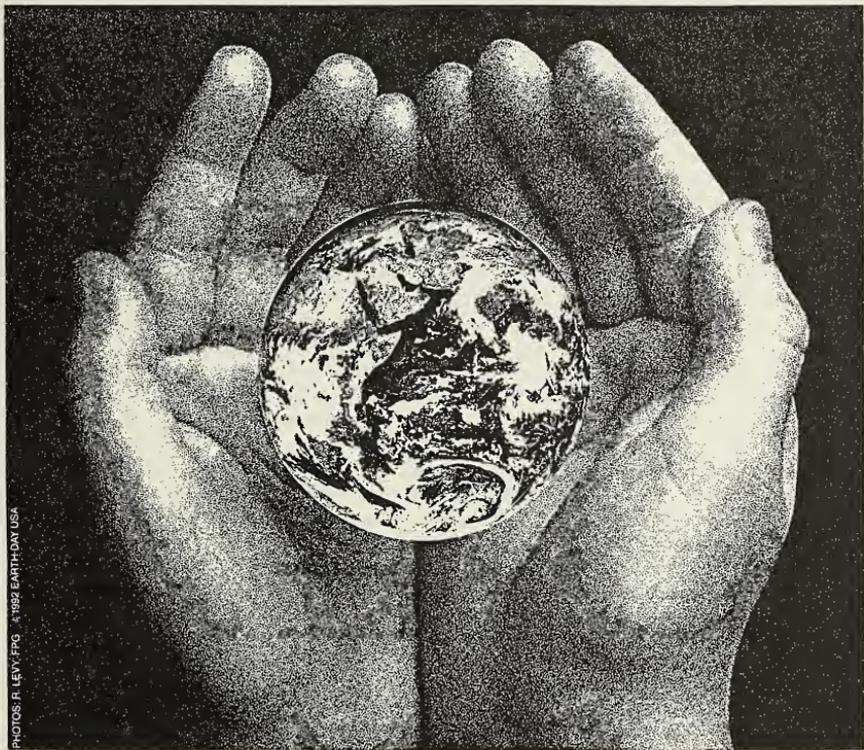
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**Next month: External Diseases**



I dreamed our planet  
got well again because  
everyone who lived here  
started doing things  
to help it.



PHOTOS: R. LEVY/EPG © 1992 EARTH DAY USA

Everyone started recycling,  
not throwing so much away,  
saving water, planting trees,  
driving less and walking more  
because everyone understood  
we all live in the same place.

APRIL 22  EARTH DAY



# Book Review

## ***Birds of Prey***

Dr. Ian Newton, consulting editor

Penny Olsen, editorial editor

Facts on File, Inc. 1990

460 Park Ave. S., NY, NY 10016

240 pgs. Hardback \$40.00 U.S.; \$50.00 Canadian

*Review by Michael J. Demlong  
Wildlife World Zoo  
Litchfield Park, AZ*

Current and historical evidence suggests that human cultures have long revered birds of prey as supernatural deities, spiritual messengers, and icons of strength and courage; yet simultaneously, humans have persecuted birds of prey for sport, food and cultural rituals. Unfortunately, this persecution and admiration often results in the decline or extinction of a species from its ancestral home ranges. However if the book, *Birds of Prey*, edited by I. Newton and P. Olsen, was made available to the world's populace, perhaps many of these threatened species could be saved.

*Birds of Prey* is the collaborative effort of 29 ornithologists, renowned for their research with raptors and dedicated to dispelling some of the popular misconceptions and prejudices surrounding these birds. These contributing ornithologists/authors accomplish their goal by divulging the mystery, the beauty, and the intrinsic value of the approximately 80 living genera of diurnal raptors. Together these genera form the order Falconiformes, whose members share characteristics like: hooked upper mandibles, powerful feet, sharp talons, large eyes, and acute vision. After having described these fundamental characteristics unique to Falconiformes, one author proceeds to define each taxonomic family within the order: Cathartidae (New World Vultures and Condors); Accipitridae (Ospreys, Hawks, Kites); Sagittariidae (Secretary bird); and Falconidae (Caracaras and Falcons).

Following their brief family by family description, the other contributors to *Birds of Prey* diverge to discuss various aspects of raptor biology; the results of diverse, comprehensive review on the natural history of diurnal raptors. The first major text division of this review examines the rudimentary biology of raptors: habitat preference, behavior, reproduction, mortality, and migration. Immediately following this section are chapters investigating mankind's relationship to raptors, human impact on their populations, and conservation/management issues.

Punctuating each page of text, in every chapter of the book, is an unusually superb color photograph. Every page is complimented with at least one color photo--most times two or more--depicting various species exhibiting some behavioral trait. Photos capture raptors in their habitats flying, mating, defending territories, feeding, resting, and most often, disastrously, interacting with humans. Independent of the written text, *Birds of Prey* merits its purchase price solely on its collection of photographs.

In addition to the photographs, another strength of this book stems from its incorporation of numerous, informative color tables and figure drawings. Noteworthy examples of the tables include those on raptor migration destinations, threatened species and their cause of decline, longevity records for wild birds, and a world checklist for all living diurnal species.

At first glance, *Birds of Prey* appears to be a "coffee table" book because of the numerous color photos and drawings, but look carefully, it is not. Instead you will find this book packed with useful and enlightening information - just like an encyclopedia. And this encyclopedia, *Birds of Prey*, will make a worthy addition to any nature lover's library, especially as a companion to the dry, species by species description field books commonly available on raptors.

## Book Review, *Continued*

Individuals who will particularly benefit from this concise presentation of biological material will be zoo or biology educators who periodically need a quick and accurate source of information on raptors. Still, anyone who has a fondness for raptors will appreciate this comprehensive compilation of "facts", on this unique avian order.

### *The Quails, Partridges and Francolins of the World*

By Paul A. Johnsgard 1988

Color plates of paintings by Major Henry Jones  
Oxford University Press, Walton Street, Oxford OX26DO, U.K.

246 pgs, 127 color plates Hardbound \$91.00

*Review by Gary A. Powell  
Manager of Facilities & Development  
Waimea Falls Park, Haleiwa, HI*

Already well known for his comprehensive work in *Pheasants of the World*, and his expertise in the world of ornithology, Professor Johnsgard has used that same format to present an extremely comprehensive work on the quails, partridges and francolins of the world. With this study in hand, as a companion to *Pheasants of the World*, one has an almost complete reference to the pheasant-like galliformes.

The first 38 pages of *The Quails, Partridges and Francolins of the World*, deal with the comparative biology of these species. Discussion of taxonomy, phylogeny, zoogeography, reproductive biology, ecology and population dynamics, ontogenetic growth and development and the vocalizations and non-vocal behavior of adult species give even the novice investigator a broad spectrum of detailed information from which to launch his/her investigations. Several reference charts and tables are used to illustrate the text as are drawings and diagrams of postures and morphological structures.

The species accounts are broken into two basic sections. First, the subfamily Odontophorinae (New world quails) has 9 genera and 31 species. Secondly, the tribe Pedicini (Old World quails, partridges and francolins) covers 21 genera and 102 species. Each genus covered is detailed with a key to the species involved. The individual species accounts are detailed and comprehensive including vernacular names, distribution of the species geographically (includes geographic map referencing), physical measurements and identification highlights for both field investigation and captive or "in the hand" work. He further details the listings to include sections on the species' biology and ecology, its social behavior characteristics, reproductive biology, evolutionary relationships and the status and conservation outlook.

The text is written in a plain and very readable style and the uninitiated would do well to have a dictionary of biological terms available for clarification of some references. The color plates presented in this work are, with the exception of five added to this work by Timothy Greenwood and Mark Marcuson, the work of the late Major Henry Jones, done around the turn-of-the-century. They are all superb illustrations that clearly add even greater depth to this fine work.

An intense bibliography and index of common, generic and species names conclude the work. The professional involved with aviculture and the serious novice should undertake to have this volume in his/her library. The organization dealing with any of the species of birds treated in this text simply should not be without this work. Even without the companion volume, *The Quails, Partridges and Francolins of the World* is of critical value on its own merit.



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If anyone has video footage of Guy Litchy's marriage proposal to Pilar Rinky which occurred on the night of the closing banquet of the 1992 National Conference in San Diego, they are asked to please contact Guy c/o the North Carolina Zoological Park, 4401 Zoo Parkway, Asheboro, NC 27203.

## L.I.N.K.

### (Liaison and Information Network for Keepers)

Coordinator for the LINK System: Mark de Denus, Assiniboine Park Zoo, 2355 Corydon Ave., Winnipeg, Manitoba, Canada R3P 0R5. (204) 837-2916 (h).

### Regional Coordinators

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**ALASKA** - Vacancy

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**ARKANSAS** - Debbie Jackson or Ann Rademacher, Little Rock Zoological Gardens, #1 Jonesboro Dr., Little Rock, AR 72205

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Ruby Lara, Sacramento Zoo, 3930 West Land Park Dr., Sacramento, CA 95822-1123

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**GEORGIA** - Fred Alvey, Zoo Atlanta, 800 Cherokee Ave. S.E., Atlanta, GA 30315

**HAWAII** - Michelle Suenishi, Hilton Hawaiian Village, 2950 Ena Rd., Honolulu, HI 96815

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**KENTUCKY** - Scott Wright, Cleveland Metroparks Zoo, 3900 Brookside Park Dr., Cleveland, OH 44109

**LOUISIANA** - Michelle Asselin, Audubon Park & Zoological Gardens, P.O. Box 4327, New Orleans, LA 70115

**MAINE** - Jeanette Nadeau (see addresses under CT)

**MARYLAND** - Theresa Maas, Philadelphia Zoo, 34th & Girard Ave., Philadelphia, PA

**MASSACHUSETTS** - Jeanette Nadeau (see addresses under CT)

**MICHIGAN** - Dan Powell, Potawatomi Zoo, 500 S. Greenlawn, South Bend, IN 46615

**MINNESOTA** - Tim Hill, Minnesota Zoological Gardens, 13000 Zoo Blvd., Apple Valley, MN 55124

**MISSISSIPPI** - Jeannie Frazier, Jackson Zoological Park, 2918 W. Capitol, Jackson, MS 39209

**MISSOURI** - Vacancy

**MONTANA** - Vacancy

**NEBRASKA** - Carla Wieser (see address under Iowa)

**NEVADA** - Patricia Simonet, Wildlife Safaris, P.O. Box 6735, Incline Village, NV 89450

**NEW HAMPSHIRE** - Jeanette Nadeau (see addresses under CT)

**NEW JERSEY** - Theresa Maas, Philadelphia Zoo, 34th & Girard Ave., Philadelphia, PA 19104

**NEW MEXICO** - Bruce Eneboe, Reid Park Zoo, 1100 S. Randolph Way, Tucson, AZ 857716

**EAST NEW YORK** - Frank Leonard, Bronx Zoo, 185th & Southern Blvd., Bronx, NY 10460

**WEST NEW YORK** - Alan Baker, Burnet Park Zoo, 500 Burnet Park Dr., Syracuse, NY 13204

**NORTH CAROLINA** - Lucy Segerson, North Carolina Zoo, Rt. 4, Box 83, Asheboro, NC 27203

**NORTH DAKOTA** - Bob Debets, Assiniboine Park Zoo, 2355 Corydon Ave., Winnipeg, Manitoba  
Canada R3P 0R5 (204) 986-4040 [w]

**OHIO** - Scott Wright, Cleveland Metroparks Zoo, 3900 Brookside Park Dr., Cleveland, OH 44109

**OKLAHOMA** - Debbie Jackson or Ann Rademacher (see addresses under AR)

**OREGON** - Anna Michel, Washington Park Zoo, 4001 SW Canyon Rd., Portland, OR 97221

**PENNSYLVANIA** - Theresa Maas, Philadelphia Zoo, 3400 W. Girard, Philadelphia, PA 19104

**RHODE ISLAND** - Jeanette Nadeau (see addresses under CT)

**SOUTH CAROLINA** - Lucy Segerson, North Carolina Zoo, Rt. 4, Box 83, Asheboro, NC 27203

**SOUTH DAKOTA** - Bob Debets (see address under ND)

**TENNESSEE** - Gail Karr or Cindy Pinger, Memphis Zoo & Aquarium, 2000 Galloway, Memphis, TN 38112

**TEXAS** - Ann Marie Greco, San Antonio Zoo, 3903 N. St. Mary's St., San Antonio, TX 78212

**UTAH** - Suzanne Chacon-Brennan, Denver Zoo, City Park, Denver, CO 80205

**VERMONT** - Jeanette Nadeau (see addresses under CT)

**VIRGINIA** - Theresa Maas, Philadelphia Zoo, 34th & Girard, Philadelphia, PA 19104

**WASHINGTON** - Elandra Aum, Woodland Park Zoo, 5500 Phinney Ave. N, Seattle, WA 98103

**WEST VIRGINIA** - Theresa Maas, Philadelphia Zoo, 34th & Girard, Philadelphia, PA 19104

**WISCONSIN** - Wayne Hazlett, 3768 S. 89th St., Milwaukee, WI 53228

**WYOMING** - Vacancy

**DISTRICT OF COLUMBIA** - Theresa Maas (see address under PA)

**Province of Ontario** - Neil Porter, Metro Toronto Zoo, Box 280, West Hill, Ontario M1E 4R5 Canada

**Provinces of Manitoba & Saskatchewan** - Bob Debets (see address under ND)

**Province of Quebec** - Vacancy

**Provinces of Alberta & British Columbia** - Grant Tkachuk, 10139 157th St., #206, Edmonton, Alberta T5P 2T9

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# Building a Relationship with Your Animals (Breaking Through)

By  
James Bousquet, Director  
*Walk in the Wild*  
Inland Northwest Zoological Society  
Spokane, WA

Given the fact that we are an ever-present factor in our animals' lives, we cannot expect them to behave normally unless we are fully accepted or at the very least, we are a positive influence in their lives. I know there are those who feel there should be no interaction with our animals, but we interact whether we like it or not. Not only is interaction with our animals what makes our job special, the fact that we are around our animals 8-10 hours a day mandates that we develop a relationship that is positive. Our very presence impacts every facet of their lives, hence they cannot behave normally unless we have a positive working relationship with them. I do not advocate making pets of them, merely developing an atmosphere of cooperation and communication which changes our negative status to a positive one in the eyes of the animal. The result is a release of normal behavior. I call this release of normal behavior a **BREAKTHROUGH**.

There are many ways to **BREAKTHROUGH** with your animals and there are many stages and levels of **BREAKTHROUGH**. The initial breakthrough is the most important because an animal shackled by fear and stress will never behave normally or utilize even the richest environment. Fear supersedes all instincts. This paper is about how to Develop a Relationship Which Allows You to **BREAKTHROUGH** with your animals and release normal behavior. You will be amazed at what this will do to enrich your animals' lives. Sometimes it takes many months, so do not give up.

Some of you may feel it is not natural to cooperate and communicate with your animals, but I can assure you, from personal experience, it works very well in a zoo environment. It even works on wild animals as research by Goodall and Fossey has shown. In their early studies, Goodall and Fossey were discouraged because every time the apes saw them, they ran screaming into the forest. It was not until they learned one another's behavior that an atmosphere of trust developed. This took about two years. Goodall and Fossey went so far as to learn the apes' social behavior, calls and postures. The apes learned Fossey's and Goodall's behavior because these researchers displayed consistent behavior which was non-threatening. They learned to cooperate and communicate with one another and as a result the apes began to behave as if they were not being watched. **They behaved NORMALLY.** Fossey and Goodall broke through with their animals, and as a result of their studies our understanding of animal behavior and animal intelligence changed forever. If developing a relationship works with wild animals which are free to leave at any time, it must apply to zoo animals which are our captives.

## COMMUNICATION -

There are many examples of interspecies communication in the wild, so it does not seem so strange that we should communicate with our animals. For example, many animals communicate the presence of danger to different species. The Honey guide (*Indicator wilcocksii*) leads the Ratel (*Milliovoora capensis*) to honey and is rewarded with the leftovers. Though many animals do not knowingly communicate with one another, they are observant and receptive to interspecific communication just the same. I believe zoo animals are receptive to many forms of communication from us too. We, in fact, communicate with them without knowing it. Most animals react to odors, postures, specific movements and sounds, so how we behave around them has more significance than you might think. We begin to communicate with them the moment we come into view, into hearing range or into their sense of smell. If we become aware of this and begin to program our routines around communicating with our animals, we are on our way to developing a positive relationship and a breakthrough.

COOPERATION -

Cooperation with an animal means communicating what you are doing, what you want of them, then allowing them the time, space and freedom to respond accordingly. We must know our animals well enough to understand how they communicate, what it means and how we can meet their needs through cooperation, i.e. recognizing behavioral, environmental and specific needs and meeting these needs. An example is reducing stress during cleaning with nervous animals by creating Safe Spots or Safe Places (See "Safe Spots, Safe Places and Behavior Consistent Routines", *Animal Keepers' Forum*, April 1992 pp. 139-42). These are consistent, repeatable routines which teach animals to react appropriately by staying outside of their discomfort zone, thus reducing fear, stress and confusion. Before I discuss specific techniques I use for breaking through with animals, I would like to give some examples of breakthroughs early in my career. Though I did not know that much and my techniques were simple, the results were dramatic. Now I have many specific methods I use which facilitate a breakthrough much more quickly.

When I started in the zoo field in 1966, I observed many things I did not understand and it seemed that something was wrong with Keeper/Animal Relationships. Idealistically, I went to work believing man and animal coexisted harmoniously in our atmosphere of affection and respect, that love and respect creates happy, healthy animals. Wrong! Now I know we must create a rich environment and then the animals must somehow be freed of fear and stress so they can utilize their environment to its fullest. Breaking through releases this normal behavior and as a result animals are able to use their environment more fully. Affection or respect may develop later but it does not have to for a breakthrough to occur.

My first breakthrough came with an adult male Bengal tiger (*Panthera tigris*) named Raja. He obviously hated people and vented his rage by hissing, roaring and slinking around looking worried. When I came in to clean his den each morning, he would hiss and angrily slink out the door. I noticed he had a glazed look in his eyes and saliva ran from the corners of his mouth in long stringy drops. It was obvious that this was not normal, but there were no informative books around at that time, particularly regarding the symptoms of stress related to animals in captivity. A bit later I found a description of the classic symptoms of stress in a tiger in an old book on animal training. The swallowing reflex is dampened by fear, causing the saliva to run from the corners of the mouth (fear mutes all the senses and instincts). I really did not know what to do about it at the time, but I knew I must do something. So I tried to be his friend. Each morning I would happily enter his building talking all the time, talking in a reassuring, gentle, and friendly way. Each day he would slink out of the building as he had the day before.

After eight months, there was a miraculous change in Raja. As usual I came in talking and being as friendly as possible, but unlike every other morning, Raja was waiting for me and just stood there looking at me. He gave his greeting noise and turned his side to the wire inviting me to touch his fur. I carefully reached through the wire and stroked his soft fur. I could see a shudder run through his body. I did not know it at the time, but I had a breakthrough with Raja and his life was changed forever. No more catatonic behavior or stringy saliva running from his mouth. We looked forward to seeing one another and exchanging greeting calls. Looking back I realize he had a miserable environment, but in my own way I had enriched his life. Had his environment been richer, he would have been able to utilize it more fully, resulting in more normal behavior. I fondly remember my breakthrough with Raja as one of my most rewarding moments in zoo work, even though it was 26 years ago.

I also worked with a solitary adult male Polar bear (*Thalarctos maritimus*) named Karl at the same zoo. Much like Raja, he hated people and he displayed his rage by attacking the wire and pounding on the door as I cleaned his den. From my success with Raja I knew I could reach Karl and change his life. I now know most animals can be reached in some way.

## **Building a Relationship with Your Animals (Breaking Through), Cont'd**

I always cleaned Karl's outdoor enclosure first and he always rushed around nervously with periodic attacks at the wire. I acted as though his behavior did not bother me and just continued to wash his pen. As I washed his pen, I noticed he was quite aware of the water splashing on the ground. I felt using the water would be a good way to reach him. I also used my voice to communicate with Karl as I did with Raja. To see what his reaction would be, I splashed water in front of him, behind him, or beside him. I was looking for a release of play-chase behavior which I could build on in developing a relationship.

One morning I sprayed water into the pool and Karl immediately dove in to capture whatever it was splashing in his pool. He really enjoyed chasing the splash on the water and eventually I began to spray water into his mouth, then on his belly, rump and back, all of which he enjoyed. In time, the play-chase game spread over the entire display and I had at last a breakthrough with Karl. He no longer acted aggressively toward me, though he could not be trusted. Yet I know it made a difference in his life and I did it without making physical contact. Learning I could breakthrough with an animal without contact was a valuable lesson.

After I completed college in 1970, I went to work in a large west coast zoo where I cared for a rather large African Veldt Display. On my way to my route I passed behind another person's route and a holding pen where an adult male Brindled gnu (*Connochaetes taurinus*) named Toro was isolated from the other animals. He was used only for breeding, so when the females were in estrus, he was put in the display after all the other animals were locked up. Apparently he had killed several animals before they decided to isolate him.

Each morning he would be waiting for me at the top of the hill, and as I walked to my route he butted and tore at the fence all the way. The wire was a mangled mess attesting to his strength and tenacity. I always talked to him in a friendly and reassuring way. In this situation, I never responded by kicking the wire or throwing things as I had seen so many people do. Squirting animals with water to control or punish them is a poor habit as well. It only makes the animal worse. The daily routine with Toro went on for 4-5 months until, like Raja the tiger, a change came over Toro. One morning he was standing at the top of the hill as usual, but rather than attacking the fence, he just stood looking at me. We gazed at one another for awhile and I waited for Toro to take the initiative. I have found that when an animal wants to have contact or develop a relationship, it will generally make it known. In this case, Toro turned his side to the fence and stood close to the wire. I touched his back and he trembled all over. I had broken through! From then on, as usual, he was waiting for me at the top of the hill. But now as I walked and talked down the hill, he would bounce and prance alongside me. Some mornings he would spronk and run around his pen as fast as he could, then would stop and look at me as if to say "see how wonderful I am", and he was. I might add that he continued to produce offspring so the relationship did not affect his viability. I think I enriched his life at least a little bit.

Since those early days I have made many breakthroughs and as a result, I have developed quite a few techniques. I would like to share them with you.

## **Methods for Breaking Through With Your Animals**

### **TALK TO YOUR ANIMALS -**

Our voice is one of the most powerful tools we have. It can transcend barriers and allow us to reach animals without ever touching them. A voice can calm, reassure, encourage, instruct, express feelings, reward, hold their attention, alert, coax, etc. I have broken through with many animals using only my voice. As I talk to my animals I look for signs of a positive response, then I build on it. Talking at feeding time is particularly good because your voice can be associated with something positive. I like to talk and encourage animals in play behavior. Many times they can be taught to associate words and voice inflection with play behavior, then you can encourage them to play by using your voice. I cannot overemphasize how important communicating to your animals verbally will be in breaking through.

## **Building a Relationship with Your Animals (Breaking Through), Cont'd**

### **LEARN YOUR ANIMAL'S PRIMARY SENSORY MODES -**

I like to rate an animal's senses in my animal profiles as 1, 2 and 3. For example, an elephant's senses are rated 1 smell, 2 hearing and 3 eyesight. This is good information to use in developing a routine as well as developing a relationship. Most animals (mammals in particular) respond to our voice, but animals that are visually-oriented can also respond in a major way to our actions. For example: bursting in to a room or making sudden movements sends a blast of visual stimuli to a sight-oriented animal which can have disastrous results. By the same token, yelling and slamming doors has the same effect on animals with an acute auditory sense. Animals with a primary olfactory system are nervous about odors they cannot identify or strange odors on a keeper. Be careful about colognes or aftershave, etc.

I remember how nervous my Yellow-backed duikers (*Cephalophus sylvicultor*) were at seeing my new boots under the stall door. Until I opened the door to let them see that I was attached to them, they were very uncomfortable. Many dense forest animals use vision as a last resort sensory mode. Once a predator is close enough that the prey animal can see them, they make a mad dash into the forest for safety. In a zoo with concrete walls and fences, a response like this is terminal. So always rate your animals' senses and develop a routine around them. It will help you develop a relationship and reduce injury accidents.

### **DEVELOP PROFILES ON ALL OF YOUR ANIMALS**

Prepare extensive profiles on your animals which are species specific and also individually specific. It helps put your whole animal care program into perspective. All animals within a species have similar characteristics, but each animal is an individual. They have individual traits regarding personality, food preferences, reaction to stress, keeper relationships and so on. Do not be afraid to change your profiles and update them on a regular basis. You will find the animals' personalities will change as you breakthrough (at least their real personality may reveal itself). Write down how you breakthrough reward, relate, play or interact with your animals in a positive way.

Prepare summer, winter, breeding season and parturition routines. Zoos with major changes in weather and severe storms or the possibility of diseases should have contingency plans for animal care. Keepers can use Safe Places (See Safe Places Explanation) if animals need to be contained in an emergency, for example.

Share your profiles and your material on breaking through with your animals with your relief keeper. Dramatic changes in the level of care due to an uninformed relief keeper can disturb an animal greatly. A two-day relief keeper stint can affect an animal more than you realize. For example: An untrained relief keeper spends two days on your route, then the animal requires 2-3 days to recover. So, a person only relieving you on your days off can affect an animal adversely for 4-5 days. That leaves you only 2 days to make any progress with your animals. So it is really important to have good relief people and it is critical to communicate with them.

### **BE CONSISTENT -**

Being consistent is one of the most important things you can do for your animals. Inconsistency and undependable behavior are very disturbing. Animals spend every waking hour trying to maintain consistency in their lives (homeostasis). They require a balance in their lives between many factors. Since we are part of their world, we must be a consistent factor as well. Use Safe Spots and Behavior Consistent Routines to assure animal safety and mental health. (See Safe Spots and Behavior Consistent Routines, *AKE*, April 1992 p. 139-42). If changes in routine must be made, plan them carefully and make them slowly.

### **DO NOT RETALIATE FOR AGGRESSIVE OR BELLIGERENT BEHAVIOR (BE CALM, BUT CONFIDENT)**

When breaking in with new animals, be calm, but confident and do not retaliate at

## **Building a Relationship with Your Animals (Breaking Through), Cont'd**

aggressive behavior. Many animals want to be dominate to a new keeper. Some good examples are Chimpanzees (*Pan troglodytes*), polar bears, hooved animals, big cats, etc. They have a variety of moves and vocalizations which are intended to scare or intimidate a new person. If the new keeper cowers in fear or retaliates by hosing, kicking the wire, or throwing things, they have really lost. This kind of behavior only sends an animal into its next phase of aggressiveness. A keeper should act as though it does not bother him or her. Do not retaliate - communicate. Talk to the animal, give it treats or simply ignore their antics. Work on ways to breakthrough and reach your animals. This may take a long time so be ready for some uncomfortable days, weeks or months ahead. It helps to imitate a successful keeper routine, action and voice inflection when breaking in at a new area.

## **LEARN TO UNDERSTAND WHAT YOUR ANIMALS ARE TRYING TO TELL YOU**

If you know enough about your animals as a species and as individuals you will find a new level of communication will open to you. Your animal will communicate many needs to you that you had never recognized before. When an animal finally opens up to you due to a breakthrough, you had better be ready to recognize and respond to the instincts and behaviors that are released. This may mean adding or taking away enrichment items, changing (carefully) routines, improving feeding techniques, whatever it takes to meet your animals' needs and create further breakthroughs. I cared for 2.2 Yellow-backed duikers that were very nervous and they used little of their environment. They paced along the back fence or they would lie down close to the moat so that they could dive in if something looked threatening. To initiate a breakthrough, I started on my Safe Spots and slowly began to enrich their outside pen. I planted grass, added logs and piles of soil. They really enjoyed rooting round the dirt and investigating the logs. Little by little their world grew. Soon they used their whole display and I was now able to work around them with a fair amount of confidence inside and outside.

## **KEEP GOOD RECORDS**

Maintain a good set of records aside from daily reports. These should be much more extensive and complete than daily reports. It really helps you to learn about your animals quickly. They can also help you recognize problems, trends, predict coming events and it can help you handle problems in their earliest stages.

## **SAFE SPOTS**

A Safe Spot is a secluded area or corner in a yard or barn where an animal feels secure during cleaning or routine maintenance. It is best to have several of them so the animal(s) can move from one to the other as cleaning progresses. Once an animal realizes it will not be pestered or trapped if it is staying in a Safe Spot, it calms down during cleaning. They are equally cooperative after they learn that moving to another Safe Spot at the appropriate time will make things run smoothly and reduce stress. In quite a short period of time, jumpy animals realize the benefit of the Safe Spot routine and they readily cooperate - it can even become a game for them.

## **SAFE PLACES**

A Safe Place differs from a Safe Spot in that once the animal is in the Safe Place, it is left alone. You must have a shift pen or stall in your barn or pen for this method to work properly. Be sure to prepare a Safe Place well ahead of time, then coax the animal to enter. Once they realize the advantages, they will quickly run into a Safe Place. In an emergency, such as an impending storm, birth or injury, being able to secure an animal inside at will is a valuable technique. My animals always knew when I wanted them to go into a Safe Place when I used my "Go Into the Barn" behavior.

## **BEHAVIOR CONSISTENT ROUTINES**

A Behavior Consistent Routine means developing a work routine which animal(s) can easily recognize (communication) and respond accordingly, i.e. we let them respond

## **Building a Relationship with Your Animals (Breaking Through), Cont'd**

(cooperation). This goes back to consistency and takes it several steps further by creating routines which are so readily identifiable that the animals immediately know they are expected to respond in a certain way. For example, use "Clean the Yard" behavior and animals will seek Safe Spots. Use "Go Into the Barn" behavior and animals will seek Safe Places. Use "Let's Play" behavior and animals will play and chase. Our Alaskan brown bears (*Ursus middendorffi*) now know "Into the Den" behavior means Occupational Feeding Time. That was an easy one because the rewards of natural feeding are immense to them.

### **MAXIMIZE OCCUPATIONAL AND ENVIRONMENTAL OPPORTUNITIES**

Though this does not necessarily mean a better relationship with your animals, it means once you break through and release normal behavior, a rich environment already in place can be used to its fullest. A rich environment and ample occupational activities can mean further breakthroughs leading to a richer and more meaningful life for your animals.

### **ONE BREAKTHROUGH LEADS TO ANOTHER**

Many forms of animal behavior are sequential. I believe breakthroughs are sequential as well. The first and most important breakthrough is the elimination of fear and stress which results in the release of normal behavior. Since this is only the first step, we must realize that the animal can only continue to progress with our help, i.e. providing a rich environment, proper social ratios, consistent routine care and occupational activities.

Because we think an animal has reached its behavioral potential does not necessarily mean it is so. Many animals may not have reached their potential because we have not realized the sequential nature of breaking through and therefore have not provided the necessary behavioral and environmental releases for the animal to develop to its maximum potential. We should be continually alert and prepared to provide everything necessary to let an animal attain every breakthrough possible.

Exhibit development should not be static. (A display is never finished.) Adding, taking away, repositioning, changing routines, raising or lowering display fixtures can release different behaviors. Merely repositioning an object may release a new behavior. "Autoformulated" releases are a sequential and natural form of behavioral development. For example, changes in the shape of a termite mound stimulates activity. Further changes stimulate other activities. This applies to exhibit development too. Even small changes could produce quite dramatic changes in your animals.

I suppose you could call it micromanagement of your animals, but we must teach ourselves to know and understand our animals as we never have before. A new phase in animal care is evolving where we care about behavior, enrichment activities, relationships, feelings and the total development of an animal's world. Breaking through is merely a part of this new sophisticated, more aware level of animal care which has become a part of our world in the zoo. By managing every facet of an animal's life through breakthrough, habitat enrichment, occupational activities and monitoring behavior as a guide, we actually create an environment where an animal can be as free and normal as possible in captivity.



## **Information Please**

Anyone wishing to trade cassette tapes of Gibbon calls, please call Lisa Tate at Zoo Boise (208) 384-4170; or send your cassette to: Zoo Boise, Attn. Lisa Tate, 355 Julia Davis Drive, Boise, ID 83702.

# Chapter News

## Omaha AAZK Chapter

The Omaha AAZK Chapter was involved in a variety of activities in 1992. In April our Chapter was honored with a visit from Mark de Denus, L.I.N.K. Coordinator. Our "Bowling for Rhinos" activity was held on 8 May raising \$1090.00. Omaha's Henry Doorly Zoo docents contributed another \$120.00 to our donation to Ngare Sergoi.

In July the Public Relations and Marketing Department hosted its first annual Critter Ride Bike Race. AAZK members passed out registration packets and manned a bicycle sitting service after the race for those participants remaining to enjoy the zoo. For the Chapter's efforts, we received half of the proceeds from the event.

One of the highlights for our zoo was hosting the National Docent Conference (AZAD) in October. Our Chapter assisted by passing out hundreds of sack lunches that were creatively illustrated by students from Bancroft School, Henry Doorly Zoo's adopt-a-school partner. At the conference funds were raised to assist the Miami Metro Zoo hurricane relief effort.

Also in October, Yoshi. Yonetani from the Zoo Design & Education Lab in Kobe, Japan was a guest at our zoo.

Our Chapter continued to support its members by sending Bob Lastovica and Alan Holst to the National AAZK Conference in San Diego.

Our priority throughout the year has been organizing for the 1994 National AAZK Conference. Some of our fundraising endeavors include: aluminum can recycling, holding a garage sale, "keeper for a day" raffle, and sales of honey, beeswax candles, bird houses and bat houses.

In order to maintain a well-coordinated conference, our Chapter has voted to retain the present officers for the ensuing year:

President.....Diane Callaway  
Vice Pres.....Paul Dulany  
Secretary.....Jay Tetzloff  
Treasurer.....Alan Holst  
Chapter Liaison.....Elizabeth Pyle

Conference co-chairpersons, Diane Callaway and Lisa Cuevas, have been diligently planning for the 1994 Conference. We all look forward to sharing Omaha's Henry Doorly Zoo with you.

--Elizabeth Pyle, Chapter Liaison

## Caldwell Zoo AAZK Chapter

New officers for 1993 are:

President.....David Menasco  
Vice Pres.....Ralph Durham  
Secretary.....Coleen Watkins  
Treasurer.....Jeannie Wood  
Chapter Liaison.....Kelly Clay

The Caldwell Zoo AAZK Chapter has installed a committee system including Executive, Ways & Means and Rules & By-Laws Committees. Chapter business meetings are held each month alternately on Tuesday, Wednesday and Thursday evenings at 5:00 p.m.

A "Members Night Out" will be held once each quarter at a preselected restaurant where members will have dinner (paid for by the Chapter) and a guest speaker will bring a program.

--from Caldwell News 2/93

## San Diego AAZK Chapter

The February meeting of the San Diego Chapter featured local Chapter member and architect John Bretton. He spoke about his recent visits to Tierpark Berlin, Tiergarden Berlin, the Copenhagen Zoo and Prague.

Included in the slide presentation were slides of the four zoos and surrounding areas and local historical sites. He also mentioned the Cuban influence of the eastern European zoos.

The Chapter has recently adopted a second bus stop under the Adopt-A-Bus Stop Program.

--Neil Ferrier, Chapter Liaison

## Chapter News, Continued

### Milwaukee County Zoo AAZK Chapter

Our Chapter Christmas Party was again hosted by Lois Kessler and Sue Simon. Chili by Chef Wayne, and drinks by Craig, plus many sidedishes brought by other members, made for a full evening. Videos and snapshots of Lois and Sue's last trip to Tanzania were shown. They were not aware of the lion lurking in the brush behind them until they viewed the pictures. What a thrill that was!

New member Barbara Bell, a Keeper in our Aviary, spent four weeks in Belize studying the Howler monkey (*Alouatta pigra*) with Dr. Robert Horwich. It was an experience she will long remember.

Our annual Valentine's Day bake sale was another success, thanks to the staff and volunteers. The money made is used for various conservation projects supported by the Chapter.

The renovated Primate Building is scheduled to open on 8 May. This is the third building in our "core zoo". We now have three buildings that can be toured without going outside. The Aquarium-Reptile Building will be the next in line for renovation.

On 23 February, Stephanie Powers and Robert Wagner made a visit to our zoo. They were in town doing Love Letters, a play by A.R. Gurney. Wayne and Diane Hazlett represented Wisconsin AAZK and the Milwaukee County Chapter for the event. The local Chapter presented one of their cookbooks to Ms. Powers, and an AAZK mug to Mr. Wagner. It was a great pleasure to meet these two caring, supportive people.

Former Chapter member Clay Ecklund was here in March for a visit. He attends the Santa Fe Community College Teaching Zoo in Gainesville, FL. He is an active member of their Chapter.

--Wayne J. Hazlett, Chapter Liaison

### Indianapolis Zoo AAZK Chapter

After much deliberation, our Chapter has sent the check to Ecosystem Survival Plan for a Conservation Parking Meter. The majority of the money was

raised through our hot chocolate sale. The unveiling of the meter is planned for sometime this month.

Cara Lance is off on the trip she won to Kenya. She was one of the two top money raisers in the nation for the 1992 "Bowling for Rhinos". This year our Chapter will be bowling on 17 April.

--Maria McManus, Chapter Liaison

### Sedgwick County Zoo AAZK Chapter

Officers for 1993 are:

President.....Barbara Rausch  
Vice Pres/Liaison.....Joyce Kaplan  
Sec/Treas.....Mara Gonzalez  
Chair Facilitator.....Jenny Joyce

Our Chapter had a busy year of fundraising efforts with \$1000 raised in "Bowling for Rhinos"; \$500 raised in a rummage sale; and \$2500 raised for the Miami Metrozoo Crisis Fund.

The newest activities of our Chapter combine community service with fundraising and conservation. We recently enrolled our Chapter in the Adopt-A-Highway program and are eagerly awaiting our first clean-up duty. Our new zoo recycling program is run by the Chapter with proceeds going to international conservation efforts. Most of our current energies are focused on preparing a fun-filled and conservation-minded evening for the Wichita community at this year's "Rockin' for Rhinos" on 5 June (Conservation Day).

--Joyce Kaplan, Chapter Liaison

### Dallas Zoo AAZK Chapter

On 16 February, our Chapter sponsored another sensational bake sale. Thanks to all the bakers for creating the best brownies and cupcakes that we've ever tasted!

To increase awareness of AAZK in the community, our Chapter participated in a pledge drive for local PBS station KERA. On 17 March, we monitored telephone lines from 6:30 to midnight while modeling "Bowling for Rhinos" T-shirts.

--Kevin Lew, Chapter Liaison

## Chapter News, *Continued*

### Philadelphia Zoo AAZK Chapter

As 1993 gets underway, our Chapter is busy following through on conservation projects begun in 1992. We have continued our support of the Minerva Zoo in Guatemala by shipping very needed tools, old padlocks, and a complimentary Boomer Ball® for their animals. We hope to continue assisting this worthwhile institution.

Locally we continue to raise money for the Delaware River Campaign, administered by the Philadelphia Chapter of The Nature Conservancy, which protects 150 natural areas in the Delaware River watershed. So far, \$1346.69 has been raised through our long-distance viewfinders. We also continue to support The Nature Conservancy internationally through our Adopt-an-Acre program funded by our Conservation Parking Meter.

Within our own zoo we have helped supplement and increase interest in our zoo's "Critter Fund" which allocates money for the purchase of toys and ropes for our animal collection. We are pleased at the enthusiasm and support demonstrated by the general public who contributed by way of a donation box placed in our refreshment area. A total of \$210.00 was collected for January and February. Money was also generated by setting up a "Critter Fund" table at our Christmas event, Miracle on 34th Street, which featured actual toys that had been used by different species, coupled with a price tag which reflected the high cost of these items, a total of \$6535.00 was raised at this event. An additional

\$500.00 was added to the fund by collecting and cleaning coins from the various pools around the zoo.

In addition to the Critter Fund", we are always on the look-out for new ways to enrich our animals' lives. One idea we devised was to have a PVC party after work which allowed us to make puzzle and cricket feeders for our animals from PVC pipe, some of which was donated.

An Endangered Species letter writing party was held recently to generate support for legislation that preserves our national heritage. Staff from all over the zoo wrote letters to their respective state senators and representatives while enjoying a free lunch provided by AAZK. Over 250 letters were completed and sent to Washington, DC.

In another "in-house" project, we donated funds to include a backyard exhibit in our Children's Zoo. The \$500.00 donation will help with the recycling and composting portion of the exhibit due to open next month.

We have instituted a zoo-wide recycling program that allows all departments to recycle aluminum, tin, and certain plastics. We hope to continue to expand and improve this valuable program with the help of other zoo staff.

Our "Keeper Evenings" and morning "Keeping Up With Keepers", continue to bring in many zoo members and generate money for the Chapter. We also look forward to having a profitable "Bowling for Rhinos" this June.

*--Philadelphia Chapter*



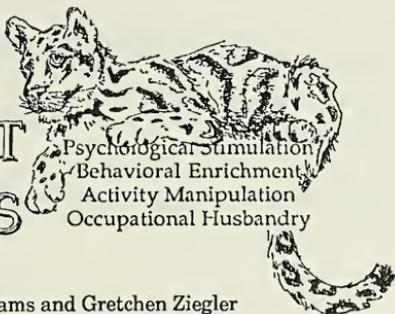
## ***Keepers' Alert***

Published material describing methods used to introduce unfamiliar great apes to each other or to existing groups is scarce. I am interested in compiling an anecdotal record of great ape introductions. Please send me any previously unpublished accounts and information regarding individual or group introductions that have occurred at your facility. It would be most helpful if accounts included techniques and methods employed to introduce individuals or groups. For example, information regarding initial meetings between individuals (i.e. through bars), criteria used to decide when individuals were ready to meet and length of time of first and subsequent encounters should be included. Please share both your successes and failures. These accounts will be compiled in a published report. Thank you for your cooperation. Send to: Carole Noon, Department of Anthropology, 1350 Turlington, University of Florida, Gainesville, FL 32611 FAX 904-392-6929.





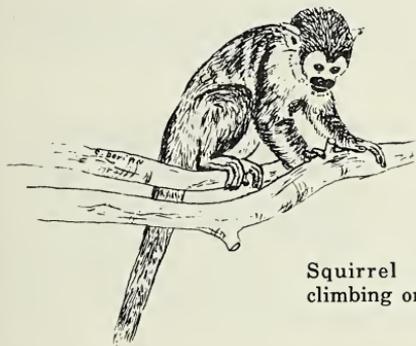
# ENRICHMENT OPTIONS



Psychological Stimulation  
Behavioral Enrichment  
Activity Manipulation  
Occupational Husbandry

by Kayla Grams and Gretchen Ziegler  
Keepers, Topeka Zoo

**Primates** - Lesser spot-nosed guenon (*Cercopithecus petaurista fantiensis*) clutching a bite of fruit in one hand, a pine cone with the other and resting on multiple level branches. Note the two black pads (ischial callosities) on which she sits. Capuchins will use two branches at a time to sit and rest on also, although their position is different from that of the guenon.



Squirrel monkey (*Saimiri sciureus*)  
climbing on parallel branches.

--Camille Dorian  
Monkey Zoo, Orinda, CA

**Sea lions** - A fish popsickle is a favorite. I give toys to the pups, but bulls almost never play with toys. But a bull will play with and eat a fish popsickle. This can be made by freezing a mackerel in a bucket of water.

**Giraffes** - Play music - all kinds, except hard rock. It has a calming influence over the animals. I often play other animal noises such as bird calls, and whale songs, and tropical rainforest sounds including rainfall and thunder sounds. These things are better than complete silence all winter long. It also sets an atmosphere for children when they come into the building and hear music. They listen and are quieter while viewing the animals, instead of being loud and running around. It also forms an anesthetising blanket over the animals so they don't hear as many irritating sounds.

--Carol Sharp, Keeper  
Hogle Zoo, Utah

**Cats** - We give almost intact deer, goat, calf and horse carcasses to our puma, lion, tiger, on exhibit at the end of the day.\*

--Donna Versteeg  
Walk In The Wild Zoo,  
Spokane, WA

## Enrichment Options, Continued

(\* Editors' note: we recommend that this procedure be approved by a veterinarian prior to feeding.)

(Editor's note II - in last month's issue we listed one of the contributors, Andrew Main, as being associated with the Mystic Marineline Aquarium in Connecticut. Andrew is not employed at that facility, but is a private individual residing in E. Hartford, Connecticut. Our apologies for this error.)



*Institutions wishing to advertise employment opportunities are asked to send pertinent data by the 15th of each month to: Opportunity Knocks/AKE, 635 Gage Blvd., Topeka, KS 66606. Please include closing dates for positions available. There is no charge for this service and phone-in 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.*

**KEEPER/INTERNS...**summer of 1993, 10 weeks from May to August, starting dates flexible. Closing date **1 May 1993**. Stipend \$1,000. Funds provided by Friends of the Salisbury Zoo. Must have own transportation. Written inquiries only. Response should include three references, personal goals, interests and background. Reply to: Gary Muir, General Curator, Salisbury Zoological Park, P.O. Box 3163, Salisbury, MD 21801.

**SENIOR KEEPER...**requires two years college level course work, two years experience in the care of exotic animals; OR an equivalent combination of experience and training which provides the required knowledge, skills and abilities. Will be working with maned wolves, anteaters, ungulates including Asian elephant. Salary: \$17,092.00. Interested individuals must complete and submit a standard City of Little Rock Application for Employment and a Training and Experience Questionnaire. Closing date is **5:00 p.m., Friday 7 May 1993**. Contact City of Little Rock, Personnel Dept., 500 West Markham St., Little Rock, AR 72201-1428 - phone (501) 371-4590.

**ZOOKEEPER...**full-time position. We are seeking an energetic self-starter to work with a wide variety of animals including 85 species of mammals, birds, herps, fish and invertebrates. Applicant must have a working knowledge of the care of exotic animals in a progressive zoo situation. Must be willing to participate in the design of new exhibits. Minimum qualifications: high school graduation, college preferred; experience working with exotic animals in a zoo setting; knowledge of current zoo philosophy; willingness to accept responsibility and work with a team. Salary: \$5.10 - \$5.45/hour; Benefits included. Send resume to: Steven M. Wing, General Curator, Folsom Children's Zoo and Botanical Gardens, 1222 S. 27 Street, Lincoln, NE 68502. **Closing date is 14 May 1993.**

**CURATOR...**The Wildlife Discovery Program (a Houston I.S.D. Magnet School) is now taking applications for the 1993-1994 school year. The Curator position vacancy will become available August 1993, and continue through June 1994 (10 month contract with benefits). The duties of this position include planning and experiential instruction in an outdoor setting at the Houston Zoo to 3rd grade students. Requirements are two or more of the following: 1) high school diploma (required); 2) education experience; 3) wildlife biology background; 4) environmental/outdoor education experience; 5) summer camp counselor experience. Salary is \$1030.00/month for 10 months with benefits. Applications will be accepted **until 15 July 1993**. Please send inquiries and resumes to: Ms. Karyl Watz, Coordinator, Wildlife Discovery Program, 1513 North Macgregor Way, Houston, TX 77030.

**LEAD KEEPER BIRDS/SMALL MAMMALS...**provides daily care and maintenance to and observation of a variety of animals including softbills, hookbills, waterfowl, cranes, birds of prey, mustelids, primates, rodents and reptiles. Provides supervision to full and part-time employees. Requires high school diploma or GED and 2 years progressively responsible work experience. Experience in incubation and hand-rearing of birds, exhibit design/construction and experience working with spheniscid penguins desirable. Send resume by **1 May 1993** to: City of Idaho Falls, Personnel Dept., P.O. Box 50220, Idaho Falls, ID 83405.



# AAZK Membership Application

Name \_\_\_\_\_ check here if renewal [ ]

Address \_\_\_\_\_

City \_\_\_\_\_ State/Province \_\_\_\_\_ Zip \_\_\_\_\_

## U.S. Members

- \$30.00 Professional/U.S.  
*Full-time Keepers*
- \$25.00 Affiliate/U.S.  
*Other staff & volunteers*
- \$25.00 Associate/U.S.  
*Those not connected with  
an animal facility*
- \$50.00 or up Contributing/U.S.  
*Individuals*
- \$50.00 or up Institutional/U.S.  
*Organizations / Institutions  
(requires Board approval)*

## Canadian Members

- \$35.00 Professional/Canada  
*Full-time Keepers*
- \$30.00 Affiliate/Canada  
*Other staff & volunteers*
- \$30.00 Associate/Canada  
*Those not connected with  
an animal facility*
- \$55.00 or up Contributing/Canada  
*Individuals*
- \$55.00 or up Institutional/Canada  
*Organizations / Institutions  
(requires Board approval)*

## International Members

- \$40.00 International  
*All members outside U.S. &  
Canada regardless of category*

## Library Only

- \$20.00 Library  
*Available only to  
established libraries*

Zoo Affiliation (if any) \_\_\_\_\_

Zoo Address \_\_\_\_\_

Title \_\_\_\_\_

Work Area \_\_\_\_\_

My check is enclosed (AAZK, Inc.)

Please charge to 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 U.S.A. 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.

**of Zoo Keepers, Inc.  
635 Gage Blvd.  
Topeka, KS 66606**

Address Correction Requested



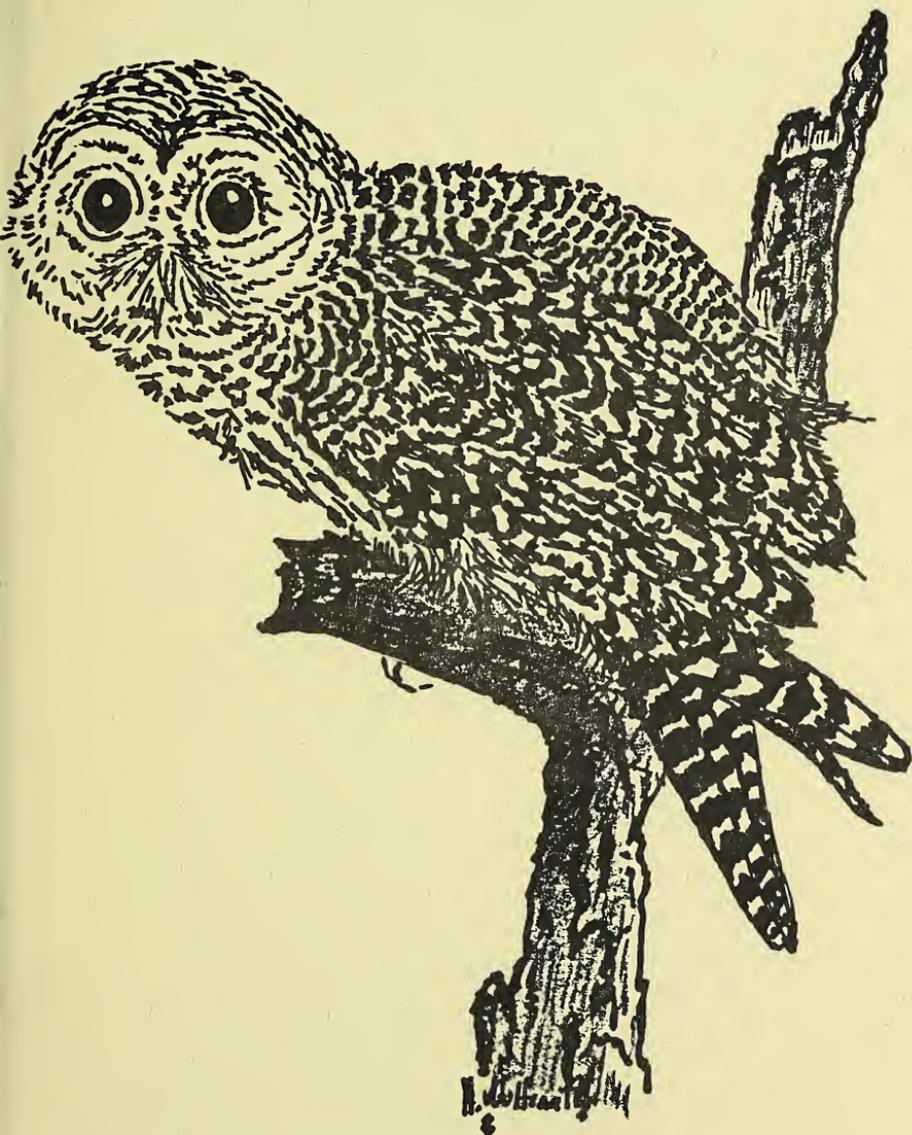
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# Animal Keepers' Forum

May 1993



*Dedicated to Professional Animal Care*

ANIMAL KEEPERS' FORUM, 635 S.W. Gage Blvd., Topeka, KS 66606  
Phone: 1-800-242-4519 (U.S.) 1-800-468-1966 (Canada) FAX 913-273-1980

**May 1993**  
**Volume Twenty**  
**Number Five**

**Editor-In-Chief:** Susan Chan  
**Associate Editors:** Kayla Grams & Gretchen Ziegler

Animal Keepers' Forum (ISSN 0164-9531) is a monthly journal of the American Association of Zoo Keepers, Inc., 635 S.W. Gage Blvd., Topeka, KS 66606. Ten dollars of each membership fee goes toward the annual publication costs of Animal Keepers' Forum. Third Class postage paid at Topeka, KS. Postmaster: Please send address changes to:

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Norman Gershenz, San Francisco Zoo

#### AAZK PUBLICATIONS : CONTINUING DATA COLLECTION

Zoo Infant Development Project - Harmony Frazier-Taylor, Woodland Park Zoo  
Diet Notebook, Mammals, Vol. II - Susan Bunn Spencer, Bronx Zoo  
An Approach to Zoo Keeping - Patricia Sammarco, Gainesville, FL

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### 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. All illustrations, graphs, charts and tables should be clearly marked, in final form, and should fit in a page size **no greater than** 15cm x 25 1/2cm ( 6" x 10"). Literature used should be cited in the text (Brown, 1986) and alphabetically in final bibliography. Avoid footnotes. Include scientific name of species (as per ISIS) the first time it 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.) Black and white photos only are accepted. Color slides should be converted to black and white prints (minimum size 3 x 5 inch) before submission. Clearly marked captions should accompany photos. Please list photo credit.

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 envelope. Telephone or FAX contributions of late-breaking news or last-minute insertions are accepted. However, long articles must be sent by U.S. mail. The phone number is (913) 272-5821 Ext. 31.

### DEADLINE FOR EACH EDITION IS THE 15TH OF THE PRECEDING MONTH

Articles printed do not necessarily reflect the opinions of the  
Animal Keepers' Forum editorial 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 \$2.00 each.

This month's cover features the Barred Owl (*Strix varia*) which is one of eleven species of Disk-eyed owls. It occurs in North America as far south as Guatemala and frequents river woodlands. It averages 17-24 inches in size with a wingspan of 40-50 inches. The females are larger than the males with weights averaging 800 gm and 630 gm respectively. Their brown eyes are unique since all other species typical of the eastern U.S. have yellow eyes. These keen sighted raptors hunt at dusk and dawn and eat a wide variety of foods including mice, chipmunks and squirrels, birds and small snakes. They nest in tree cavities and produce a clutch of 2-3 eggs which hatch after a 28-day incubation. Chicks fledge at 42 days. The artist is Heidi Wulfraat, a keeper at Magnetic Hill Zoo in Moncton, New Brunswick. Thanks, Heidi!

## Scoops

and

## Scuttlebutt

### Bowling for Rhinos Update submitted by Patty Pearthree, BFR Coordinator

Over 50 Chapters will be participating in the 1993 "Bowling for Rhinos" (BFR) event which promises to be an exciting one! If you are planning to hold an event (even if it is a revelry, dinner, etc.):

- 1) Please be sure to inform me of the dates of your event ASAP. I have received several calls from the public who wish to join your event, but I must have a contact person, phone # and date of your event to give these folks!
- 2) Please be sure to fill out your **financial statement** which you should find in your sponsor sheet packet. This is extremely important for our non-profit status. It's much easier to fill out if you look it over long before your event. Return the financial form to me along with a copy of your sponsor sheets.
- 3) Please be sure everyone is aware of the new rules for winning the trip to Kenya, also included in your sponsor sheet packet). New people will be going each year and it may be you!
- 4) I have additional T-shirt info for anyone interested in pre-made T-shirts or see the April issue of AKF page 145.
- 5) Have fun and save endangered wildlife at the same time!
- 6) If you need additional sponsor sheets or information, problems, etc., please don't hesitate to call me at (317) 322-8723 or write BFR, P.O. Box 199026, Indianapolis, IN 46219.

### Conference Proceedings Mailed/Limited Copies Still Available

The 1992 Conference Proceedings from San Diego have been mailed to all those who ordered copies or who received gratis copies because they were speakers/workshop presenters. Only speakers who submitted their manuscripts in compliance with the Proceedings Guidelines have been sent gratis copies. We have approximately 30 extra copies of the 1992 San Diego Proceedings which may be purchased through AO. They will be sold on a first come/first served basis. They cost \$20.00 per copy plus \$3.00 additional postage for orders outside the U.S. They may be purchased by telephone if you wish to use your credit card (VISA or MasterCard accepted). Mail-in orders should send payment in U.S. Funds only made payable to AAZK, Inc. If you wish a copy of this 255-page publication, you are urged to act quickly as these copies will not last long!

### Final Notice on Environmental Enrichment Workshop

The Metro Washington Park Zoo, Portland, OR will host a conference on environmental enrichment for zoo and aquarium animals July 16-20, 1993. Topics will include husbandry, research, exhibit design, and psychological well-being. Space is limited but still available. Individuals interested in attending this conference should direct inquiries to Drs. David Shepherdson or Jill Mellen. Phone (503) 226-1561 Ex. 260, FAX (503) 226-0074, or write to: First Conference on Environmental Enrichment, Metro Washington Park Zoo, 4001 S.W. Canyon Rd., Portland, OR 97221. Registration fee is \$225.



# Coming Events

## International Conference on Tortoise & Turtle Conservation

July 11-17, 1993

New York, NY

Sponsored by the American Museum of Natural History's Turtle Recovery Program and the New York Turtle & Tortoise Society. For further information write to: Craig Vitamenti c/o The New York Turtle Trust & Tortoise Society, 163 Amsterdam Ave., Suite 365, New York, NY 10023 or call (212) 459-4803.

## 1993 Western Conference of Association of Fish and Wildlife Agencies and Division American Fisheries Society

July 23-30, 1993

Sacramento, CA

For further information contact: Tim Farley, Dept. of Fish and Game, 1416 9th St., 12th Floor, Sacramento, CA 95814 (916) 653-6194.

## American Federation of Aviculture 1993 Red Siskin Summit

August 20-22, 1993

Kansas City, MO

Will include speakers as well as group discussion sessions on breeding the Red Siskin. These finches are being bred through the Red Siskin Project for eventual release in South America. Registration is \$20 and includes a catered lunch and 1993 Siskin Summit shirt. To register or for further information contact: Red Siskin Summit, c/o Yvonne Patterson, 4630 Blue Ridge Blvd., Kansas City, MO 64133 (816) 353-9964.

## 1993 Annual Meeting of the American Association of Zoo Veterinarians

October 10-15, 1993

St. Louis, MO

Special sessions will include government regulations, zoo veterinarian's role in conservation programs, medicine of Australasian species, and group medicine and herd health. Other program sections will include pathology, parasitology, clinical pathology; reproductive technology and contraception, immobilization, anesthesia and monitoring; case reports, exotic pets and practice tips, reptiles and amphibians; primates, carnivores and small mammals; avian species; and aquatic animals. Scheduled workshops include comprehensive pest control programs, occupational health and safety, endoscopy, ophthalmology, and basic zoo animal medicine. Individuals interested in submitting a manuscript should contact Donald Janssen, DVM, San Diego Zoo, P.O. Box 551, San Diego, CA 92112 - Phone (619) 557-3933; FAX (619) 557-3959. For other conference information contact Wilbur Amand, DVM, AAZV Executive Director, 3400 Girard Ave., Philadelphia, PA 19104-1196; phone (215) 387-9094; FAX (215) 387-8733.

## International Conference on Orang-utans: The Neglected Ape

March 5-8, 1994

Fullerton, CA

The First International Conference on Orang-utans: The Neglected Ape will be co-hosted by the California State University, Fullerton; the Zoological Society of San Diego; and the Atlanta/Fulton County Zoo Inc. Paper and poster presentations are scheduled for 5-7 March, in Fullerton, CA, followed by a post-conference trip to the San Diego Zoo on 8 March, with attendees participating in workshops and tours. For registration information and abstract guidelines, please contact: Norm Rosen, Dept. of Anthropology, California State University, Fullerton, CA 92634-9480, FAX: 310-798-0576.



# Message From the President.....

## AAZK Board Overseers: Who are they and what are their responsibilities?

This is the first in a monthly overview of the responsibilities of each member of the AAZK Board of Directors. As a Board Member you are assigned committees and/or projects to coordinate or oversee. These oversights are managed on the basis of professional communication with the Board Overseer, a direction of goals by the Overseer/Board, and the collaborative efforts of committees, chairs and the membership.

The Overseer also coordinates mid-year and annual reports to the Board for consideration of budget needs, appointees, resignations and accounting of activities for report to the membership. The Overseer is essentially the manager of the projects/committees assigned to him/her and sees to the best interest of the AAZK.

Many of our most essential contributions have been through this work. Our future as a professional association is dependent on these contributions. This month we'll review the responsibilities of Board Member Rachel Watkins Rogers, Sr. Keeper, San Diego Zoo/Mammal Department.

### AAZK Publications Funding Committee

Chair: David Luce, Chaffee Zoological Gardens of Fresno  
Committee: Karen Stern, Denver Zoological Gardens and  
Teri Maas, Philadelphia Zoological Garden

The concept of this committee was developed during the 1991 Annual Board Meeting in Toledo, OH. The Board and Board-elect collaborated to form the basis of methods and philosophies. Joe Rindler, Columbus Zoological Gardens, was initially appointed to Chair this committee. The intent was to offset the costs of printed matter produced by the AAZK. Joe resigned and David Luce was appointed to the position of PFC Chair in the fall of 1992. David has formed a new committee consisting of Karen Stern and Teri Maas. This committee has been given the task of developing a source of funding to offset costs incurred with the publishing of the *Animal Keepers' Forum*. If you have any ideas for ads or vendors that might want to sponsor columns in *AKF*, please contact David Luce.

The intent of the committee is to lay down a solid network of donors or commercial supporters to fund printed matter for the AAZK. These may include such items as DIET NOTEBOOK, ZOONOTIC DISEASES, AN APPROACH TO ZOO KEEPING and smaller items like posters, pamphlets or brochures. This is an ambitious goal, but one that will allow for a continuing financial stability for our Association.

### AAZK Library Resources

Coordinator: Marilyn Cole, Metro Toronto Zoo

Library Resources has a long history with the AAZK, but it has reached the point of becoming a major resource for the membership and researchers alike. A computer database of references on various topics related to the field of animal care is in place and is continuously being expanded. Authors include keepers, curators, directors, scientists, veterinarians, etc. If you need to do a lecture or are seeking references to a research question, you may find that specific information by using the AAZK service. For further information on this valuable resource contact Marilyn Cole. The cost for a print-out of references on your particular topic is minimal at 25 cents per page with a minimum order of \$2.00 (to cover copying and postage costs). This service is at no cost to the AAZK due to 'in kind' support by Metro Toronto Zoo.

### AAZK Awards Committee

Chair: Jan McCoy, Metro Washington Park Zoo  
Committee: Carolyn Horton, Miami Metro Zoo; Catherine Janick, Toledo Zoological Gardens; Michael Illig, Metro Washington Park Zoo; Susan Gurley, Zoo America; Board Overseer, fifth voting member.

## Message from the President - Board Oversight, *Continued*

This committee of the AAZK is one of honor and recognition for the efforts of those who shape the structure of this Association. It is the framework through which those who educate, those who exemplify excellence in zoo keeping, and those whose achievements are of a caliber warranting recognition by the Association are so recognized. These awards are a vehicle for recognizing your peers and those who you think merit recognition for their work. Study the criteria/nomination procedures published in the *AKF* and do your part to recognize the work that is done in our profession.

Due to the evolution of our field there may be changes in focus of the awards process. Such a change has been made, last year, with respect to the addition of wording to cover enrichment aspects to exhibit design in captive settings. Currently the committee is reviewing a proposal for a life-time achievement award. If you wish to know more about this committee of the AAZK contact Jan McCoy.

### AAZK Training Materials

Co-Coordinator: Laura Trechsel, Minnesota Zoological Garden

Debbera Stecher, Woodland Park Zoo

Committee: Jeanne Ragland, Woodland Park Zoo

This project of the AAZK is developing into a new phase of service to the membership. AAZK is developing a training package for sale to individuals, institutions and Chapters. This package is under development at this time, but is expected to be available sometime in 1994. Those of you who have an interest in parts of this package may purchase them individually through the training materials clearinghouse coordinated by Laura Trechsel. If you would like to purchase a training package they will be available through Debbera Stecher in 1994. If you are interested in providing ideas or information for this important project, please contact Laura or Debbera.

Education is one of the most integral parts of the Statement of Purpose of the AAZK. A far-reaching goal of this project will be the development of a recognized certification program for zoo keepers. This is still in the future, but an important first step will be accomplished by the production of a training package.



## **AAZK Announces New Professional/Contributing Members**

Charlie Schweim, Franklin Park Zoo (MA)

Jennifer Swarmer, Erie Zoo (PA)

Eden Schoff, Sea World of Florida (FL)

Kelly Pace, Sea World of Florida (FL)

Kelly Barnett, Lowry Park Zool. Gdns. (FL)

Geralynne Johnson, Discovery Island (FL)

Kathryn Fields, Zooland Animal Park (AL)

Gene Peacock, Knoxville Zoo (TN)

Paul Fiocca, Akron Zoo (OH)

David Hodge, Louisville Zoo (KY)

George Lindberg, Lake Superior Zoo (MN)

James Sommers, Grindstone Valley Zoo (IL)

Kim Wilks, Tulsa Zoo (OK)

Shannon Hiemstra, Tautphaus Park Zoo (ID)

Holly Robin Halsch, The Phoenix Zoo (AZ)

Victoria Ferris, San Diego Wild Animal Park (CA)

Judy Knapp, Folsom City Zoo (CA)

Delfi Messinger, Zoological Society of Kinshasa, Zaire

Kenneth Pelletier, Franklin Park Zoo (MA)

Tracy Boerner, Riverbanks Zoo (SC)

Liane Berlepsch, Sea World of Florida (FL)

Stacy Small, Busch Gardens (FL)

David Morgan, Busch Gardens (FL)

Troy Peterson, Zooland Animal Park (AL)

Christopher Williams, Knoxville Zoo (TN)

Andy Jacobsy, Columbus Zoo (OH)

Michael Maciariello, Cincinnati Zoo (OH)

Joseph Miller, Lake Superior Zoo (MN)

Mathew Paulson, Dakota Zoo (ND)

Anne Christin Davis, Tulsa Zoo (OK)

Debbie Johnson, Tulsa Zoo (OK)

Linda Flud, Tautphaus Park Zoo (ID)

Kelly Flynn, Sea World of California (CA)

Brett McLeod, Kamloops Wildlife Park (BC)

### **Renewing Contributing Members**

White Oak Conservation Center, Yulee, FL

Lloyd W. Woodburn, Topeka, Kansas

David G. Westbrook, Director, Little Rock Zoo, Little Rock, AR

## **AAZK Award Nominations Are Now Being Accepted for 1993!**

The AAZK Awards Committee would like to begin accepting nominations for the **Meritorious Achievement (MA) Award** to be presented at the 1993 AAZK Conference in Atlanta. The deadline for all award nominations is **1 June 1993**. All award nominations received after 1 June will be reviewed for 1994, so please keep this in mind when submitting your nominations.

All awards given by the AAZK do not have a minimum or maximum number offered each year. Also, if the nominees do not meet the qualifications and nominators do not follow the nomination procedures, they will not receive the award for which they were nominated. Please include scientific names of animals when they are included in the nomination of a special or outstanding breeding acknowledgment.

Please submit all nominations to:

Janet McCoy, AAZK Awards Chair  
Washington Park Zoo  
4001 S.W. Canyon Rd.  
Portland, OR 97221

### **MERITORIOUS ACHIEVEMENT (MA) AWARD**

The American Association of Zoo Keepers, Inc. (AAZK) is the administering organization of the Meritorious Achievement (MA) Award presented by the AAZK Awards Committee. 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 character of the award includes; a certificate, letter of notification to the institution's director and national recognition by professional journals. Such journals include; the American Association of Zoological Parks and Aquariums (AAZPA) 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 being published by Gale Research Company based in Wheaton, MD and found in medium to large sized libraries across the U.S. and Canada.

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. The award is presented at the annual AAZK National Conference.

#### **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, aquauium 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.



### *The Shape of Enrichment*

*The Shape of Enrichment* is a new publication focusing on environmental and behavioral enrichment for captive animals. This international open forum includes feature articles as well as regular columns on browse, feeding programs, behavior, and exhibit design and construction. The first issue was published in August, 1992.

All material is submitted by professionals or volunteers who are involved in captive animal care. If you or your staff are employing enrichment devices or techniques within your collections, we would love to hear from you. Articles are accepted in any format. The deadlines are Dec. 20 (Feb. issue), Mar. 20 (May. issue), Jun. 20 (Aug. issue) and Sep. 20 (Nov. issue).

Beginning January, 1, 1993, *The Shape of Enrichment* will be available by subscription **only**. The annual (4 issues) subscription fee is \$8.00 (U.S. funds only, please). All subscriptions are from Jan. to Jan. If you are beginning your subscription during the year, please prorate your fee accordingly. Please send your fee, name and address to:

The Shape of Enrichment  
1650 Minden Dr.  
San Diego, CA 92111-7124  
U.S.A.

If you have any questions or comments, please call or FAX

Karen Worley at:  
(619) 231-1515 x4272  
(619) 231-1725 FAX



# International Conference on Orang utans: The Neglected Ape

The First International Conference on Orang utans: The Neglected Ape will be co-hosted by the California State University, Fullerton; the Zoological Society of San Diego; and the Atlanta/Fulton County Zoo, Inc. The meeting will be held March 5-8, 1993. Paper and poster presentations are scheduled for March 5-7, in Fullerton, CA, followed by a post-conference trip to the San Diego Zoo on March 8, with attendees participating in workshops and tours. For registration information and abstract guidelines, please contact: Norm Rosen, Dept. of Anthropology, California State University, Fullerton, CA 92634-9480, FAX: 310-798-0576.

## **CALL FOR PAPERS/ABSTRACTS - DEADLINE 1 AUGUST 1993**

Abstracts are invited on the following topics related to orang utans: 1) ecology, 2) social behavior, 3) reproduction, 4) genetics, 5) demography, 6) captive husbandry and management, 7) cognition, 8) veterinary medicine and health, 9) taxonomy, 10) anatomy, and 11) conservation, including reintroduction. In each case, we welcome papers from both captive and field perspectives. Abstracts will be reviewed by the Program Committee for suitability and quality. If accepted, they will be organized into sessions based on topic area and manner of presentation. Notification regarding acceptance will be communicated to the first (presenting) author by October 1993. Abstracts received after deadline will **NOT** be accepted.

## **PAPER SESSIONS**

Contributed papers will be scheduled at 20 minute intervals. Each presentation should be not more than 15 minutes in length, allowing 5 minutes for questions.

## **POSTER SESSIONS**

We encourage submission of poster presentations. Posters will be displayed for the duration of the meeting, and a special cocktail hour will be held in the poster area, during which time authors will be available to discuss their presentation. Abstracts of posters are the same as for presented papers.



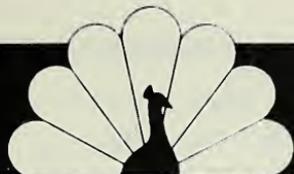
## **Information Please**

Attention Invertebrate Keepers: I am interested in information regarding the display and husbandry of the following invertebrates: *Atta texana* (Leaf-cutter ants), Honey bees (*Apidae*). Please send information to: William Blayney, Calgary Zoo, Box 3036 Stn. B, Calgary, Alberta, Canada, T2M 4R8, or FAX (403) 237-7582. I am particularly interested in exhibit construction and nutritional requirements.

---

Want to exchange information pertaining to the breeding, housing, training and care of raptors. Intern education materials also desired. Please contact Springbrook Nature Center, 130 Forest Avenue, Itasca, IL 60143, Attn: Bill Wiczorek. Tel: (708) 773-5572; FAX - 708-773-2505.





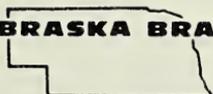
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**THE AMERICAN ASSOCIATION OF ZOO KEEPERS  
MEMBERSHIP SURVEY RESULTS**  
(from survey published in January 1993 AKF  
with approximately 5% membership response)

1. SEX RATIO                      Female 74%                      Male 26%
2. ASSOCIATION STATUS            Professional 77%            Affiliate 21%    Associate 2%
3. JOB TITLE
- |                       |     |                         |     |
|-----------------------|-----|-------------------------|-----|
| Zookeeper             | 36% | Supervisor              | 4%  |
| Senior Zoo Keeper     | 12% | Curator/Asst. Curator   | 14% |
| Zoo Keeper II         | 7%  | Director/Asst. Director | 4%  |
| Zoo Keeper III        | 4%  | Docent                  | 1%  |
| Aviculturist          | 6%  | Other                   | 2%  |
| Vet Tech/Sr. Vet Tech | 5%  | No Response             | 5%  |
4. INCOME LEVEL
- |            |                 |     |                                     |
|------------|-----------------|-----|-------------------------------------|
| Zoo Keeper | \$10,000 /LESS  | 0%  | (Includes Zoo keeper, Sr. Zoo       |
|            | \$10,000/15,000 | 4%  | Keeper, ZK II, ZK III, Aviculturist |
|            | \$15,000/20,000 | 42% | Vet Tech/Sr. Vet Tech)              |
|            | \$20,000/25,000 | 40% |                                     |
|            | \$25,000/30,000 | 7%  |                                     |
|            | \$30,000/35,000 | 7%  |                                     |
5. STATES/PROVINCES REPRESENTED                      23 States and Mexico
6. AVERAGE OPERATING BUDGET
- |                     |     |                        |     |
|---------------------|-----|------------------------|-----|
| \$100,000/500,000   | 14% | \$2,500,00/5,000,000   | 4%  |
| \$500,000/1,000,000 | 18% | \$5,000,000/10,000,000 | 25% |
| 1,000,000/2,500,000 | 25% | \$10,000,000 /above    | 14% |
- 6a. YEARLY ZOO ATTENDANCE
- |                  |     |                     |     |
|------------------|-----|---------------------|-----|
| LESS THAN 50,000 | 11% | 500,000/1,000,000   | 28% |
| 50,000/100,000   | 21% | 1,000,000/5,000,000 | 21% |
| 100,000/500,000  | 16% | 5,000,000/Above     | 3%  |
7. AAZPA ACCREDITED
- |     |     |    |     |         |    |
|-----|-----|----|-----|---------|----|
| YES | 84% | NO | 14% | PENDING | 2% |
|-----|-----|----|-----|---------|----|
8. TRAINING TYPES MOST OFTEN MENTIONED
- |            |     |                          |    |
|------------|-----|--------------------------|----|
| On the Job | 82% | Classroom                | 4% |
| Manuals    | 9%  | Other <u>Specialized</u> | 2% |
| Video      | 3%  |                          |    |
9. CONTINUING EDUCATION SUPPORT IN ZOOS/AQUARIUMS
- |   |                                 |
|---|---------------------------------|
| 48% offer tuition assistance            | 27% offer workshops             |
| 64% offer conference funding assistance | 3% offer no Educational Support |
| 2% offer in-house Job Advancement       |                                 |
10. Average Membership Length in AAZK:    7.7 Years
11. LOCAL CHAPTER MEMBER:            Yes 64%                      No 30%
- |                  |                     |
|------------------|---------------------|
| Former Member 4% | Potential Member 2% |
|------------------|---------------------|

## MEMBERSHIP SURVEY RESULTS, *Continued*

### 12. WHY DID YOU JOIN AAZK?

62% listed <u>AKF</u>	70% listed Professional Involvement
39% listed Conferences	9% listed Chapters
48% listed Communication	28% listed Conservation
34% listed Continuing Education	1% listed Other

### 13. WHAT ARE THE STRONG POINTS OF AAZK ?

88% listed <u>AKF</u>	8% listed AAZPA/AAZK Communication
85% listed Conferences	56% listed Conservation Programs
22% listed Chapters	5 % listed Research Grants
17% listed Membership Services	48% listed Publications

### 14. WHAT ARE THE WEAK POINTS OF AAZK ?

0% listed <u>AKF</u>	26% listed AAZPA/AAZK Communication
1% listed Conferences	4% listed Conservation Programs
15 % listed Chapters	12% listed Research
5% listed Committees	1% listed Publications
5% listed Membership Services	28% listed None

### 15. WHERE SHOULD AAZK FOCUS OUR GOALS ?

74% listed Conservation	52% listed Enrichment
52% listed Animal Welfare	37% listed Professional Advancement
81% listed Continuing Education	25% listed Research
52% listed Training	1% listed Communication
17% listed Safety	1% listed No Opinion
21% listed Publications	

### 16. IS IT IMPORTANT TO MAINTAIN A GOOD WORKING RELATIONSHIP WITH AAZPA ?

YES 96%	NO 1%	NO OPINION 3%
---------	-------	---------------

### 17. DESCRIBE AAZK'S RELATIONSHIP WITH AAZPA

Excellent	1%	Needs Improvement	24%
Good	41%	Non-Existent	0%
Fair	25%	No Opinion	9%

### 18. IS IT IMPORTANT TO MAINTAIN/DEVELOP COMMUNICATION WITH SISTER ASSOCIATIONS ?

YES 98%	NO 0%	PROBABLY 1%	NO OPINION 1%
---------	-------	-------------	---------------

### RANDOM COMMENTS:

ALL MEMBERS SHOULD HAVE THE RIGHT TO VOTE ON ELECTIONS  
AAZK DOES AN EXCELLENT JOB PROMOTING COMMUNICATION BETWEEN ZOOS  
AAZK IS A PRESENT FORCE WITHOUT BEING POLITICAL  
AAZK SHOULD WORK ON DEVELOPING A STANDARD PROGRAM CRITERIA WITH AN EYE  
TOWARDS CERTIFICATION  
ORGANIZE BETTER WITH CLEAR GOALS  
PUBLISH UPDATES ON COMMITTEES  
DEVELOP ORGANIZATIONAL MATERIALS FOR CHAPTERS  
DEVELOP MORE OF AN INTERNATIONAL FLAVOR FOR AAZK  
DEVELOP CONTINUING EDUCATION MATERIALS

(The AAZK Board of Directors and the Staff of Administrative Offices welcome your constructive comments and suggestions at any time.)



# Five New In-Situ Conservation Sites Chosen to Receive Funding Under ESP

*Submitted by Rosemary Krussman, Program Associate  
Ecosystem Survival Plan*

The Ecosystem Survival Plan's Scientific Advisory Committee has chosen five new conservation sites to receive funding from the ESP's Conservation Parking Meter and Adopt-An-Acre programs. Sites selected are:

\* **The Talamanca/Caribbean Biological Corridor,  
La Amistad Biosphere Reserve, Costa Rica**

This area encompasses nine life zones containing at least 60% of Costa Rica's faunal diversity. La Amistad is home to at least 560 bird species including the threatened Moscovy duck, Crane hawk, Peregrine falcon, and the Great green macaw. Mammals found within the refuge include the Howler, White-faced and Spider monkeys, spotted felines such as the Margay and Ocelot as well as the Jaguarundi, Cougar, Silky anteater, Caribbean manatee, River otter and Baird's tapir. The beaches provide valuable nesting sites for Green, Hawksbill, Leatherback and Loggerhead sea turtles.

\* **Amboro National Park, Bolivia**

An area of high biological diversity, this park hosts eleven life zones and shelters an extensive and fragile network of river basins. These rivers are all tributaries of the Mamore River which provides water to several traditional agricultural communities as it flows into Santa Cruz. The headwaters represent areas of high biodiversity which are home to such species as the Spectacled bear, Bush dog, Helmeted currawong and Red-fronted macaw.

\* **Pacaya-Samiria National Reserve, Peru**

This reserve is Peru's largest, an expansive Amazon forest twice the size of Yellowstone National Park harboring an incredible variety of wetland and humid tropical forest species. The inventories of the reserve's flora and fauna have determined that it provides critical habitat for the Grey and pink river dolphins, Amazonian manatees, the Black and Spectacled caiman, Giant South American river turtle, Saddleback tamarin, and many monkeys including the Woolly, Spider, Capuchin, and Squirrel species.

\* **The Panama Canal Watershed, Panama**

The Panama Canal Watershed area is composed of two parks - the Soberania and the Chagres National Park. These critical areas provide 40% of the fresh water needed to operate the Panama Canal. Soberania National Park is a primary, undisturbed forest of 55,000 acres containing more than 400 species of birds and 3,000 species of plants and trees. Chagres National Park is roughly 300,000 acres and contains rich cloud forests and vast biological diversity.

\* **The Maya Biosphere Reserve, Guatemala**

The Maya Region of Central America is the largest remaining wilderness in Mesoamerica spanning four million acres. Forty per cent of migratory birds from North America stop temporarily in the forests and marshlands of the area during their travels. The area is home to Jaguars, Pumas, Tapir, Howler monkeys, Harpy eagles, Jaribu storks, Crocodiles and Oscillated turkeys to name a few. The actual potential biological riches of the area are yet to be explored and discovered.

Currently there are 125 meters placed around the country including one in Canada. These meters along with the Adopt-An-Acre program have raised over \$375,000 in the name of rain forest conservation.

For more information on the Ecosystem Survival Plan and its programs, please contact:

\* Norm Gershenz, National Coordinator, ESP, c/o San Francisco Zoo, One Zoo Road, San Francisco, CA 94132 (415) 753-7052.

\* Rosemary Krussman, Program Associate, ESP, c/o National Aquarium in Baltimore, Pier 3, 501 E. Pratt St., Baltimore, MD 21202 (410) 659-4207.



# San Diego Wild Animal Park Institutes 'Protected Contact' Elephant Protocol

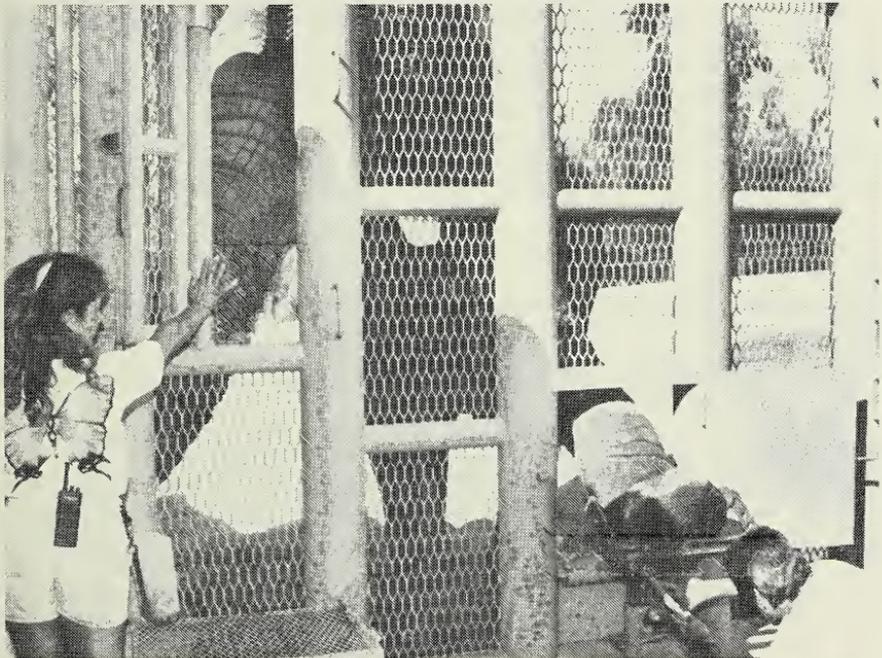
With many zoos around the country watching and offering encouragement, the San Diego Wild Animal Park is pioneering a new system of elephant care called 'protected contact'.

Construction workers are installing hydraulic gates at the elephant show arena and redesigning the one-acre Asian elephant yard. Massive renovations are finished in the elephant barn, herd size has been reduced by sending two Asian cows to other zoos, and all of the elephant keepers have completed a tough, eight-week course in operant behavior training.

In 'protected contact' care, keepers and veterinarians work to maintain the elephants' health while shielded by a heavy metal gate. With food rewards, the elephants are trained to stretch a foot through a hole in the gate, or offer an elephant ear for close inspection. In traditional "free contact", keepers stand right beside their elephants. With 'protected contact' care, keepers and vets maintain hand-on contact--trimming the elephant's footpads or drawing blood from a vein in the ear--but do so out of reach of the elephant's trunk and protected from accidental bumping.

Wild Animal Park animal management staff has developed 'protected contact' elephant care routines with the Asian and African bull elephants over the past two years. Because of extraordinary strength and unpredictable behavior, adult male elephants are isolated from the female herds for safety of keepers, the female elephants, and the public.

Now, with \$500,000-worth of modifications to the Asian elephant barn, exhibit and show arena, the Wild Animal Park is moving into uncharted territory by switching exclusively to a 'protected contact' care regimen for a herd situation --its five female Asian elephants.



**Assistant Animal Behavior Specialist Jennine Antrim and Animal Behavior Specialist Gary Priest are shown demonstrating foot work done on an elephant using the protected contact method. (Photo ©1992 Zoological Society of San Diego)**

'Protected contact' is now practiced in the Asian elephant barn. The elephant yard will become a free range zone for the elephants, where keepers will not be allowed. Last month, training demonstrations began for a summer elephant show, done without keepers in the arena to present 'protected contact' in action to the visiting public.

"Protected contact care is an experiment at this point, but one which we expect will minimize keeper injury," said Gary Priest, the animal behavior specialist for the Zoo and Wild Animal Park. "From letters and phone calls, I know many other zoos are watching us and waiting to see whether and how 'protected contact' may work for them."

To prepare the Asian elephant keepers and herd for a 'protected contact' care program, Priest conducted an eight-week course to certify keepers in basic operant behavior training. The Asian elephant herd size was reduced, to make it more manageable, by sending two elephants--Connie and Alice--to the Columbus (Powell, OH) and Rio Grande (Albuquerque, NM) Zoos respectively.

In the near future, the SDWAP will phase a 'protected contact' care system into its African elephant herd management. Modifications will be made in the African elephant barn. African elephant keepers have already received intensive training. And the African herd will be reduced by sending two of the elephants to other zoos. Present plans are to relocate Bisi to the Gladys Porter Zoo in Brownsville, TX, and Dunda to the Oakland Zoo, Oakland, CA.

"Elephants are marvelously sensitive, intelligent and social animals," Priest said. "Yet as gentle as these animals can be, they are 50 times larger than their human caretakers, and that alone poses a tremendous risk factor. Elephants are responsible for injuring more zookeepers than any other animal.

"In the traditional, free contact system, because of the proximity to the elephant and lack of protection, keepers are always at some risk of serious injury," he added. "By contrast, in protected contact care, the trainer is not directly exposed to the animal. We think the overall quality of elephant care will improve and the number of elephant keeper injuries will be dramatically reduced."

--San Diego Wild Animal Park News Release 3/8/93



### **ATTENTION ELECTION NOTICE**

Ballots for the 1993 AAZK Board of Directors Election have been mailed to all Professional members whose membership was paid and current as of 15 April 1993. Ballots are to be returned **by June 7, 1993**. They must be returned in the addressed ballot envelope **only**. Do not include anything else with your ballot as it goes directly to the Accounting Firm tabulating the votes. Ballots have been sent by First Class Mail. If you do not receive a ballot by 15 May, contact AO at 1-800-242-4519 (US) or 1-800-468-1966 (Canada).



## History & Overview of the Migratory Bird Treaty Act

The Convention for the Protection of Migratory Birds, signed 16 August 1916, is one of the most significant international treaties ever signed by the United States. It was the first treaty ever agreed to by any two countries for the protection of birds.

The countries needed an international agreement to protect migratory birds because of their very nature of traversing state & continental boundaries during the year's travels, thus Federal oversight for their welfare is essential. However, how we really ended up with a proposal for an international treaty to protect birds, then a Migratory Bird Treaty Act to implement it, and subsequent treaties with Mexico, Japan, and the former Soviet Union is in itself an interesting story.

By the late 1880s there was some form of protection for wildlife in all States and territories. But it was a reaction to a lack of uniformity in migratory game bird hunting regulations in the late 1890s that led to the need for an international treaty. State duck hunting regulations, where adjacent states set vastly different season dates, resulted in such an uproar from sportsmen and conservationists that the Migratory Bird Act was signed into law by President Taft in 1913. This Act (commonly called the Weeks-McLean Act) empowered the Secretary of Agriculture to set dates for hunting migratory game birds. (In fact, the Act contained wording related to protection of nongame birds as well.) Unrelenting opposition from States-rights and market hunters, however, resulted in a 1914 District Court ruling that found the Act unconstitutional.

To counter the question of constitutionality, a treaty between the U.S. and Canada was proposed. Dr. T. S. Palmer of the Bureau of Biological Survey, the predecessor agency of the Fish and Wildlife Service, wrote the draft that was ratified by the U.S. and Great Britain for Canada in 1916.

Ratification removed the constitutionality question, but one more step was necessary; passage of enabling legislation. This was accomplished on 3 July 1918, with passage of the Migratory Bird Treaty Act (MBTA). Opposition still remained, however, until 1920 when U.S. Supreme Court Justice Oliver Wendell Holmes read the landmark decision in the *Missouri vs. Holland* case which cleared the way for Federal control of use and management of the continent's migratory bird resource.

The MBTA prohibits the taking of any migratory bird, except as permitted by certain regulations. Thus it is:

"...unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, or any part, nest, or egg, of any such birds..."

This prohibition applies to birds covered in the Convention between the U.S. and Great Britain (for Canada) for the protection of migratory birds concluded 16 August, 1916; the Convention between the U.S. and the United Mexican States for the protection of migratory birds and game mammals concluded 7 February, 1936; the Convention between the U.S. and Japan for the protection of birds and their environment concluded 4 March, 1972; and the Convention between the U.S. and the Union of Soviet Socialist Republics for the conservation of migratory birds and their environment concluded 19 November, 1976. However, the Secretary of the Interior is authorized and directed to allow certain activities by adopting suitable regulations. Parts 20 and 21 of the *Code of Federal Regulations* contain these current exceptions.

The four migratory bird treaties and their enabling legislation, the MBTA, protect all but a very few species of birds inhabiting the U.S. In fact, 836 species in all are protected; 56 of which can currently be hunted as game birds.

## History & Overview of Migratory Bird Treaty Act, Continued

The MBTA led to sometimes complicated, but by-and-large reasonable, regulations designed to allow rational use of the migratory bird resource. For example, hunting seasons for certain species of migratory birds can only be:

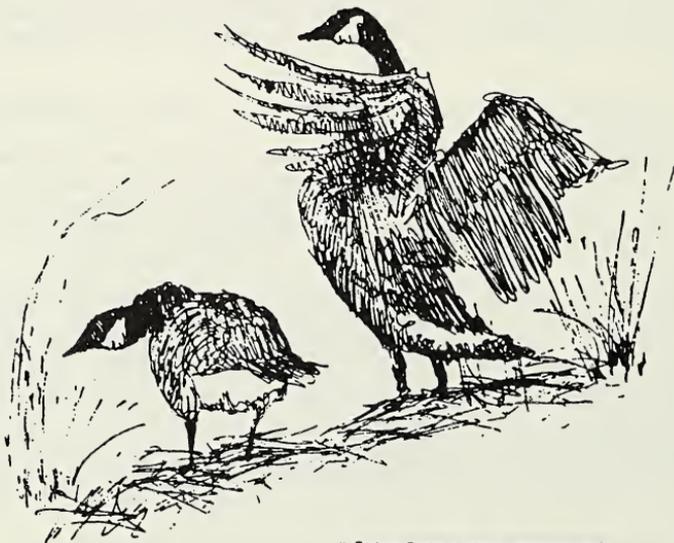
"...authorized and directed, from time to time; having due regard to the zones of temperature and to the distribution, abundance, economic value, breeding habits, and times and lines of migratory flight of such birds, to determine when, and to what extent, if at all, and by what means, it is compatible with the terms of the Convention to allow hunting..."

This requirement has led to the largest monitoring programs in the world related to any group of animal species. The USFWS monitors the status of waterfowl, woodcock, doves, cranes, etc.--all species that are hunted. Cooperative flyway management of migratory bird harvest evolved through this program and with significant public input to the specifics of hunting regulations. Provision is made for the use of birds for scientific and propagation purposes and the Act provides for State laws and regulations to enforce these requirements. The USFWS also extensively monitors North American breeding birds.

A remaining challenge not addressed by the Act is that it does not address habitat protection, it protects only birds. Because of this, cooperative programs were necessary, such as the U. S.-Mexico Joint Committee on the Conservation of Wild Fauna and Flora that involves a strong migratory bird component. The more recent North American Waterfowl Management Plan seeks to protect adequate waterfowl nesting, migration and wintering habitat. The MBTA also greatly influenced the acquisition of national wildlife refuges. The 1929 Migratory Bird Conservation Act and the 1934 Migratory Bird Hunting Stamp Act began the current process of funding the acquisition of national wildlife refuges and waterfowl production areas for migratory birds.

Simple protection from indiscriminate killing has not been found to be sufficient to protect many species of migratory birds. Recognition of this fact has led to innovative programs, but much remains to be done.

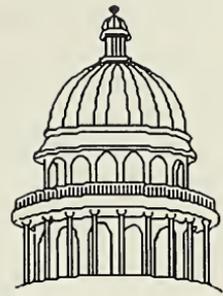
--Tom Dwyer, Migratory Bird Management Office, U.S. Fish and Wildlife Service  
in Fish and Wildlife News, Winter 1993



© Barbara Cushmore From "RE.SOURCES"

# Legislative Outlook

Compiled by  
Phyllis Nilson-Wojcik  
Legislative Advisor



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## Endangered Species Protection Moves Forward in Congress

This year marks the 20th anniversary of the Endangered Species Act, and for environmental activists, the year will be one of renewed commitment to action. Although the outlook for final action on the Endangered Species Act this year is unclear, 1993 will be a critical year for laying the ground work for a stronger act. The Endangered Species Act was due for reauthorization by last year's Congress, but the session came to an end before decisive action was taken. This makes the ESA reauthorization a top priority for consideration in the 103rd Congress, but timely action is unlikely without unprecedented grassroots support for the legislation.

Reps. Gerry Studds (D-MA) and John Dingell (D-MA), authors of last year's Endangered Species Reauthorization bill, H.R. 4045, have announced their intent to introduce similar legislation in this session. The 1993 version will include new provisions to improve functioning of the act. One measure would address federal agency compliance with the act internationally. Another would provide incentives for private landowners to assist in the recovery of threatened and endangered species on their land.

Reps. Studds and Dingell planned to introduce the bill in April. The House Merchant Marine and Fisheries Committee - chaired by Rep. Studds - has jurisdiction over endangered species, and plans hearings this spring. With the ESA's 20th anniversary and the grassroots and congressional activity already scheduled, many legislators' attention will be focused on this important legislation. This makes the upcoming weeks a critical period for activity on the part of concerned grassroots environmentalists. Let's all help make 1993 the year the ESA finally gets reauthorized!

> *Excerpted from National Wildlife Federation's EnviroAction, April 1993*

*Editor's note: You can write your representative urging him or her to become an original cosponsor of the Studds-Dingell Endangered Species Reauthorization bill. Write c/o U.S. House of Representatives, Washington, DC 20515.*

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## Wetlands Protection Legislation Being Considered/Additional Funding Approved by MBCC for Wetlands Acquisition/Enhancement

The Wetlands Reform Act, HR 350, sponsored by Don Edwards (D-CA) is gaining support with 60 cosponsors by mid-April. This bill would establish a national wetlands policy to preserve the quantity and quality of the nation's wetlands. The bill requires permits for previously unregulated land uses which degrade or destroy wetlands. Such activities include draining, flooding, and excavating wetlands, in addition to discharging fill or dredged material. Tax incentives are also proposed to encourage privately owned wetland's protection. You are encouraged to write your representative at the address in the editor's note to encourage support of HR 350.

In related wetlands news, the Migratory Bird Conservation Commission, a Cabinet-level commission, has approved the expansion of 10 national wildlife refuges (NWR) by 17,331 acres and expenditures of \$10,740,000. Funding comes from the North American Wetlands

## Legislative Update, *Continued*

Conservation Fund grants to public and private agencies to restore, enhance, and acquire some 70,000 acres of important migratory bird habitat on the North America continent. Major actions include expansion of the Bear River Migratory Bird Refuge (NWR) in Utah by 1,650 acres, addition of 5,014 acres of the second most important waterfowl production area in Colorado to the Arapaho NWR, and adding 2,958 acres to key wintering waterfowl habitat on the Texas Gulf Coast to the San Bernard NWR.

Major grants from the North American Wetlands Conservation Fund, matched two-to-one by partnership dollars, include \$1,844,424 for wetlands and water quality work in 26 southwestern counties of the Minnesota River Watershed; \$1,800,000 to continue the multi-year project of restoring nationally and internationally significant wetlands in the Cheyenne Bottoms in Central Kansas; and \$1,400,000 to restore 1,800 acres of wetlands in the Four Rivers Wildlife Area in southeastern Missouri.

In Canada, a grant of \$173,000, together with an equal match, will be used in British Columbia in a multi-year project to restore wetland habitat that supports immense numbers of shorebirds, raptors, including bald eagles, and waterfowl. In Mexico, \$341,672 will be matched to restore coastal wetlands that are critically important as wintering habitat for migratory birds, to complete a management plan, and to begin an environmental education effort.

Funds to acquire land for the National Wildlife Refuge System comes from the sale of the Migratory Bird Hunting and Conservation Stamps, called Duck Stamps, refuge entrance fees and other wildlife-related accounts. Funding for the North American Wetlands Conservation Fund comes from appropriations and wildlife-related interest and fines. Projects are recommended to the Commission by a nine-member, public and private council established by legislation and appointed by the Secretary of the Interior.

> *Department of the Interior News Release 3/22/93 and National Wildlife Federation's EnviroAction, April 1993*

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## **The Mountain Gorilla and The War in Rwanda**

The situation in Rwanda continues to affect the Karisoke Research Center which was founded by Dian Fossey 25 years ago. Although the Rwandan Patriotic Front (RPF) and the government forces were attempting negotiations, there was little hope of rapid peace as of mid-April. Administrative staff still have not returned to Karisoke. Rwandan teams continue to monitor the area. Two groups of five men each follow a gorilla group - two individuals watch the group while the other three conduct anti-poaching runs checking for snares. These men return to their villages at night.

The previous concerns of a Mountain gorilla dying as a direct result of the military actions proved unfounded and the cause of death of the gorilla from Group 5 was determined to be pneumonia. The Mountain gorillas, numbering 310, are priceless as a greatly endangered species but also to Rwanda as an attraction for tourism, a great source of revenue to Rwanda.

> *from phone conversation with Karisoke Director, Dieter Steklls, Ph.D. on 6 April 1993*



## **Keepers' Alert**

We have been asked to notify the membership that Possum Walk Station operated by Kitty and Michael Mallory, has a new address: Possum Walk Station, 1040 New Mexico Road, Bowdon, GA 30108. The Mallorys specialize in hand-rearing marsupials and offer assistance and advice for those hand-rearing marsupials and also have supplies available by mail for hand-rearing. The new phone number for Possum Walk Station is (404) 258-2869.



## CONFERENCE '93 SCHEDULE

### ■ SATURDAY, OCTOBER 9

Closed Board Meeting  
Trip to Tennessee Aquarium  
Early Registration

### ■ SUNDAY, OCTOBER 10

Registration  
AM: State of the Association Meeting  
PM: Committee Meetings  
Ice Breaker

### ■ MONDAY, OCTOBER 11

Welcome Breakfast/Roundtables  
Paper Sessions & Workshops  
Bar Brachiation at Underground Atlanta

### ■ TUESDAY, OCTOBER 12

Zoo Day: Tours and Workshops  
Breakfast and Lunch at zoo  
PM: Reception, Silent Auction, Workshops

### ■ WEDNESDAY, OCTOBER 13

Tour Fernbank Natural History Museum  
Stone Mountain Park: Zoolympics, Awards, Free Time

### ■ THURSDAY, OCTOBER 14

Paper Sessions & Workshops  
PM: Reception, Banquet, Live Auction

### **THIRD CALL FOR PAPERS**

Now is the time to claim your spot on the 1992 conference program. Proposed paper, poster and workshop topics will be accepted on all aspects of zookeeping.

- Papers will be limited to 15 minutes followed by five minutes of questions
- Workshop sessions will be provided for programs, discussion, and debates ranging from 30 minutes to three hours.

Guidelines for preparing manuscripts for the AAZK Conference Proceedings are found below.

PLEASE SUBMIT A SHORT ABSTRACT FOR ALL PROPOSED PAPER, WORKSHOP, AND POSTER PRESENTATIONS BY 1 JULY 1993. ABSTRACTS SHOULD INCLUDE THE NAME OF PRESENTER, ZOO AFFILIATION, TITLE OF PAPER, PROPOSED FORMAT (PAPER, WORKSHOP, ETC.) AND EQUIPMENT NEEDED.

- We would like to offer a few panel discussions and breakfast roundtables in order to promote exploration of important issues, challenges and controversies surrounding the future of zookeeping. We welcome any suggestions or requests for specific topics and/or potential panelists. Help ensure that the 1993 conference program serves your needs.

Send abstracts and other program suggestions to:  
Craig Piper or Sue Barnard, Program Committee, 1993 AAZK Conference,  
Zoo Atlanta, 800 Cherokee Avenue, SE, Atlanta, GA 30315.

### **AAZK Guidelines for Paper Presentation and Publication**

For continuity in publishing the Proceedings, please adhere to the following guidelines for manuscript submission. If a paper is submitted and does not follow these guidelines, it will be rejected for publication.

- FORMAT:**
1. Submit manuscripts on one side of 21.5 x 28 cm (8 1/2 x 11 in.) bond paper.
  2. Use a clear, clean typeface on your typewriter, computer or word processor. Text should be single-spaced.
  3. Indent five spaces for paragraphs.
  4. Double space between paragraphs.
  5. Pages should be numbered consecutively at the bottom of each page.
  6. Leave at least a 2.54 cm (1 inch) margin all around.
  7. Bold-face or underline sub-headings within the text (i.e. Introduction, Materials, Methods, Conclusions, etc.)

**LENGTH:** The entire paper, including photographs, graphs and charts should be no more than ten pages long.

**TITLE:** Should be brief and descriptive. Center your title on the first page of your paper directly before you begin the introduction and text. Follow the title with your name, position, facility, city and state as shown below:

By  
Joe Smith, Keeper II  
Best Zoological Park  
Anywhere, Allstates

# Chapter Fundraising Survey

Oh, no ! Not Another survey ! Well, you will actually see results from this one.

The goal of this project is to produce a "how-to" manual for fundraisers. We all know how difficult it can be to devise and organize new and successful methods of raising money. This manual will showcase other Chapters' projects, explaining how they were planned and executed. Nothing is too "big" or too "small" to be included.

Some Chapters have already received the survey forms. These were sent according to listings in the first L.I.N.K Newsletter. I know that there are other great projects out there ! Please take a few minutes (maybe 15) to complete the accompanying form and send it to me. I would like to complete this project by the end of the year, but it all depends on your response !

Send completed survey forms to:

Teri Maas  
c/o The Philadelphia Zoo  
3400 W. Girard Avenue  
Philadelphia, PA 19104

**THANK YOU FOR YOUR HELP !**

# Fundraising Project/Product Survey Form

Name of fundraiser: \_\_\_\_\_

TYPE (circle letter)

- a) AAZK National Project      b) Regional Liaison Council Project  
c) Local Chapter Project      d) Individual Member Project

PURPOSE

- a) Conservation Project - name: \_\_\_\_\_  
b) Chapter Fundraiser (general operations)  
c) Chapter Fundraiser (specific purpose) name: \_\_\_\_\_  
d) Zoo Project

PERCENTAGE OF FUNDS TO TARGET GROUP

- a) 100%      b) 75%      c) 50%      d) other \_\_\_\_\_

APPROXIMATE AMOUNT RAISED      \$ \_\_\_\_\_

OVERALL SUCCESS OF FUNDRAISER

- a) excellent      b) good  
c) fair      d) poor

TIME FRAME OF FUNDRAISER

- a) one time only      b) weekly      c) monthly  
d) yearly      e) other \_\_\_\_\_

**RESOURCES PROVIDED BY AAZK MEMBERS**

**Manpower:** \_\_\_\_ number of people X \_\_\_\_ approximate hours per person

**Funding:** Chapter funds used? YES NO Amount? \$\_\_\_\_\_

**Materials - list:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Services - list:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**RESOURCES PROVIDED BY OTHER THAN AAZK (i.e. zoo volunteers, etc.)**

**Manpower:** \_\_\_\_ number of people X \_\_\_\_ approximate hours per person

**Funding:** Outside funding sought? YES NO

To cover entire expenses? YES NO

Number of sources: one\_\_ two\_\_ three\_\_ other\_\_

**Materials - list:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Services - list:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**BRIEF DESCRIPTION OF FUNDRAISER**

(Explain what, where, how, and why with adequate details)

A clear and concise prototype or representation of a product should be included with this form. Include name and address of contact persons if using services or products from another source. (Use extra sheets if needed)

Include details of any past terms of contracts or agreements with associate agencies, businesses, institutions, or other project participants.

AAZK PROJECT LEADER:\_\_\_\_\_

CHAPTER:\_\_\_\_\_YEAR OF PROJECT:\_\_\_\_\_

INSTITUTION AFFILIATION:\_\_\_\_\_

This form submitted by:\_\_\_\_\_

**TABLES/  
GRAPHS:**

These, along with their legends, should be submitted on separate pages (one side) and not run within the text. All graphs, charts and illustrations must fit within a space no larger than 6 in. by 9 in. These must be black and white only (no faded photocopies, please). Include the explanation of the graph, chart, etc. on the page with the illustration. Examples: Figure 1 Shows the average temperature of incubation.... Graph 4 Illustrates the variation in duration of.....

**ILLUSTRATIONS:**

Should be on the same-sized paper as the manuscript and each should be identified by author and figure number.

**METRIC SYSTEM:**

Use the twenty-four-hour clock (i.e., 0900 - 1425 hrs.) for identifying time and the continental dating system (day, month, year) when describing dates. Use the metric system for weights and measurements (standard equivalent may be noted in parenthesis).

**SCIENTIFIC**

**NAMES:**

Should be stated with their vernacular names, when first mentioned, and only the vernacular thereafter. When both the vernacular and scientific name are given as a paragraph heading, put the scientific name first. Only currently recognized nomenclatures should be utilized. Authorship of scientific names should be included only when nomenclature problems exist. Avoid footnotes.

**SPECIAL NOTES:**

Identify Registered or Trademark products by ® or ™ symbols respectively. If you have a Products Mentioned in the Text section, please include full name and address of the manufacturer of the product.

**REFERENCES:** Should be listed alphabetically at the end of the manuscript according to author's surname. (Example: Richter, J.W. 1984. How To be A Good Keeper. Animal Keepers' Forum. Vol. 11, No. 6: 12-22. AAZK, Inc., Topeka, Kansas, U.S.A.)

Within the text, references should be cited as Richter (1984) or (Richter, 1984).

**IMPORTANT:**

1. Manuscript must be submitted before presentation is given.
2. Manuscript must be suitable for printing or it will be returned.
3. Speakers who do not provide manuscripts in time for publication will be barred from speaking for a two-year period.
4. Authors whose manuscripts are accepted for publication will receive one gratis copy of the Conference Proceedings.

If you have any further questions, please contact:  
Susan Chan, Proceedings Editor  
1-800-242-4519

PRE-CONFERENCE TRIP

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SATURDAY, OCTOBER 9, 1993  
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ATLANTA, GA 30315

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ADDRESS \_\_\_\_\_  
PHONE \_\_\_\_\_ # OF PEOPLE RESERVED \_\_\_\_\_

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POST CONFERENCE TRIP

Cumberland Island National Seashore, Okefenokee Swamp,  
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Explore the history and ecology of an unspoiled barrier island.  
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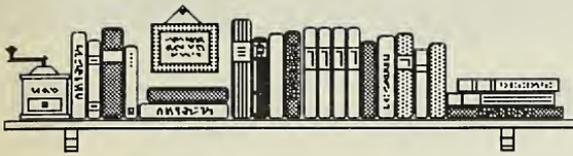
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# Book Review

## Penguin Biology

Edited by Lloyd S. Davis and John T. Darby  
Academic Press, Inc. 1990  
1250 6th Ave., San Diego, CA 92101  
Hardback 467 pgs. \$85.00

*Review by Richard C. Smith  
Aviculturist, Sea World of  
Florida, Orlando, FL*

Penguin Biology is the direct result of the editors' desire to create a "state-of-the-art book on contemporary field studies". They felt this was necessary because of the dramatic scientific advances in penguin biology since the mid-1970's. This book is a collection of papers assembled by several authors in response to the quest to produce a single publication of related material rather than having these papers scattered throughout various journals and books. This goal was initiated at the First International Conference on Penguins held in Dunedin, New Zealand, on August 16-18, 1988.

These papers, one third of which were presented at the 1988 conference, are divided into five parts: Breeding Biology, Foraging, Energetics, Behavior and Taxonomy. The book begins with an historical overview of penguin research by the well-known Bernard Stonehouse. This overview gives the reader a modern perspective by updating them on technological advances to penguin knowledge. In the Breeding Biology section, extensive long-term studies present penguin breeding variations in individual populations and throughout the family Spheniscidae. Several influences (i.e. food availability, previous reproductive success, and nest site location) are discussed in great detail.

The second part, Foraging, contains information resulting from the high tech "quantum leap" our scientific community has made. Technological advances have produced penguin sized devices for radio tracking, recording speeds and recording diving depths. Another great advance is the modern methods for sampling food intake without killing the birds. Foraging locations, intake, food preference, and energy costs for four genera are covered in this section. I found some of these studies a bit challenging, but worthwhile for me to stumble through.

In the Energetics section, the authors avoid discussing the classic thermoregulation topics related to cold environment animals. Instead, they examine the energy budgets involved with certain behaviors and seasonal events. Again, modernization of data collecting methods prove instrumental in each of the three studies. Behavior: a theoretical perspective is a collection of unrelated material that has to be the more pertinent area of this book for the zoo professional. In this part, circadian rhythms, aggression, mate selection, and reproductive techniques are covered. If you could only read one section of Penguin Biology, this would be the choice.

Finally, my personal favorite, Taxonomy: the last word, contains only one paper which discusses the uncertainty of relationships between fossil penguins and their relation to modern penguins. Recent fossil discoveries are also mentioned. In general, this part gives a good account of what has been found and where the major historical gaps are.

Although the information in Penguin Biology is from field studies, it does have applications to captive populations. The subjects covered and the depth to which they are discussed make this book a worthwhile investment for the serious penguin enthusiast. It is definitely an upgrade in penguin literature and I feel the authors succeeded in their mission to create a "state-of-the-art" publication.



# Diseases and Illness of Callitrichids

## (A Survey)

Dear Colleague:

I would like to continue my research studies of callitrichids, and I have chosen to focus on diseases and illness which occur in tamarins and marmosets. If your institution houses or did house any callitrichids, please complete and return the following survey. I would like to thank you in advance for your cooperation.

1. Institution name (address, city, state and zip code)

---

---

2. List all species of callitrichids your institution houses (include scientific name)

---

---

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3. Describe the environments where the callitrichids are housed (dimensions, objects in enclosure, group size, other species, natural or artificial light):

---

---

---

4. List the individual animal which has become ill or developed a disease.

a. Species \_\_\_\_\_

b. Sex \_\_\_\_\_

c. Diet \_\_\_\_\_

d. Natural sunlight or artificial light? \_\_\_\_\_

e. How far from nearest powerline is this animal housed? \_\_\_\_\_

f. Illness or disease \_\_\_\_\_

g. Age at onset \_\_\_\_\_

h. If death occurred, was it due to the illness or disease? \_\_\_\_\_

i. Age at time of death \_\_\_\_\_

j. If illness or disease treated successfully, indicate the treatment: \_\_\_\_\_

---

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If you have more cases than there is room for on this survey, please use an extra sheet of paper or make photocopies for additional cases. Please mail your completed survey to: **Stephanie Tomoser, 906 17th Ave., Albany, GA 31701. Thank You.**



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▼ ▲

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# ENRICHMENT OPTIONS



Psychological Stimulation  
Behavioral Enrichment  
Activity Manipulation  
Occupational Husbandry

by Kayla Grams and Gretchen Ziegler  
Keepers, Topeka Zoo

Just recently we attended the AAZPA central regional conference pub crawl in Manhattan, Kansas. We had the opportunity to show our enrichment video from the Topeka Zoo, as well as watch some other excellent enrichment ideas on video from other zoos. We also managed to coerce some submissions to our column! Thanks to those who contributed ideas that night.

**CALIFORNIA TOAD** - We are finding through serendipity that the California toad is an aerialist of considerable ability and a droll entertainer when engaged in its favorite activity - climbing. We had placed a tangle of twigs and branches in the display cage housing Pacific tree frogs and the toads so the tree frogs could display their climbing abilities. To our surprise the toads enjoyed climbing as much as their more agile cagemates, often spending all day in the branches. We think this love of climbing is not mentioned in the literature because observers have never bothered to look for them in the understories of our garden shrubs and bushes.

--George H. Hanley, Keeper  
California Living Museum  
Bakersfield, CA



**California Toad showing its aerialist skills at the California Living Museum.**

**PRIMATES** - We have two male woolly monkeys in the Children's Zoo that take turns being in an outdoor exhibit as they do not get along well together. This presents a challenge with trying to keep the one that is locked in from getting bored. As with most zoos, funds are limited, so I've made use of things available. Here are some of the things I used: from concessions stand I got different sized boxes, from our docents various sizes of paper bags, and from the horticulture department different sizes of empty plastic planters. Inside the containers, boxes and bags I put a variety of treats including monkey chow, popcorn, sliced fruit, kale, etc. These are all placed inside each other and the monkey must then figure out how to get to the treat.

--Maria Browning  
Children's Zookeeper  
San Antonio Zoo

## Enrichment Options, *Continued*

**SQUIRRELS, LEMURS, TAMARINS** - Give them paper towel tubing or toilet paper rolls with treats in the center. Crinkle down the ends so they have to work for the food. Give the same tubing with peanut butter, honey, raisins, or seeds smeared in the center to try and get to.

**MEERKATS, FENNEC FOXES** - Offer solid round rawhide balls. They are very hard to get into and last a long time.

--Melanie Haynes  
Pueblo Zoo, Colorado

**The following two videos on enrichment are available through Universities Federation for Animal Welfare, 8 Hamilton Close, South Mimms, Potters Bar, Herts EN6 3QD. Tel: 0707 658202, Fax: 0707 649279.**

"**BEAR NECESSITIES** - The Video, Environmental Enrichment for Captive Polar Bears" The UFAW has been studying captive polar bears for the past three years. It was found that stereotypic behaviors vary greatly between individual bears as well as seasonally, yet wild bears and captive-born cubs do not show such behavior. This suggested that if appropriate conditions and management were provided such repetitive behaviors may be avoidable. The video illustrates such repetitive behaviors and offers practical suggestions for reducing them and creating a more complex and stimulating environment. This can be achieved by giving them more choice and control over their environment - freezing food in blocks of ice meant the bears had to spend time manipulating and working to get their meal; scattered and hidden foods required sensory, physical and mental effort throughout the day and a variety of objects such as traffic cones and barrels stimulated play and the setting up of games. Pits of sand or bark gave the bears an alternative to hard concrete in which they foraged, dug or built day nests to rest in.

As polar bears are known to be more active in captivity than in the wild, it is important that all zoos modify their existing facilities and feeding regimes to enable bears to exhibit more of their behavioral repertoire. If polar bears are to be kept in captivity in the future, enclosures need to be designed to maximize choice and control for the occupants. Stimulating captive polar bears to forage, explore, play and build day nests is more beneficial for the animals and more interesting for the public.

This video is available in VHS or American NTSC formats, English only, for \$40 (US) each, including postage and handling.

"**ENVIRONMENTAL ENRICHMENT: ADVANCING ANIMAL CARE**" (updated)

This video describes behavioral needs of animals in captivity and gives practical suggestions for improving their lives. It includes a straightforward guide to carrying out enrichment projects and is intended for all those responsible for the care of animals in captivity - from animal technicians, pet owners, and stock handlers to zookeepers.

This video is available in VHS and American NTSC formats in English and German, for \$40 (US) each, including postage and handling.

**Remember, we are always needing more ideas to include in this enrichment column. Send your suggestions, ideas, etc. to: Gretchen Ziegler and Kayla Grams, AKF, 635 S.W. Gage Blvd., Topeka, KS 66606-2066. We are counting on you to help us continue to fill this column with ideas that will make life better for our captive charges. Make it a Chapter project to gather ideas already in use or come up with new ones to try.**



# Elephant Set

*Editor's Note: Beginning with last month's issue, this column will contain material on elephant morphology and physiology; nutrition; external diseases including parasites; internal diseases including systemic, gastrointestinal and respiratory; and use of anesthesia. These articles were part of an extensive research manuscript written by Ursula Bechert, DVM of Corvallis, OR.*



## External Diseases

By Dr. Ursula Bechert, DVM  
Corvallis, OR

The most frequently encountered medical problems include dental ailments, lesions of the foot (especially the sole) and skin diseases (Ruedi, 1990). Another study by Jainudeen and Scheurmann (1975) listed gastrointestinal parasitism as the major problem, followed by foot and skin diseases.

### Parasites

Arthropod parasites include lice, ticks, tabanid flies, oestrid flies, bloodsucking flies and mites (Schmidt, 1986).

Infestation by elephant lice (*Haematomyzus elephantis*) is common, resulting in elevated papules and cuts and bruises from scratching on posts (Kane, et al. 1976). Lice are found most abundantly behind the ears. They cannot live off the host for more than 21 days. These lice reach 2.03mm in length and have an elongated head capsule (1mm in length) with mouthparts at the tip that penetrate the thick skin of the host and maintain their attachment. They are obligate blood consumers.

Treatment consisted of scrubbing elephants with 237ml lindane-based shampoo per 3.8 L water for adult elephants (2800 kg), or 2 L of the same mixture for smaller elephants (500-1400 kg) (Kane, et al. 1976). The soapy mixture should be allowed 10-15 minutes contact before rinsing. This is done once a week for three weeks. Ivermectin® has been successfully used with dosages ranging from 0.059-0.087 mg/kg body weight intramuscularly (Karesh and Robinson, 1985). A second treatment is given 5-6 weeks after the initial dose. Due to local inflammation and soreness at the injection sites, oral administration is preferred and has proven to be just as effective (Ensley, personal communication).

The mite *Loxanoetus bassoni* is very small and infests the ears of elephants (Basson, et al., 1971). Another mite, *Loxanoetus lenae*, causes otitis externa associated with excess debris (Domrow and Ladds, 1984). No specific treatments are reported but Ivermectin® would probably work.

The microfilaria, *Indofilaria patta biramani*, causes hemorrhagic dermatitis in Asian elephants that lasts for a year or more (Schmidt, 1986). Numerous 1 cm nodules appear in the skin and may exude small quantities of blood. Microfilaria in the blood confirm the diagnosis. The disease is self-limiting but since the skin lesions may become contaminated with clostridial organisms, the elephant should be vaccinated for tetanus. Thiabendazole has been used experimentally for treatment (Schmidt, 1986).

### Foot Conditions

Foot problems mentioned in the literature or personally observed include foot rot, sole cracks, interdigital calluses, hoof overgrowth, cracked nails, infected cuticles, overworn soles and puncture by foreign objects. These problems are common and usually result

## **Elephant Set: External Diseases, Continued**

from chronically wet and unsanitary conditions combined with inadequate exercise and wear (Schmidt, 1986).

Skeletal support for the foot is located anteriorly with a spongy, poorly vascularized, elastic cushion composing the posterior portion (Wallach and Silberman, 1977). Thus elephants walk on their toes with much of the weight supported by pads in the foot (Wexo, et al. 1980). All four feet are highly flexible, expanding greatly when bearing weight and contracting when weight is removed.

The cuticle continually grows and requires monthly trimming in captive elephants. It is a very sensitive area and must be treated gingerly. If the cuticle is hard and dry, mineral oil will soften it and ease trimming or elephants will rub off the excess themselves. A 3 to 4 mm long flap of cuticle should be left and swabbed with copper naphthenate (Wallach and Boever, 1983).

The nails should be rasped to a proper length and checked with a hoof knife for penetrating wounds and foreign bodies. Cracks can be protected after cleaning with coal tar or epoxy resin hoof-repair products. Rasping the nail perpendicular to a crack at its tip can stop further spread towards the cuticle (Roach, personal communication).

The keratinized sole is 4-12 mm thick and should be trimmed so the entire surface touches the ground evenly. Wounds should be debrided with a hoof knife until healthy pinkish-yellow tissue is reached. A good method to maintain evenness involves paring the entire sole as a unit by beginning the cut at the heel and continuing to the toe using a sharp knife (Roach, personal communication). Sole abscesses need to be flushed daily with acriflavine or hydrogen peroxide, and protected for cleanliness with a canvas or leather boot (Kuntze, 1989). A long period of time is required for healing of the sole to occur by second intention or granulation. If there are any perforating injuries, 1500 IU tetanus antitoxin (TAT) should be administered subcutaneously in the lateral neck region for short-term protection (Wallach and Silberman, 1983). 200,000-250,000 units TAT every six hours with 30 million units of procaine penicillin intramuscularly every 6 hours are recommended by Wallach and Boever (1983) for treatment.

Foot abscessation is a common sequelae to poor foot care or injury. *Escherichia coli*, *Proteus spp.* and *Pseudomonas spp.* often colonize necrotic tissues and extend the damage (Schmidt, 1986). All foot abscesses require surgical drainage and repeat flushings with antiseptic or antibiotic solutions, maintenance of a clean, dry foot and possible foot baths in 5% Cu sulfate to toughen the tissues.

### **Skin Lesions**

A dermoid cyst on the neck of a captive elephant has been reported by Ritchie, et al. (1986). After initial daily treatments with saline flushes and hetacillin infusions failed, the mass was surgically excised.

Cutaneous papillomas have been found mainly on the trunks of young elephants and are most likely due to a herpesvirus (Jacobson, et al. 1986). Initial lesions are small, raised, proliferative growths with a central pore-like area filled with gray material. Older lesions are often ulcerated. Benign, self-limiting fibromas have been reported and usually don't require treatment (Schmidt, 1986).

Rashes occur fairly often in elephants due to exposure to an allergen or toxic plant juices (Schmidt, 1986). Macular swellings usually disappear in a few days without treatment.

Elephants can get sunburned if exposed to direct sunlight for several hours (Schmidt, 1986). This usually occurs on the forehead and dorsum, as evidenced by erythematous, peeling skin. Treatment consists of ice packs and soothing lotions. Concurrent hyperthermia should be treated. Providing shade for elephants and protecting the head from direct sunlight will prevent sunburn.

## **Elephant Set: External Diseases.** *Continued*

Dermatitis is a common problem of captive elephants given inadequate daily skin care (Schmidt, 1986). Hyperkeratosis, loss of pliability and pruritus are typical signs. Elephants require rough surfaces on which to rub off dead skin and daily water baths to keep the skin soft and pliable. If adequate care is provided and problems continue, vegetable oil should be added to the diet and a nontoxic oil can be applied to the skin. Murphy's Oil Soap™ provides a mild detergent for gentle cleansing and oils for lubrication (Roach, personal communication).

Subcutaneous abscesses are very common and can be a serious problem. Causes include contusions, wounds, parasitic invasions, chafing or ingrown hairs (Schmidt, 1986; personal observation). Since the skin is so thick, abscesses do not usually come to a head and rupture externally but, instead, spread internally, undermining the skin (Schmidt, 1986). Diagnosis is made by observation of an initial hot, hard swelling or later fluctuant swellings under the skin. Treatment includes surgical exploration and drainage followed by flushing with an antibiotic and antiseptic solution. Nitrofurazone and DMSO in a ratio of 2:1 works well (Schmidt, 1986). Mixed aerobic and anaerobic infections have responded well to metronidazole suppositories (15mg/kg) which reach plasma concentrations of 4.4-7.7 ug/ml within 24 hours after dosing (Gulland and Carwardine, 1987).

Skin ulcers usually occur in debilitated animals or those kept under unsanitary conditions. Treatment is done by debriding the outer surfaces, applying an antibiotic ointment, like nitrofurazone, and providing sanitary living conditions.

### **Next Month: Dental Disorders and Trunk, Eye & Ear Problems**

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## **An Introduction to**

*By*

*Ron Ringer, EMA Board Member  
and  
Liaison to AAZK*

## THE ELEPHANT MANAGERS ASSOCIATION



Formed in December 1988, this organization grew out of the annual Elephant Management Workshops, which began in 1980. The EMA is a non-profit organization composed of over 240 Professional, Associate and Institutional members. One hundred and sixty of our Professional members have over three years experience in direct handling of elephants in zoos and the private sector.

The goals of the EMA are to improve and professionalize elephant management practices which will result in improved management and treatment of elephants in North America. Since 1989 the EMA has had a liaison to the Elephant SSP and the Elephant Management Task Force, providing technical input on the development of the initial AAZPA Elephant Management Guidelines and the current Minimum Standards for Management of Elephants in Captivity. We publish three newsletters a year and the annual workshop proceedings for our membership which helps to keep them informed on current activities and issues concerning elephants.

Recently the Board of Directors of AAZK approached the EMA and asked that a liaison between our organizations be established. In September 1992, the EMA appointed me to fill that role because of my long association with both organizations. The EMA feels that this avenue between our organizations can be very beneficial and we are looking forward to working with AAZK in the future.

Membership in the EMA is at three category levels. Professional members include those who has at least three years hands-on experience working with elephants; Associate members are those interested in supporting the goals of the EMA; and Institutional memberships of institutions wishing to support the goals of the EMA. Annual membership fees are: Professional \$30.00; Associate \$20.00; Institutional \$60.00. For Professional status, verification of experience may be required at the discretion of the Board of Directors. Only Professional members may vote. The Board of Directors, made up of five Professional EMA members elected by the voting membership, determines membership eligibility and continuation.

If you should have any questions about our organization or on elephant matters please contact the author c/o the San Diego Zoo, P.O. Box 551, San Diego, CA 92112.

(Editor's note: The EMA has established a position statement on 'Protected Contact' care system for elephants [see related story page of this issue]. If you would like a copy of this position statement, send a self-addressed stamped envelope with your request to: AKF Editor, AAZK Administrative Offices, 635 S.W. Gage Blvd., Topeka, KS 66606-2066.



# World's Largest Mall

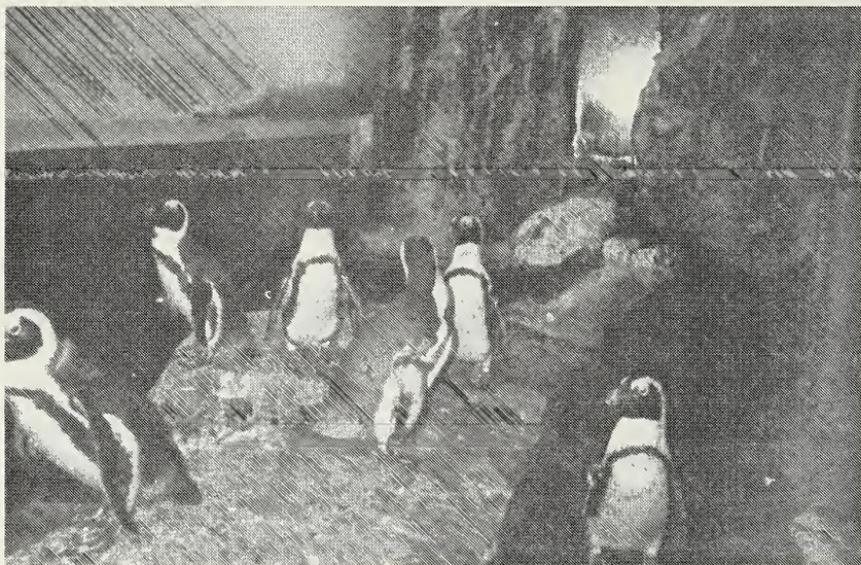
## Home to Black-footed Penguin

(*Sphenicus demersus*)

By Michele Kuberski  
Penguin Keeper/Animal Health Technologist  
West Edmonton Mall, Edmonton, Alberta, Canada

West Edmonton Mall, located in Edmonton, Alberta, Canada, has a small marine park within the building. It is home to four Bottlenose dolphins, 18 Penguins, three Sea turtles, many species of freshwater and marine fish, as well as a few species of reptiles.

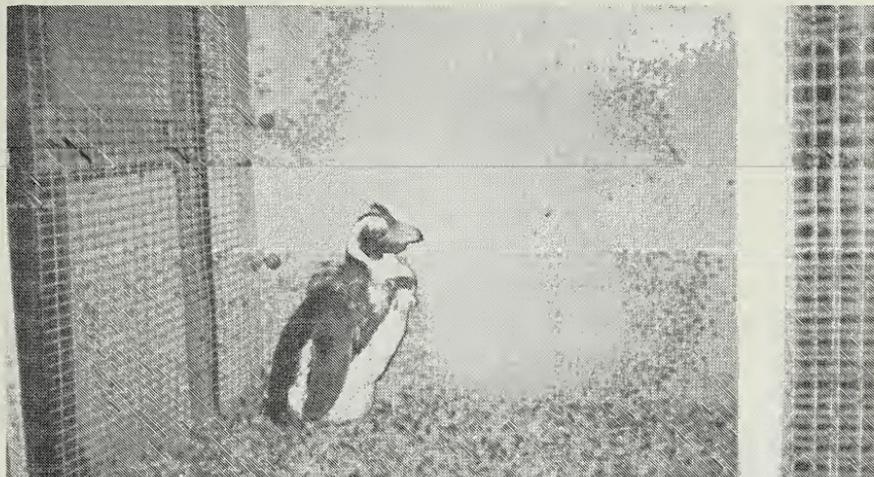
The Marine Life Department built an enclosure and received 12 adult penguins in 1985. The enclosure measures about 21 feet long by 5 ft. 6 in. wide and it is 4 ft 2 in. deep in the swimming area. The land area is about 21 feet long and 5 ft. 6 in. wide. The temperature of the habitat is maintained at 17-19°C (52-56° F). Fluorescent light fixtures light the enclosure and they are usually on for about 14 hours a day. The pool is continuously being filtered by three big sand filters. Fresh water is used in the pool.



**Figure 1 - The Enclosure**

The penguins dine on capelin, Columbus River smelt, and small herring. The penguins are fed salt tablets and multi-vitamins with their fish diet daily. The penguins are given the opportunity to eat twice a day. They consume an average of 5-10 fish a day. The consumption is recorded by the keeper and the penguins are hand-fed.

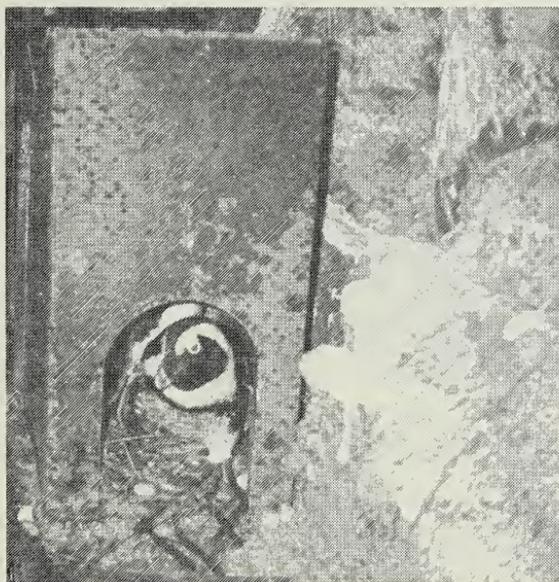
The 12 adult penguins moult once a year, usually around the same time as the previous year. The bird's appetite increases two weeks prior to the moult and the birds are removed from the enclosure during that period which lasts about 15 days. The birds are offered food during the moult, but most birds do not want to eat. Rebanding is also done at this time.



**Figure 2 - The Moult**

The Mall has five mated pairs of birds and two extra females. Two pairs have successfully mated and raised seven babies in the past one and a half years. The birds have wooden nest boxes with holes drilled in the bottom for drainage of fecal material. There are also two dens that the penguins have used for nesting. These are cut out from a fiberglass enclosure (see figure 4). The penguins are given rocks, twigs, and plastic plants from which to build up their nest, and numerous eggs have been laid.

The eggs and chicks are monitored daily, the days are counted from the time when the egg is laid until it is hatched. The chicks are left with the parents until they are 30 days old and then they are pulled and hand-raised, so they will learn how to properly hand-feed. At about two months of age the chicks moult and begin growing their first set of feathers.

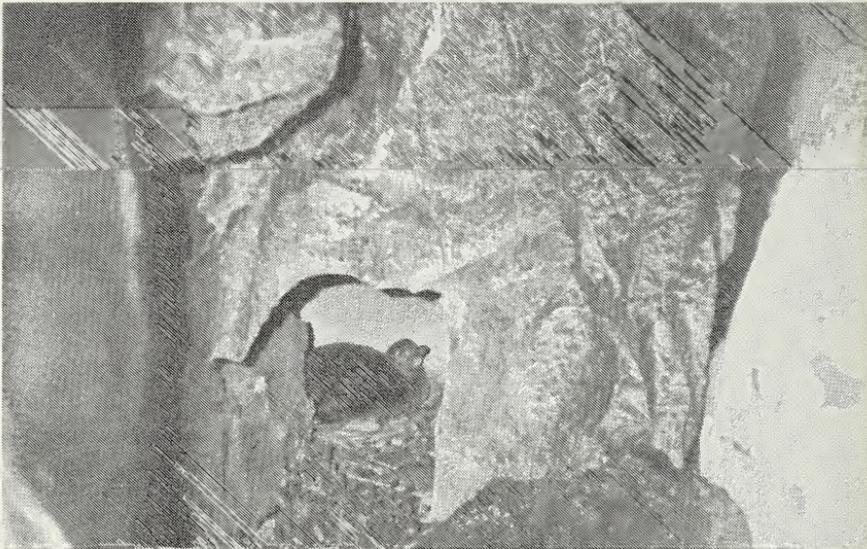


**Figure 3 - The Nest Box**

*All Photos by Michele Kuberski*



**Figure 4 - The Den**



**Figure 5 - The Chick at 30 Days of Age**



**Figure 6 - The Chick After the Moul**

Another pair is currently sitting on another egg.



## ANIMAL BEHAVIOR SOCIETY

Last year I contacted many of you to describe the benefits and the work of the Animal Behavior Society, and a great many members of AAZK agreed with me and joined the Society. Just in case I missed you last year, or you misplaced my letter, I want to again call your attention to the Society. Many of you spend considerable time observing your animals, not just cleaning and feeding, and therefore have become aware of the behavior of your animals. You also are aware of how important a knowledge of animal behavior can be both in the day-to-day care of an animal and in the planning of environmentally sound facilities.

We are a very egalitarian Society consisting of zoologists, zoo keepers, biologists, psychologists, behavior geneticists, etc. Students are welcome at all our activities, and titles are never used. Our annual conventions provide a wealth of practical information, research results, and other activities. And our conventions are not at all expensive. They are always held on a university campus and offer the option of staying in dormitories at an extremely modest cost. Our monthly journal, Animal Behaviour, published jointly with the British Society for the Study of Animal Behavior, is the leading journal in this field.

I believe you will find a second home in the Animal Behavior Society. We are your kind of people: we study, enjoy, and respect animals. We know their value and, like you, do our best to add to the treasury of knowledge of the various species, enlighten the public, and increase the chances for the survival of all species. Please join us: mail your check for \$36.00 (annual dues which include Animal Behaviour, and Membership Directory) with your name, mailing address, and affiliation to: Ira Perelle, Membership Chairman, ABS, Mercy College, Dobbs Ferry, NY 10522.



# Chapter News

## AAZK Announces New Chapters

AAZK, Inc. is pleased to announce the chartering of two new Chapters of the Association. They are:

### Riverbanks Zoo Chapter AAZK

This Chapter is made up of members from the Riverbanks Zoological Park & Botanical Garden in Columbia, SC. Their mailing address is P.O. Box 1060, Columbia, SC 29202-1060.

Officers for the Riverbanks Chapter are:

President.....Dennis Monroe  
Vice Pres.....Valerie Pruett  
Secretary.....Kristin LaHue  
Treasurer.....Tamara Burton  
Chapter Liaison.....Valerie Pruett

### Greater Cincinnati Chapter AAZK

This Chapter is made up of members from the Cincinnati Zoo and Kings Island Wild Animal Habitat. Their address is 3400 Vine St., Cincinnati, OH 45220.

Officers for the Greater Cincinnati Chapter are:

President.....Dawn Strasser  
Vice Pres.....Mike Light  
Secretary.....Karen Creamer  
Treasurer.....Becky Jones  
Chapter Liaison.....Karen Creamer

We welcome both these newly chartered Chapters to AAZK and wish them much success!

### Burnet Park Zoo AAZK Chapter

Our Chapter is looking forward to a very active year. We have already initiated several fundraisers. Our zoo's exhibit artist Kathy Woodle has just completed a design for the first in a series of shirts commemorating significant events. The first shirt announces the addition of Snow Leopard to the Wild North area of the

zoo. We are already planning a second shirt depicting our new Boa Constrictors.

We have had an excellent response to an AAZK membership drive soliciting the support of zoo volunteers. Several people have already joined AAZK, Inc. and will become actively involved in local Chapter activities.

Our outstanding officers are:

President.....David Schubert  
Vice Pres.....Nancy Porter  
Secretary.....Laura Wachob  
Treasurer.....Peggy Lauer

--David Schubert, President

### National Zoological Park AAZK

At our January meeting, Perry Barboza from the Department of Zoological Research gave a slide presentation entitled "Herbivory on Budget: Wombats and Desert Tortoises". Perry gave a comprehensive account of how the metabolic and digestive strategies of these two species enables them to utilize their native habitat without competing with, or excluding other sympatric species.

The \$420.00 raised by our Christmas bake sale was sent to AAZPA's Zoo Crisis Fund to help with repairs needed at the Miami Metro Zoo as a result of the damages from Hurricane Andrew.

The money raised by our aluminum recycling program (\$1,000.00) has been divided equally between two very worthy projects. Half of the money was sent to the Ecosystem Survival Plan - Adopt An Acre project for the purchase of "additional" land in Costa Rica. The other half has been sent to Zoo Conservation Outreach Group. The NZP Chapter is now an Active Member of ZCOG and is eligible to participate in any of their programs without contributing extra resources.

Dr. Ted Grand gave a slide presentation at our March Chapter meeting entitled "Flight Mechanisms in Mammals and Birds". Ted

## Chapter News, Continued

discussed the history of the comparative anatomy of bird species and how they use these features when utilizing air currents and thermals during flight. Ted also discussed man's role in flight.

"Preakness Clean-up" is just around the corner. The highly successful, one day, moneymaking event will be followed by a picnic for all volunteers.

--Kathy Kelly, Chapter Liaison

### Little Rock Chapter AAZK

Our officers for 1993 are:

President.....Janet Cooper  
Vice Pres.....David Alexander  
Treasurer.....Britt Thompson  
Secretary.....Ann Rademacher  
Liaison.....Becky Burns

We want to thank outgoing Treasurer Marie Schmude for her years of dedicated service. She continues to be an active Chapter member, and is now spending her "extra" time continuing her education.

Last year was a busy one for us. We raised a total of \$260.00 for the Duke University Primate Center's conservation projects in addition to our participating in Bowling for Rhinos and other previously reported projects.

Our unscheduled activity was fundraising and obtaining supplies for the Miami Metro Zoo after their devastation by Hurricane Andrew. Our staff really pitched in, over \$1,000.00 was raised. Our Docents and Friends of the Zoo were generous donors. We sent over 380 pounds of clothes, 140 pounds of fencing and clean-up supplies, and 40 pounds of personal care items. The emergency nature of this project required lots of work in a short period of time; thanks to all those who participated.

Our New Year's resolution was to have more fun in 1993. Towards this end we've had two bowling nights, and our next scheduled event is our Eleventh Annual Easter Beer Hunt. This casual after-hours affair requires each participant to find their personal

Easter egg before imbibing in the refreshments. Challenging personal clues are provided.

We are also gearing up for Bowling for Rhinos, and will participate in several of our zoo's special events. We would like to have more speakers this year, and are exploring the feasibility of getting together with keepers from nearby zoos.

We continue to offer T-shirts, sweatshirts and colder holders featuring the AAZK National logo. Our primary income is still from the soft drink and coffee machines in our break area. Recycling aluminum and cardboard also contributes a small amount of money. We've come to view our recycling efforts as more of a service than an income producer.

--Ann Rademacher, Secretary



### Jacksonville Zoo Chapter

Above is the newly redesigned logo of the Jacksonville Zoo AAZK Chapter (Jacksonville, FL). The original logo (which featured the same two animals) was designed by Cheryl Lunger in 1988. The redesign presented here was done by Chapter President Glenn Wood. The Chapter chose the giraffe (their zoo's logo) and a rhino (AAZK logo) to show the continuity between National and the Chapter. They use their logo on their letterhead and also have had a rubber stamp of the logo made.

--Jennifer Gerez, Secretary



# Fish and Wildlife Service, The Peregrine Fund to Cooperate on 'Alala Project

Because of its extensive and successful experience in restoring endangered bird populations, The Peregrine Fund of Boise, ID, has been selected by the USFWS to coordinate a project designed to increase wild and captive populations of the endangered 'Alala or Hawaiian crow (*Corvus hawaiiensis*). The San Diego Zoological Society and Greenfalk Consultants will assist in carrying out some aspects of the project.

"Our 'alala management plan calls for removing the first clutch of eggs from nesting wild 'alala, then incubating, rearing, and releasing at least some of them back into the wild," says Marvin L. Plenert, Pacific regional director of the Interior Department's U.S. Fish and Wildlife Service (USFWS). "The Peregrine Fund has had considerable success working with endangered raptor species, as well as some experience in rearing and releasing crows and ravens. We are delighted it has agreed to assist the Service in restoring 'alala populations."

"We are honored to become part of the team and take on this new challenge," stated Dr. Bill Burnham, President of The Peregrine Fund. "The problems faced by the Hawaiian crow are similar to those faced by the Mauritius kestrel in the later 1970s when it was reduced to two known pairs, but, with the help of The Peregrine Fund and many others, the bird is close to having a self-sustaining population in the wild," noted Burnham.

As a cooperator in the project, the San Diego Zoological Society will supply personnel to set up an incubation and rearing facility on the island of Hawaii. USFWS biologists will remove wild-laid eggs from 'alala nests and zoo biologists will be responsible for incubating the eggs and managing hatchlings.

The Peregrine Fund will design and construct a facility to return young 'alala to the wild, then release and monitor the juvenile birds. At approximately 4-6 weeks of age, a portion of the young will be transferred from the rearing facility to this hacking site. When the birds are fully capable of flying, and are able to locate naturally occurring foods and feed themselves, they will be reintroduced to the wild.

Other young will be moved from the rearing facility to the Olinda Endangered Species Propagation Facility on the island of Maui, where they will join 11 'alala currently in captivity. The Olinda facility is owned and operated by the State of Hawaii in partnership with the USFWS.

Since knowledge about appropriate techniques for incubating 'alala eggs, rearing young, and reintroducing them to the wild is very limited, Greenfalk Consultants of Boise, ID, will assist The Peregrine Fund and conduct research on similar crow and raven species in Idaho to improve success rates in working with 'alala. The studies began in March and have focused on egg transportation, incubation procedures and nestling release methods.

Only 13 'alala are known to exist in the wild, all on the island of Hawaii. All but one are found on the McCandless Ranch in the Kona District. A long-term management plan for the 'alala was recently prepared by the USFWS. It incorporates the recommendation of the National Academy of Sciences' National Research Council to take all steps necessary to increase both wild and captive 'alala populations, including removal of first-clutch eggs from wild nests during the 1993 season for incubation and rearing for release in the wild or inclusion in the captive flock at Olinda.

The USFWS has obligated approximately \$382,000 to cover the cost of the 'alala program with The Peregrine Fund in Fiscal Year 1993, and will seek additional funding as needed in future years.

(Editor's note: See related story on the 'alala in the February 1993 *AKE*, pages 60-62.)



# L.I.N.K.

## (Liaison and Information Network for Keepers)

Coordinator for the LINK System: Mark de Denus, Assiniboine Park Zoo, 2355 Corydon Ave., Winnipeg, Manitoba, Canada R3P 0R5. (204) 837-2916 (h).

### Regional Coordinators

- ALABAMA** - Fred Alvey, Zoo Atlanta, 800 Cherokee Ave. S.E., Atlanta, GA 30315  
**ALASKA** - Vacancy  
**ARIZONA** - Bruce Eneboe, Reid Park Zoo, 1100 S. Randolph Way, Tucson, AZ 85716  
**ARKANSAS** - Debbie Jackson or Ann Rademacher, Little Rock Zoological Gardens, #1 Jonesboro Dr., Little Rock, AR 72205  
**CALIFORNIA (Northern)** - Jean Lai, Oakland Zoo, 9777 Golf Links Rd., Oakland, CA 94605 and Ruby Lara, Sacramento Zoo, 3930 West Land Park Dr., Sacramento, CA 95822-1123  
**CALIFORNIA (Southern)** - Johnny Merk, EFBC, HCR #1, Box 84, Rosamond, CA 93560  
**COLORADO** - Suzanne Chacon-Brennan, Denver Zoo, City Park, Denver, CO 80205  
**CONNECTICUT** - Jeanette Nadeau, Roger Williams Park Zoo, Providence, RI 02905  
**DELEWARE** - Theresa Maas, Philadelphia Zoo, 34th & Girard Ave., Philadelphia, PA 19104  
**FLORIDA** - Rick Smith, 5752 Stoneridge, Orlando, FL 32839  
**GEORGIA** - Fred Alvey, Zoo Atlanta, 800 Cherokee Ave. S.E., Atlanta, GA 30315  
**HAWAII** - Michelle Suenishi, Hilton Hawaiian Village, 2950 Ena Rd., Honolulu, HI 96815  
**IDAHO** - Vacancy  
**ILLINOIS** - Pat Swieca, 5710 W. Cullom Ave., Chicago, IL 60634  
**INDIANA** - Dan Powell, Potawatomi Zoo, 500 S. Greenlawn, South Bend, IN 46615  
**IOWA** - Carla Wieser, Omaha's Henry Doorly Zoo, 10th St. & Deer Park Blvd., Omaha, NE 68107  
**KANSAS** - Gretchen Ziegler, Topeka Zoo, 635 S. W. Gage Blvd., Topeka, KS 66606  
**KENTUCKY** - Scott Wright, Cleveland Metroparks Zoo, 3900 Brookside Park Dr., Cleveland, OH 44109  
**LOUISIANA** - Michelle Asselin, Audubon Park & Zoological Gardens, P.O. Box 4327, New Orleans, LA 70115  
**MAINE** - Jeanette Nadeau (see addresses under CT)  
**MARYLAND** - Theresa Maas, Philadelphia Zoo, 34th & Girard Ave., Philadelphia, PA  
**MASSACHUSETTS** - Jeanette Nadeau (see addresses under CT)  
**MICHIGAN** - Dan Powell, Potawatomi Zoo, 500 S. Greenlawn, South Bend, IN 46615  
**MINNESOTA** - Tim Hill, Minnesota Zoological Gardens, 13000 Zoo Blvd., Apple Valley, MN 55124  
**MISSISSIPPI** - Jeannie Frazier, Jackson Zoological Park, 2918 W. Capitol, Jackson, MS 39209  
**MISSOURI** - Vacancy  
**MONTANA** - Vacancy  
**NEBRASKA** - Carla Wieser (see address under Iowa)  
**NEVADA** - Patricia Simonet, Wildlife Safaris, P.O. Box 6735, Incline Village, NV 89450  
**NEW HAMPSHIRE** - Jeanette Nadeau (see addresses under CT)  
**NEW JERSEY** - Theresa Maas, Philadelphia Zoo, 34th & Girard Ave., Philadelphia, PA 19104  
**NEW MEXICO** - Bruce Eneboe, Reid Park Zoo, 1100 S. Randolph Way, Tucson, AZ 857716  
**EAST NEW YORK** - Frank Leonard, Bronx Zoo, 185th & Southern Blvd., Bronx, NY 10460  
**WEST NEW YORK** - Alan Baker, Burnet Park Zoo, 500 Burnet Park Dr., Syracuse, NY 13204  
**NORTH CAROLINA** - Lucy Segerson, North Carolina Zoo, Rt. 4, Box 83, Asheboro, NC 27203  
**NORTH DAKOTA** - Bob Debets, Assiniboine Park Zoo, 2355 Corydon Ave., Winnipeg, Manitoba Canada R3P 0R5 (204) 986-4040 [w]  
**OHIO** - Scott Wright, Cleveland Metroparks Zoo, 3900 Brookside Park Dr., Cleveland, OH 44109  
**OKLAHOMA** - Debbie Jackson or Ann Rademacher (see addresses under AR)  
**OREGON** - Anna Michel, Washington Park Zoo, 4001 SW Canyon Rd., Portland, OR 97221  
**PENNSYLVANIA** - Theresa Maas, Philadelphia Zoo, 3400 W. Girard, Philadelphia, PA 19104  
**RHODE ISLAND** - Jeanette Nadeau (see addresses under CT)  
**SOUTH CAROLINA** - Lucy Segerson, North Carolina Zoo, Rt. 4, Box 83, Asheboro, NC 27203  
**SOUTH DAKOTA** - Bob Debets (see address under ND)  
**TENNESSEE** - Gail Karr or Cindy Pinger, Memphis Zoo & Aquarium, 2000 Galloway, Memphis, TN 38112  
**TEXAS** - Ann Marie Greco, San Antonio Zoo, 3903 N. St. Mary's St., San Antonio, TX 78212  
**UTAH** - Suzanne Chacon-Brennan, Denver Zoo, City Park, Denver, CO 80205  
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**VIRGINIA** - Theresa Maas, Philadelphia Zoo, 34th & Girard, Philadelphia, PA 19104  
**WASHINGTON** - Elandra Aum, Woodland Park Zoo, 5500 Phinney Ave. N, Seattle, WA 98103  
**WEST VIRGINIA** - Theresa Maas, Philadelphia Zoo, 34th & Girard, Philadelphia, PA 19104  
**WISCONSIN** - Wayne Hazlett, 3768 S. 89th St., Milwaukee, WI 53228  
**WYOMING** - Vacancy  
**DISTRICT OF COLUMBIA** - Theresa Maas (see address under PA)  
**Province of Ontario** - Neil Porter, Metro Toronto Zoo, Box 280, West Hill, Ontario M1E 4R5 Canada  
**Provinces of Manitoba & Saskatchewan** - Bob Debets (see address under ND)  
**Province of Quebec** - Vacancy  
**Provinces of Alberta & British Columbia** - Grant Tkachuk, 10139 157th St., #206, Edmonton, Alberta T5P 2T9

*Institutions wishing to advertise employment opportunities are asked to send pertinent data by the 15th of each month to: Opportunity Knocks/AKE, 635 Gage Blvd., Topeka, KS 66606. Please include closing dates for positions available. There is no charge for this service and phone-in 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.*

**ZOOKEEPER**...requires some experience as a paid employee in a zoo. We are looking for someone who is anxious to learn and interacts well with fellow employees and visitors alike. Should be comfortable talking to large groups of people. An interest in reptiles a plus. Degree in zoology preferred but not required. Send resume to: Vince Hall, Claws 'n' Paws Wild Animal Park, RD 6, Lake Ariel, PA 18436 or call 717-698-6154. Positions open until filled. Salary negotiable.

**CHIMPANZEE CAREGIVER**...two full-time positions open. Requires two years college level course work, two years experience in the care of exotic animals; OR an equivalent combination of experience which provides the required knowledge, skills and ability. Primate experience a plus. Assist in the responsibility of caring for approximately 80 chimpanzees (*Pan troglodytes*) in a breeding colony. Must be willing to make at least a two-year commitment. Excellent benefits. EOE. **ALL** applicants must have a negative T.B. skin test, negative hepatitis B surface antigen test, and evidence of a measles booster or natural disease prior to employment. Send letter of interest (with requested salary), resume, and three letters of reference to: Jo Fritz, Director, Primate Foundation of Arizona, P.O. Box 20027, Mesa, AZ 85277. **Closing date is 1 July 1993.**

**ZOOKEEPER (two newly established positions available)** - Kansas City Zoological Gardens. Requires high school diploma and one year experience in the care, feeding and handling of zoo animals. Responsible for daily animal care, exhibit maintenance, animal observations and public contact. Good communication skills desired. Work with diverse collection in expanding zoo undergoing \$71 million renovation. Salary \$1,266 to \$1,931 monthly, plus excellent benefits. Nonresidents, if appointed, must establish residency within the city limits of Kansas City, MO. Send resume by 4 June 1993 to: Reta Gaebler, Personnel Dept., City Hall, 414 E. 12th St., Kansas City, MO 64106. EOE/M/F.



## IMPORTANT CHAPTER TAX NOTICE

If your Chapter has received a 1992 Return for Organizations Exempt From Income Tax booklet from the Internal Revenue Service, PLEASE DO NOT disregard this package. All Chapters who receive this package MUST return either Form 990 EZ or Form 990. If your Chapter's gross receipts are normally not more than \$25,000.00, you may fill out Form 990 EZ. If your Chapter received this packet and you need help with the instructions for completion, please do not hesitate to call AAZK Administrative Offices at 1-800-242-4519. The Tax Forms MUST be filed no later than **15 May 1993**. After you have completed the form which is appropriate for your Chapter, be sure and retain a copy for your Chapter records and forward a copy on to AAZK Administrative Offices for your permanent Chapter file which is kept at Topeka. Please let us know if you need help, but DO NOT disregard these forms--if your Chapter received one, it MUST be filed.

# AAZK Membership Application

Name \_\_\_\_\_ check here if renewal [ ]

Address \_\_\_\_\_

City \_\_\_\_\_ State/Province \_\_\_\_\_ Zip \_\_\_\_\_

## U.S. Members

- \$30.00 Professional/U.S.  
*Full-time Keepers*
- \$25.00 Affiliate/U.S.  
*Other staff & volunteers*
- \$25.00 Associate/U.S.  
*Those not connected with  
an animal facility*
- \$50.00 or up Contributing/U.S.  
*Individuals*
- \$50.00 or up Institutional/U.S.  
*Organizations/Institutions  
(requires Board approval)*

## Canadian Members

- \$35.00 Professional/Canada  
*Full-time Keepers*
- \$30.00 Affiliate/Canada  
*Other staff & volunteers*
- \$30.00 Associate/Canada  
*Those not connected with  
an animal facility*
- \$55.00 or up Contributing/Canada  
*Individuals*
- \$55.00 or up Institutional/Canada  
*Organizations/Institutions  
(requires Board approval)*

## International Members

- \$40.00 International  
*All members outside U.S. &  
Canada regardless of category*

## Library Only

- \$20.00 Library  
*Available only to  
established libraries*

Zoo Affiliation (if any) \_\_\_\_\_

Zoo Address \_\_\_\_\_

Title \_\_\_\_\_

Work Area \_\_\_\_\_

My check is enclosed (AAZK, Inc.)

Please charge to 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 U.S.A. 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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**American Association  
of Zoo Keepers, Inc.  
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# Animal Keepers' Forum

June 1993

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*Dedicated to Professional Animal Care*

ANIMAL KEEPERS' FORUM, 635 S.W. Gage Blvd., Topeka, KS 66606  
Phone: 1-800-242-4519 (U.S.) 1-800-468-1966 (Canada) FAX 913-273-1980

June 1993  
Volume Twenty  
Number Six

Editor-In-Chief: Susan Chan  
Associate Editors: Kayla Grams & Gretchen Ziegler

Animal Keepers' Forum (ISSN 0164-9531) is a monthly journal of the American Association of Zoo Keepers, Inc., 635 Gage Blvd., Topeka, KS 66606. Ten dollars of each membership fee goes toward the annual publication costs of Animal Keepers' Forum. Third Class postage paid at Topeka, KS. Postmaster: Please send address changes to:

American Association of Zoo Keepers, Inc.  
Administrative Offices, 635 S.W. Gage Blvd., Topeka, KS 66606  
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Zoo Infant Development Project - Harmony Frazier-Taylor, Woodland Park Zoo  
Diet Notebook, Mammals, Vol. II - Susan Bunn Spencer, Bronx Zoo

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### 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. All illustrations, graphs, charts and tables should be clearly marked, in final form, and should fit in a page size **no greater than** 15cm x 25 1/2cm (6" x 10"). Literature used should be cited in the text (Brown, 1986) and alphabetically in final bibliography. Avoid footnotes. Include scientific name of species (as per ISIS) the first time it 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.) Black and white photos only are accepted. Color slides should be converted to black and white prints (minimum size 3 x 5 inch) before submission. Clearly marked captions should accompany photos. Please list photo credit.

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 envelope. Telephone or FAX contributions of late-breaking news or last-minute insertions are accepted. However, long articles must be sent by U.S. mail. The phone number is (913) 272-5821 Ext. 31.

### DEADLINE FOR EACH EDITION IS THE 15TH OF THE PRECEDING MONTH

Articles printed do not necessarily reflect the opinions of the Animal Keepers' Forum editorial 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 \$2.00 each.

This month's cover features the South American Tapir (*Tapirus terrestris*) shown with Scott Wright, Head Animal Keeper at the Cleveland Metroparks Zoo, Cleveland, OH. Tapirs are unsocial, cautious, forest-dwelling odd-toed ungulates that are related to the rhinoceros. They have a good sense of smell but poor eyesight. They like to stay near water and are excellent swimmers and divers. Their diet includes aquatic plants, fruits, grasses, leaves, fresh sprouts and small branches. In captivity, tapirs have lived to be 30 years old. This cover is one in a series of "Keepers in Action" drawn by Yoshi. Yonetani of the Zoo Design & Education Lab in Kobe, Japan. Thanks, Yoshi!

## Scoops

and

## Scuttlebutt

### From the President: Board Adopts Mission Statement

During the Mid-year Board of Director's Meeting concluded in Topeka, KS, the Board drafted a Mission Statement for our Association. Most every corporation, business, zoo and aquarium has a Mission Statement upon which they build their goals and objectives. The function of a Mission Statement is to enable any member to be able to quote all or a select part of the statement, when asked to qualify the purpose of the Association. Pending membership comment, the Mission Statement of the American Association of Zoo Keepers, Inc. shall read as follows:

**Mission Statement  
American Association of Zoo Keepers, Inc.**

To provide a resource and a forum of continuing education for the animal care professional and to support zoo and aquarium personnel in their roles as animal caregivers, scientific researchers, conservationists, and public educators. To promote zoos and aquariums as cultural establishments dedicated to the enrichment of human and natural resources; to foster the exchange of research materials, enrichment options and husbandry information through publications and conferences which will lead to a greater understanding of the needs and requirements of all animals.

Please direct any comment to me at the following address: **Ed Hansen, AAZK President, Reid Park Zoo, 1100 S. Randolph Way, Tucson, AZ 85716**

### ADT Forms Available Upon Request

Animal Data Transfer Forms for zoos and aquariums are available free of charge upon request. This is a professional service provided by AAZK. Contact: Bernie Feldman, Burnet Park Zoo, 500 Burnet Park Drive, Syracuse, NY 13204. If your facility is not already using the ADT form, please encourage your administration to implement its use whenever an animal is shipped. Any comments or suggestions about the ADT Form are always welcome.

### Poster Commemorates Jamaican Iguana Survival

The Fort Worth Zoo is offering a beautiful, full-color poster of the Jamaican iguana (*Cyclura collei*), which was unveiled at the recent International Symposium and Workshop on the conservation of the Jamaican Iguana held in Kingston, Jamaica, 22-24 February 1993. The poster is being distributed in Jamaica to heighten public awareness for

## Scoops & Scuttlebutt, *Continued*

the plight of this critically endangered lizard. Once feared extinct, the Jamaican iguana was rediscovered in 1990, and a small remnant population still clings to existence in the undisturbed forests of the remote Hellshire Hills. Superb in color quality, this 17" x 22" poster features three photographs of the Jamaican iguana and its habitat.

A limited number of posters are available for \$10.00 each plus \$2.50 for postage and mailing tube. Proceeds generated by the sale of the posters will directly support the ongoing field research and conservation efforts in Jamaica. To order please send a check or money order for \$12.50 payable to the Fort Worth Zoological Association. Mail to: Rick Hudson, Reptile Dept., Fort Worth Zoo, 1989 Colonial Parkway, Fort Worth, TX 76110.

### Limited Copies of '92 Conference Proceedings Still Available

We have a limited number of copies of the 1992 San Diego Proceedings which may be purchased through AO. They will be sold on a first come/first served basis. They cost \$20.00 per copy plus \$3.00 additional postage for orders outside the U.S. They may be purchased by telephone if you wish to use your credit card (VISA or MasterCard accepted). Mail-in orders should send payment in U.S. Funds only made payable to AAZK, Inc. If you wish a copy of this 255-page publication, you are urged to act quickly as these copies will not last long!



## **Behavior and Management of Captive Chimpanzees Workshop**

**August 17-18, 1993, Sturbridge, MA**

The first annual workshop on the Behavior and Management of Captive Chimpanzees will be held in conjunction with the 1993 American Society of Primatologists Meeting at the Sturbridge Motor Hotel. The purpose of the workshop is to facilitate better communication among persons involved in the management of captive chimpanzees in order to provide more effective and responsible care and research efforts. Those working with chimpanzees in zoos, laboratories and in the field are encouraged to attend.

The workshop will focus on two issues. Introductions of chimpanzees into new groups, including mixed age and infant adoptions will be the topic of discussion on 17 August from 4:30-8:00 p.m. Chimpanzee behavioral training through the use of operant conditioning will be discussed on 18 August from 8:00-11:30 a.m. The agenda for the workshop will include presentations by invited speakers, short reports from individuals representing several facilities, open discussion and action items. The dates and hours of the workshop have been selected so as to overlap as little as possible with other meetings (such as the Ethics and Primatology symposium and the ASP committee meetings).

As space is limited, preregistration is required. For more information and registration materials, please contact Linda Brent, Southwest Foundation for Biomedical Research, P.O. Box 28147, San Antonio, TX 78228, (210) 674-1410, or e-mail lbrent@icarus.sfbr.org.



# Report to the Membership Mid-Year Board of Director's Meeting 26-27 April, 1993, Topeka, KS

The AAZK Board of Directors met in Topeka, KS at the Administrative Offices of AAZK, Inc. on 26-27 April 1993. In addition to the published minutes, the following issues were addressed and either ratified by the Board or placed on the agenda for membership ratification during the National Conference in Atlanta.

**Board of Directors:** The Board has voted to propose to the membership in the form of a By-law amendment an increase in the number of Directors from 5 to 7. With the increase in Directors will come a redefinition of the duties of the President, with a focus on acting more like an Executive Director on behalf of the membership. Pending membership approval of the expansion, to attain the needed members, the Board has voted to retain the candidate with the third highest vote total in the 1993 Board election for a full term. The current President shall step down, but be retained on the Board for two more years until the 1995 election.

**Immediate Past President:** the Board has voted to expand on the roles of the Immediate Past President (IPP) of the Association and utilize that person as a consultant to the Board, requesting their attendance at Executive Session Meetings during the Annual Conference.

**Presidential Election:** The Board has voted to propose to the membership in the form of a By-law amendment, a change in the method of electing the National President. An Executive Committee consisting of the current Board, the two immediate IIPs, the National Election Committee and selected Chairs from the following committees (CPR, By-law, Research Grants, Awards, PEC, Historian, and L.I.N.K.) will be charged with electing the President. Each candidate for President will be required to publish a notice of qualifications and platform in the AKF for membership view. The election will take place every other year, in July, and will be handled by the NEC.

**Administrative Directory:** The Board has voted to initiate a manual of operation for the Association, Committees and Chapters that details the policies of the Association, duly proposed and ratified by the Board of Directors. The Administrative Directory will allow the Board to streamline the adopted By-laws of the Association, letting the membership vote upon the laws of the Association and giving the Board the power to ratify and adopt operating policy.



Ed Hansen, President  
AAZK, Inc.



# Coming Events

## 1993 Western Conference of Association of Fish and Wildlife Agencies and Division American Fisheries Society

July 22-29, 1993

Sacramento, CA

For further information contact: Tim Farley, Dept. of Fish and Game, 1416 9th St., 12th Floor, Sacramento, CA 95814 (916) 653-6194.

## American Federation of Aviculture 19th Annual Convention

August 4-8, 1993

Salt Lake City, UT

For more information, please call the AFA business office at (602) 484-0931.

## American Federation of Aviculture 1993 Red Siskin Summit

August 20-22, 1993

Kansas City, MO

Will include speakers as well as group discussion sessions on breeding the Red Siskin. These finches are being bred through the Red Siskin Project for eventual release in South America. Registration is \$20 and includes a catered lunch and 1993 Siskin Summit shirt. To register or for further information contact: Red Siskin Summit, c/o Yvonne Patterson, 4630 Blue Ridge Blvd., Kansas City, MO 64133 (816) 353-9964.

## 14th Association of Avian Veterinarians Conference

Aug. 31 - Sept. 4, 1993

Nashville, TN

For further information and Paper Criteria, contact: AAV Conference Office, 1625 S. Birch St., Ste. 106, Denver, CO 80222 (303) 756-8380, FAX 303-759-8861.

## 11th Annual Association of Zoo Veterinary Technicians Conference

Oct. 5-9, 1993

St. Louis, MO

To be held at the St. Louis Zoological Gardens. For more information contact: Barbara Jenness, St. Louis Zoo, One Government Dr., St. Louis, MO 63110 (314) 781-0900 or Virginia Crossett, Louisville Zoo, P.O. Box 37250, Louisville, KY 40233 (502) 459-2181.

## 1993 Annual Meeting of the American Association of Zoo Veterinarians

October 10-15, 1993

St. Louis, MO

Special sessions will include government regulations, zoo veterinarian's role in conservation programs, medicine of Australasian species, and group medicine and herd health. Other program sections will include pathology, parasitology, clinical pathology; reproductive technology and contraception, immobilization, anesthesia and monitoring; case reports, exotic pets and practice tips, reptiles and amphibians; primates, carnivores and small mammals; avianspecies; and aquatic animals. Scheduled workshops include comprehensive pest control programs, occupational health and safety, endoscopy, ophthalmology, and basic zoo animal medicine. Individuals interested in submitting a manuscript should contact Donald Janssen, DVM, San Diego Zoo, P.O. Box 551, San Diego, CA 92112 - Phone (619) 557-3933; FAX (619) 557-3959. For other conference information contact Wilbur Amand, DVM, AAZV Executive Director, 3400 Girard Ave., Philadelphia, PA 19104-1196; phone (215) 387-9094; FAX (215) 387-8733.

## Coming Events, *Continued*

### International Marine Animal Trainers Association 21st Annual Conference

November 7-12, 1993

Kailua-Kona, HI

Hosted by Dolphin Quest and headquartered at the King Kamehameha Hotel on the big island of Hawaii. IMATA has issued its FIRST CALL FOR PAPERS in three categories: formal presentations, poster presentations and discussion groups. Abstracts must be submitted by 15 August 1993. For further information contact Julie Scardina-Ludwig, 1st Vice Pres., c/o Sea World of California, 1720 S. Shores Road, San Diego, CA 92109.

### International Conference on Orang-utans: The Neglected Ape

March 5-8, 1994

Fullerton, CA

An International Conference on Orang-utans: The Neglected Ape will be co-hosted by the California State University, Fullerton; the Zoological Society of San Diego; and the Atlanta/Fulton County Zoo Inc. Paper and poster presentations are scheduled for 5-7 March, in Fullerton, CA, followed by a post-conference trip to the San Diego Zoo on 8 March, with attendees participating in workshops and tours. For registration information and abstract guidelines, please contact: Norm Rosen, Dept. of Anthropology, California State University, Fullerton, CA 92634-9480, FAX: 310-798-0576.



## **AAZK Announces New Professional/Contributing Members**

- |  |   |
|--|---|
| Lisa D. Allen, The Utica Zoo (NY)                          | Susan M. Reynolds, Brandywine Zoo (DE)  |
| Cathy Yarbrough, The National Zoo (DC)                     | Christopher Himes, Riverbanks Zoo (SC)  |
| Dawn Moore, Central Florida Zool. Prk. (FL)                | Brendalee Philips, Sea World of Florida |
| Andrew Briskin, Wildlife & Zool. Services (FL)             | Patty-Leon Singer, Miami Metro Zoo (FL) |
| Katrina Donnelly, Lowry Park Zool. Gdns. (FL)              | David Burch, Busch Gardens (FL)         |
| Seana Lammers, Knoxville Zool. Gdns. (TN)                  | Noele McCuistion, Knoxville Zoo (TN)    |
| Robert Boylks, Knoxville Zoo (TN)                          | Michael Widener, Knoxville Zoo (TN)     |
| Danny Tennyson, Memphis Zoo (TN)                           | Adrienne Graves, Memphis Zoo (TN)       |
| Kate Friedman, Memphis Zoo (TN)                            | Lawrence Turn, Memphis Zoo (TN)         |
| Ricky Millican, Memphis Zoo (TN)                           | Micki Hollan, Cleveland Metro Zoo (OH)  |
| Gina Peysha, Cleveland Metroparks Zoo (OH)                 | Patty Richmond, Kings Island WAH (OH)   |
| Gloria Copeland, Detroit Zoo (MI)                          | Colette M. Robertson, Detroit Zoo (MI)  |
| Patricia Khan, Milwaukee Co. Zoo (WI)                      | Judith A. Bryja, Houston Zoo (TX)       |
| Robert Brand, San Antonio Zoo (TX)                         | Lee Ann Anderson, Honolulu Zoo (HI)     |
| Linda Vannatta, Honolulu Zoo (HI)                          | Nancy Ward, Lilac Grove Aviary (ONT)    |
| Lisa A. Hays, Gatlinburg Municipal Black Bear Habitat (TN) |   |

### **New Contributing Members**

- John Shea, ZooTec International, Ltd, New Boston, NH  
Kent K. Fellows, Senca Park Zoo, Rochester, NY  
Melissa Aquilar, Director, California Living Museum, Bakersfield, CA

### **Renewing Contributing Members**

- Debra Burch, Miami, FL  
Minnesota Zoological Gardens, Apple Valley, MN  
Jane Truitt, Pet-Ag, Inc., Elgin, IL  
Hildegarde N. Lane, Lincoln Park Zoo, Chicago, IL  
Folsom Children's Zoo, Lincoln, NE



# Births & Hatchings



**Calgary Zoo (Calgary, AB, Canada)**... reports several first-time hatchings for their facility in 1992: 0.0.2 Blue & gold macaws (*Ara ararauna*); 0.0.1 Goffin's cockatoo (*Cacatua goffini*); and 1.0 Keyserlingii frog-eyed gecko (*Teratoscincus scincus*).

**Mammals** - nineteen-ninety-three has already presented us with some very significant births. January 12th brought us our first Lowland gorilla (*Gorilla g. gorilla*) birth since a stillbirth in 1980. A male, Mbundi [Congolese for peacemaker] weighed 2.78kg at one week. This was the first for the 11-year-old dam and 13-year-old sire. February 28th brought us a second gorilla birth; another male, Ntondo [Congolese for origin] was a first offspring for his 22-year-old mother. The sire for both is "Kakinga", a son of Jambo, a well-known male from Jersey, being the first zoo-born gorilla to be successfully raised by his mother.

Another exciting birth occurred 11 January. Monitored only by camera, two Spectacled bear cubs (*Tremarctos ornatus*) were born. These are the first for this pair and add to our facility's previous record of 9 surviving cubs. *submitted by Mona Keith, Chapter Liaison, Chinook Chapter AAZK, Calgary Zoo, Calgary, AB, Canada.*

**National Zoological Park (Washington, DC)/Conservation and Research Center (Front Royal, VA)** - reports the following significant B&H for January - April 1993:

**Mammals** - 2.2 Maned wolves (*Chrysocyon brachyurus*) [E]; 1.0 Arabian oryx (*Oryx leucoryx*) [E]; 1.1 Sable antelope (*Hippotragus niger*) [E]; 0.0.3 Clouded leopard for (*Panthera nebulosa*) [E]; and 4.13.3 Pere David's deer (*Elephurus davidianus*) [E].

**Birds** - 1.0 Micronesian kingfisher (*Halcyon cinnamomina*) [E, acquired]. *submitted by Kathy Kelly, Chapter Liaison, National Zoo AAZK Chapter.*

**International Wildlife Conservation Park/Bronx Zoo**...the Chapter reports the following significant B&H from January to the present:

**Mammals** - 0.0.1 Douroucouli (*Aotes trivirgatus*) [E]; 1.2 Larger Malay chevrotain (*Tragulus napu*) [E]; 1.0 Lowland gorilla (*Gorilla gorilla*) [E/SSP]; 2.0 Red-handed tamarins (*Saguinus midas*) [E]; 0.0.2 Slender-tailed cloud rats (*Phloeomys pallidus*) [E/U]; 0.0.1 Pale-headed saki (*Pithecia pitheca*) [E]; 0.0.3 Rodriguez flying fox (*Pteropus rodricensis*) [E]; 0.1 Chilean pudu (*Pudu pudu*) [E]; 1.0 Prehensile-tailed porcupine (*Coendou prehensilis*) [E]; 0.1 White-cheeked gibbon (*Hylobates concolor*) [E]; and 0.1 Silvery marmoset (*Callithrix argentata*) [E].

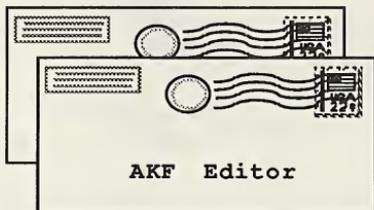
**Birds** - 0.0.4 Guira cuckoo (*Guira guira*) [E]; 0.0.3 Green jungle fowl (*Gallus various*) [T]; 0.0.5 Rothschild's peacock pheasant (*Polyplectrum inopinatum*) [E]; 1.1.3 Red birds of paradise (*Paradisaea rubra*) [E]; 1.0.1 Lesser birds of paradise (*Paradisaea minor*) [E]; and 0.0.1 Crestless fireback pheasant (*Lophura erythrophthalma*) [E].

**Reptiles** - 0.0.2 Travancore tortoise (*Indotestudo travancorica*), 0.0.5 Red tailed rat snake (*Gonyosoma oxycephala*), and 0.0.1 Snake neck turtle (*Chelodina expansa*).

**Amphibians** - 0.0.1 Green and black poison arrow frog (*Dendrobates auratus*) and 0.0.7 *Dendrobates azureus*.

*submitted by Peter Psillas, Chapter President; Pam Hedding, Chapter Liaison; Patti Cooper and Susan Leiter, Ornithology.*





## Letters to the Editor

*(Letters to the Editor are welcome at any time for those wishing to comment on articles published in AKF or about matters pertaining to the Association)*

Dear Editor,

I am writing this letter in rebuttal to the letter published in the AAZK Forum, April 1992, by Patty Pearthree on her travels to Africa. This same letter was also sent out along with the information package on "Bowling for Rhinos" for this year's event, signed "missing Africa already". In addition, I feel that putting this letter in the "Bowling for Rhinos" package is using space for personal opinion as opposed to fact.

Upon discussing this with many of my co-workers I realized that I was not alone in my interpretation of Patty's comparison of her trip to Lewa Downs and the "safari" trip taken by many others, including myself, where (as Patty phrases it) "It wasn't like a regular safari where you have to stay in a vehicle and watch lions that are bored with people".

I was offended by this remark. Visiting Africa was a dream of mine that I never thought would become a reality. Through much research and planning this dream did come true. There was nothing on this adventure that was left out and I will always treasure the memories and the hundreds of pictures I returned with. I can only assume that Patty has not been on both kinds of excursions or she would never have made the remark that the vehicle safari is any less exciting than the trip to Lewa Downs. While I was on safari throughout all of Kenya, I experienced an almost spiritual feeling as I took in the beauty around me.

The remarks made by Patty on how this trip can't possibly compare to the one to Lewa Downs is unfair and an injustice to anyone who has been fortunate enough to experience this type of safari. That is what inspired this letter. I would hate to think that someone planning this adventure had changed their mind thinking that they would be visiting a zoo atmosphere or something like it. They couldn't be more wrong.

I too saw wildlife of every kind including monkeys, baboons, warthogs, cape buffalo, impalas, gazelles, gerenuks, zebras, waterbucks, kudus, elands, giraffes, elephants, hyraxes, mongoose, leopards, and rhinos. In addition to this list there were many vultures picking clean a zebra carcass, a hino with her calf, two million plus flamingos along the shoreline of Lake Nukuru, and so on.

Other events scheduled in this "boring" trip were balloon rides over the Masai Mara for an aerial view of the wildlife with a champagne brunch waiting for us upon landing. We were also fortunate enough to enter a Masai village and were invited to enter their huts and even witness the warriors while they danced and chanted hunting songs of bravery. Expanding on this we were entertained nightly, after fabulous dinners at the lodges, by the local tribes people with traditional song and dance.

I understand that Patty is missing Africa. I am too. I would be honored to experience the trip to Lewa Downs and get my hands dirty helping conservation, but that would by no means make my safari trip any less of a wonderful experience. It should also be pointed out that the money taken in by the African Government through tourism of any kind benefits the wildlife throughout Africa as a whole and keeps sanctuaries and national preserves protecting the animals that otherwise may not exist, which is what AAZK is all about.

Missing Africa, too.

Renee Belknap-VanDerHeuvel  
John Ball Zoo, Grand Rapids, MI



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# AAZK Board Overseers: Who are they and what are their responsibilities?

This is the second in a monthly overview of the responsibilities of each member of the AAZK Board of Directors. Each Board Member is assigned committees and/or projects to coordinate or oversee. These oversights are managed on the basis of professional communication with the Board Overseer, a direction of goals by the Overseer/Board, and the collaborative efforts of committees, chairs and the membership.

The Overseer also coordinates mid-year and annual reports to the Board for consideration of budget needs, appointees, resignations and accounting of activities for report to the membership. The Overseer is essentially the manager of the projects/committees assigned to him/her and sees to the best interest of the AAZK.

This month we'll review the responsibilities of Board Member Mard de Denus, Assiniboine Park Zoo, Winnipeg, Manitoba, Canada.

## International Affairs

Coordinator: VACANT

The intention of this membership service is two-fold. The original intent was for contact to be made between AAZK and like or sister organizations around the world. Journals, annual reports, educational materials and other information is exchanged and shared between these groups. Contact has been established with the Association of British Wild Animal Keepers (ABWAK), the Australasian Society of Zoo Keepers (ASZK), the Dutch Association of Zoo Keepers and other international zoo or keeper affiliated organizations such as Zoo Outreach Organization in India (Z.O.O.). A column called International Zoo News appears periodically in AKF.

A second aspect of International Affairs is the Foreign Keeper Sponsorship Program. This service introduces AAZK to specific keepers in foreign countries and supports those persons with educational material and resource information for their benefit. There are currently 15 foreign keepers sponsored by AAZK Chapters or individual AAZK members.

Goals of this service are to improve communication between all keeper-oriented organizations and to facilitate the real exchange of information and ideas amongst all interested groups. The establishment of liaisons or communication officers within these groups to coordinate a joint effort and plan for information exchange is a prime goal. In addition, promoting an awareness of AAZK within international institutions and facilities is also important. This may be achieved by increasing international and library memberships.

Anyone interested in pursuing the objectives and goals of this service as International Affairs Coordinator is asked to contact Mark de Denus.

## Exhibit Design Resource Notebook

Status: On Hold

Coordinator: VACANT

The Exhibit Design Resource Notebook is a project that stems back to 1983, and, historically, even further. Keepers have always been interested in their exhibits; how to maintain and how to improve. The considerations have been from a number of points of view - the animals, the keeper, the visitor, and the zoological facility. The purpose of this EDRN project is to gather physical and maintenance information on existing single species exhibits in zoo facilities and to compile this material, eventually, into a resource notebook (much along the same lines as the AAZK Zoo Diet Notebook). This information could then be used as preliminary resource information for exhibit renovation, modification or planning. Data sheets for collecting this information have been sent out (with fairly poor return) and some advertising has been done in AKF (Sept. 1991 issue).

## AAZK Board Overseers: What are their responsibilities? *Continued*

Coordinators Jon Brangan and Eric Krussman presented a workshop and poster paper during the National Conference in San Diego.

During the Mid-Year Board Meeting in Topeka in April '93, the Board of Directors decided to put this project on hold. It was determined that the project needed a fresh approach and evaluation of its application and direction. The Board will reconsider the viability of this project at the National Conference in Atlanta.

If any member has any interest or views regarding coordinating this interesting project, please contact Mark de Denus.

### Liaison and Information Network for Keepers (LINK)

Coordinator: Mark de Denus, Board of Directors

Regional Coordinators: see listing in *AKF*

The intention of LINK is to act primarily as a direct communication network between AAZK Chapters and the parent or central organization. It also serves to increase communication to the general membership by facilitating the needs of project or committee persons. The main players in the network are the Coordinators, Regional Coordinators and Chapter and Institutional Liaisons.

The main focus of the LINK system for the past year or so has been the AAZK Chapters and their organization. The current status of all Chapters as tax-exempt, no-profit entities has required intense focus on these groups for registration, chartering and operation. The parent organization, as well, has had to adjust radically to oversee the responsibilities for the Chapters and to formulate policies and procedures for function and operation of subordinate groups. The LINK BULLETIN was also conceived as a way to directly inform and instruct Chapters regarding requirements and responsibility.

There will be continued progress in regard to dispersement of information to Chapters and members. The LINK BULLETIN will try to address aspects of professional operation of Chapters (minutes, rules of order) and address the use of AAZK forms (Memorandums of Agreement, Product/Project Proposal Forms) and fundraising and other surveys.

The Administrative Directory should be ready in the near future for use as well. This will be a culmination of all relevant information for, and about, the AAZK organization. Much of this info has been derived from the Manual of Resources data collected over the past few years. For inclusion as well will be general information and policies, directives, procedures and definitions for all AAZK officers and members to reference.

A main objective for this year will be to advance and promote the position of the Regional Coordinator. Another objective is to help coordinate and assist AAZK projects with information exchange and assistance.



## Information Please

The Lee Richardson Zoo is wishing to replace the net on top of their open flight aviary with a stronger, finer material. Squirrels and snow build-up on the existing net have created a constant maintenance problem. We are now looking for a source for 24-gauge or finer stainless steel chicken wire with a 3/4 inch mesh. If you currently use a product such as this or know of a supplier, please send any information to: Jeff Bullock, Lee Richardson Zoo, P.O. Box 499, Garden City, KS 67846.

# Chapter News

## Smoky Mountain AAZK Chapter

New officers for 1993 are:

President.....Stacy Lester  
Vice Pres.....Gene Peacock  
Secretary.....Patricia F. Stroud  
Treasurer.....Rocky Sylar  
Chapter Liaison.....Teresa Collins

The Smoky Mountain AAZK Chapter had its first official meeting in April to reorganize and elect new officers and welcome new members.

--Patricia F. Stroud, Secretary

## San Diego AAZK Chapter

The flowers are blooming and the scent of orange blossoms is in the air. Spring is here and once again the cycle of renewal has taken place. The new Board has taken their seats and duly volunteered their new officers to their posts. Steve Castillo is our new President. Backing him up are myself (wearing two hats as VP and Liaison), Nicki McGahey as Secretary, and Vicki Steele as Treasurer. We will try and do as good a job as the previous Board.

Scott Woodward is getting our annual "Bowling for Rhinos" going and Nicki has volunteered to get teams together at the zoo. Nicki is very enthusiastic and no one can refuse her--she signed up five bowlers in her first day!

The Board voted to buy a little something with the money from our Conference (equipment for the Bighorn Sheep Project and a slide projector for the Chapter).

Unfortunately the cycle of renewal has been interrupted in some areas of the world by human interference. At our March meeting Karen Barnes (CRES Keeper at the Wild Animal Park) spoke movingly about the effects of poaching on the elephant population at Ruaha National Park. Karen and her husband Richard recently went there to survey the population. A whole generation of

elephants is missing. Richard is continuing to study the effects of this gap on the population.

--Christina Simmons, Chapter Liaison

The April meeting of the San Diego Chapter featured Georgeanne Irvine, our Public Relations Manager, speaking about her trip to Sumatra to rescue Barakas, a male Sumatran rhino. He was being captured due to habitat loss on the impoverished island. George, as we call her, had a very interesting and professional video of the trip as well as CNN new clips and personal slide show.

We are getting ready for "Bowling for Rhinos" and hope to have a huge success in the fundraising. We have been donating to local projects like the Bighorn Sheep Project to which we gave \$400 for a telescope and tripod for observation. Our monthly newsletter, *The Keeper*, is getting bigger and better all the time, thanks to Andrew Simmons and all of the creative authors. We are hoping the more impressive, professional newsletter will help bring in more memberships.

--Nicki McGahey, Secretary  
Acting Liaison

## Columbus Chapter AAZK

New officers for 1993 are:

President..... Dianna Frisch  
1st Vice Pres.....Joe Rindler  
2nd Vice Pres.....Beth Pohl  
Secretary.....Sally Sickles  
Treasurer.....Pat Currie  
Chapter Liaison.....Lori Monska-Wright

With the proceeds of our recycling program we distributed \$6,000.00 to various conservation organizations. Included in this was \$1500.00 to the Hurricane Andrew Zoo Crisis Fund.

We held an Appreciation Dinner for our maintenance, horticulture and visitor services departments in October. Zoolympics was the evening's entertainment. This was a great event to end a busy season on and will be repeated this year.

The officers designed the 1993 calendar of events in January and it looks to be another good year.

--Lori Monska-Wright, Chapter Liaison



by Kayla Grams and Gretchen Ziegler  
Keepers, Topeka Zoo

Hey reptile, fish, bird, hoofstock, and small mammal keepers ! We're not ignoring you! We just don't have much material submitted for these animals. It seems that most of the column focuses on carnivores and primates (which we appreciate!) but we would like the column to be useful to all keepers. Send us your ideas!!!

**ALASKAN SEA OTTERS** - We dump buckets of ice cubes in various places around the otter exhibit, and hide frozen butter clams in the ice piles. The otters dig through the ice to find the food and they also like to roll and play in the ice as well. It's a great opportunity for the public to see the animals out of the water.

-- Cynthia A. Alia, Senior Mammalogist  
Oregon Coast Aquarium

**CATS** - Used in off exhibit areas - hanging scratch logs, sawdust boxes, Boomer Balls® and large pieces of browse to tear up.

-- Sun Bear Forest Keepers  
San Diego Zoo

**HOOFSTOCK** - Large plastic barrels with chains inside for animals to shove around and gore. (Eland, Elk, Bison, Zebra). Also, large tree roots from a demolition company, or forestry dump to crawl, rub on, and gore etc..

**BEARS** - Whole salmon (15 lbs) to bears. We get them at a nearby hatchery.

-- Donna Versteeg  
Walk in the Wild Zoo, Spokane, WA

**PRIMATES** - Rubber boots, old shoes with laces tied in a bow. Primates spend a long time undoing laces, picking at them, and sometimes even trying to thread them.

Old sheets, blankets, quilts, pillow cases, and towels, to hide under, drag around, and generally cuddle up in.

Cardboard boxes of all sizes, from kleenex up to refrigerator size, to hide in, tear apart, make noises with, and sit in.

Spread food items such as ketchup, peanut butter, jam, or mustard on walls of exhibit for an extra taste test and olfactory stimulation.

Cut up old unusable hose pieces for animals to pick at and play with.

--Carol Sharp  
Hogle Zoo, Salt Lake City, UT





# Book Review

## Wild Dogs: The Natural History of the Nondomestic Canidae

By Jennifer W. Sheldon

Academic Press, 1250 6th Ave., San Diego, CA 92101. 1992

248 pgs. Hardback. \$49.95.

*Review by Karen Anderson  
Brookfield AAZK Chapter  
Brookfield, IL*

Wild Dogs is an up-to-date reference on the Canidae, containing much natural history information. The majority of the book is organized with each chapter dealing with one genera of wild dogs. Within each chapter the following information is given on each of the 35 species: introduction, distribution, habitat, physical characteristics, taxonomy, diet, activity, reproduction, social organization, and behavior. This layout makes finding specific information on a particular dog relatively easy. Within each section, the author makes numerous references to work done on that particular species.

The information is current, and comes from both field and captive studies. The wild status of most species is discussed briefly, and some captive breeding programs are presented. Detailed physical characteristics are given, including measurements and coloration. The taxonomy sections are interesting. The arguments for assigning each dog to a particular genus or species are presented within the chapters. The author takes a conservative approach to taxonomy, but does make reference to other conflicting viewpoints. At the beginning of the book there is a brief discussion of taxonomy which includes a handy chart outlining the classification used in this book. The author notes here that neither Dingos nor New Guinea wild dogs are included in the book, since both are directly descended from domestic dogs.

Good detailed information can also be found in the sections on diet, activity and reproduction. Again, information comes from both captive and field studies. For a few species, inadequate information is available, but the author presents what little can be found. The section on social organization and behavior presents material on social structure, territory, home range, scent marking, vocalizations, and does some comparisons between sympatric species. It is interesting to discover that a number of species are quite flexible in their social structure depending on food availability.

The last quarter of the book is the bibliography. It is quite extensive, and should be quite useful to those who want to investigate a species in more detail.

Overall, I would recommend this book, particularly to anyone who works with nondomestic dogs. This is not a book that is easily read from cover to cover, and in fact a reader can sometimes get bogged down with so many references within the text. Despite this minor flaw, this book is an excellent reference and well worth the price.

## *A Parrot Without a Name: the search for the last unknown birds on earth*

By Don Stap, 1991

University of Texas Press, P.O. Box 7819, Austin, TX 78713

255 pgs. Paperback \$14.95

*Review by Edward O'Brien  
Senior Keeper  
Franklin Park Zoo Boston, MA*

In his book, A Parrot Without a Name, author Don Stap details a collection expedition to Peru's Cordillera Divisor led by Louisiana State University ornithologist, John O'Neil. O'Neil is a former director of LSU's museum and is an expert on Peruvian birds, having been involved in the documentation of eleven new species in that country since 1963.

A veteran of these forays into Peru's tropical forest, O'Neil chose the Cordillera Divisor because of the uniqueness of its surroundings. This low mountain range has been

## Book Reviews, *Continued*

separated by lowlands from the Andes mountains for 10,000 years and promised to be a habitat for rare, scientifically undocumented bird species.

Stap's narrative alternates as an adventure travelogue, a history lesson, and an ecological ethics exercise. He balances the team leader's frustration at their young boatmen, who keep dumping the canoes, with the delight he feels as he views a newly documented species. Stap digs deeply and gives a concise history of the historical exploration of Peru. This book underscores the need for further exploration and study of the tropical forests that are quickly becoming a memory.

This book will appeal to everyone who has an interest in tropical biology, especially bird enthusiasts. The author gives a realistic account of the rigors and rewards of the expedition, and deals honestly with the uncomfortable situations that arise. He conveys the internal conflict the team feels when their guide returns to camp with supper, a dead Howler monkey and her crying baby:

"no one can stand to be near the scene. We are certainly in no position to judge our Peruvian guides, (we) gringos who are accustomed to buying our dinners wrapped in cellophane and who now with the righteous manifest of science tucked in our back pockets, have come to collect a thousand or more birds."

He also brings to light the apparent contradictions of biologists who fight for protection of the very species they themselves kill. I must admit my own naivete regarding this aspect of the profession, but as Stap points out, the differences between species is often so slight that they must be studied by hand.

For contrast, Stap offers the example of Alexander Skutch as an ornithologist who spent years studying tropical birds but did not collect skins. The author does not judge either method, but merely presents the alternatives and allows the readers to make up their own minds.

I closed this book with a greater respect for the people whose love of nature and of knowledge sustain them through the cultural, personal, and professional trials they encounter on tropical expeditions.



## **WWF To Award Grants To U.S. Local Nonprofits For Conservation Activities**

For the fifth year in a row, World Wildlife Fund will award small grants to local, regional, and statewide nonprofit conservation and citizen groups for innovative projects to conserve nature. These "Innovation Grants" will average between \$6,000 and \$7,000, with maximum grants of \$8,000. Only U.S. organizations are eligible. The program is highly competitive.

Preference will be given to projects that address conservation of wetlands, endangered species, neotropical migratory birds, coastal resources, and protected natural areas. The emphasis of the program is to spur new approaches to conservation and sustainable development; creative proposals are encouraged.

Examples of eligible activities include assessing natural resources, building public support for conservation, developing innovative regulatory mechanisms and cooperative resource management strategies, and forging partnerships to promote conservation and sustainable development.

The deadline for grant applications is July 1, 1993. Announcement of awards will be made in early October. For a brochure describing the program, write to: Innovation Grants, U.S. Land and Wildlife Program, World Wildlife Fund, 1250 Twenty-Fourth Street, NW, Washington, DC, 20037.



# Legislative Outlook

Compiled by  
Phyllis Nilson-Wojcik  
Legislative Advisor



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## Endangered Species Act

As we celebrate the 20th anniversary of the ESA, and the reauthorization of the ESA approaches, we need a final push, so let your voice be heard! The House of Representatives' bill, HR 2043 had 54 cosponsors as of May. The Senate has a companion bill, S 921 with 12 Senators as cosponsors. Write your Representatives and Senators and urge their support of HR2043 and S 921.

U.S. Senate  
Washington, DC 20510

U.S. House of Representatives  
Washington, DC 20515

>National Wildlife Federation's Enviro Hotline, week of 11 May 1993

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## Ancient Forest Protection

In June, three separate task forces set up to deal with science, economics and policy will offer the President options for crafting a strategy to deal with forests in the Northwest. With only ten percent of the ancient forests left - mostly in national forests - time is running out. Call or write President Clinton today, urging him to: 1) provide permanent protection for all remaining forests, including forests east of the Cascade Mountains, 2) preserve salmon fisheries and 3) oppose industry efforts to weaken our nation's forestry and environmental laws. Call (202) 456-1414 or write:

President Clinton  
The White House  
Washington, DC 20500

>National Wildlife EnviroAction May 1993

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## Wetlands

Our nation's wetlands provide critical habitat for countless species of wildlife, serve as filters for pollutants, and replenish underground aquifers. Largely due to constituent letters, the Wetlands Reform Act of 1993, HR 350, has gained 68 cosponsors since its introduction by Don Edwards (D-CA). An opposing bill, HR 1330, deceptively named "The Comprehensive Wetlands Conservation and Management Act of 1993", was introduced by James Hayes (D-LA) in mid-March and has quickly gained 76 cosponsors. While the Edwards bill would preserve the quality and quantity of wetlands, the Hayes bill proposes to undermine current standards for wetland protection, including a measure that would eliminate fifty percent of the nation's wetlands from protection. Write your representative asking him or her to cosponsor HR 350, the Wetlands Reform Act of 1993. Write c/o House of Representatives, Washington, DC 20515.

>National Wildlife Federation EnviroAction May 1993





The Zoo Atlanta AAZK Chapter  
Invites You to Join Us for the  
20th National AAZK Conference  
October 10 - 14, 1993  
Sheraton Colony Square Hotel  
Atlanta, GA



1993 National AAZK Conference

October 10-14

Hosted By: Zoo Atlanta AAZK Chapter  
800 Cherokee Avenue  
Atlanta, GA 30315

Conference Registration Form:  
(Please one per registrant)

Name: \_\_\_\_\_

Street Address: \_\_\_\_\_

City, State/Province: \_\_\_\_\_ Zip \_\_\_\_\_

Zoo Affiliation: \_\_\_\_\_

Name & Title for Badge: \_\_\_\_\_

Primary field of interest: \_\_\_\_\_

	Yes	No	
AAZK member .....	_____	_____	
Committee Member .....	_____	_____	
Submitting a paper .....	_____	_____	
Vegetarian .....	_____	_____	Type: _____
Participating in Zoolympics .....	_____	_____	
Bringing an auction item .....	_____	_____	
Interested in a T-shirt .....	_____	_____	Size: <u>  </u> S <u>  </u> M <u>  </u> L <u>  </u> XL

Please check boxes of fees you will be paying and events you plan to attend:

Full Conference rates	Daily Conference Rates
Member \$95 _____	Monday - \$25 _____ Wednesday - \$25 _____
Member spouse - \$95 _____	Tuesday - \$30 _____ Thursday - \$25 _____
Non-Member - \$110 _____	Icebreaker-\$10 _____ Banquet - \$35 _____
Late Fee* - \$10	Late Fee* - \$3

\*Late Fees charged after 9/1/93 Total Amount Due \_\_\_\_\_

Daily registrants MUST register 48 hours prior to day or event.  
Full Conference rates include all activities, meals and transportation.  
Daily registrants must register for the Icebreaker and Banquet separately.

Conference Trips: Please check the trip you are interested in joining.

   A one day trip to Chattanooga Aquarium on Saturday, October 9.  
   A weekend trip to Cumberland Island and White Oak Plantation, Friday through Monday, October 15-18.

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# AAZK Publications Order Form

I wish to order the following AAZK Publications:

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Member (U.S.)	\$26.50	\$ _____
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## Zoonotic Diseases, 2nd Edition

Member	\$6.50	\$ _____
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# Publications Available from the American Association of Zoo Keepers, Inc.

## AAZK Diet Notebook, Mammals, Vol. 1

This reference work contains 325 diets representing 213 species and subspecies from fourteen participating institutions. The diets are arranged by taxonomic order using ISIS numbers in a durable and attractive three-ring D-style binder. Each Diet Response Form included contains the following information: common name, scientific name, ISIS number, the contributing individual, their institution, how long the diet has been used, whether the animals have bred while on the diet, the diet ingredients, instructions for preparation, notes and remarks, special considerations and nutritional analysis (if available). The Diet Notebook is a copyrighted publication of AAZK, Inc. and is now in its second printing. Cost of the Diet Notebook is as follows: AAZK Members \$40.00; Nonmembers \$55.00; and Institutions \$70.00. These prices represent prepaid order prices and include postage for the U.S. and Canada. Overseas orders should contact AAZK for additional postage charges.



## Biological Values for Selected Mammals, 3rd Edition

The Third Edition of this important reference work is published in an 8 1/2 by 11-inch format and is comb-bound. It contains information on 457 species of mammals and covers values ranging from geographic range and habitat to Circadian cycle, size and measurements, reproductive data, life expectancy, body temper-

range maps. The volume contains a complete bibliography of the references utilized. Prices are: AAZK Member \$26.50 U.S. &

\$32.50 - Canadian and Overseas; Nonmember - \$35.00 U.S. and \$45.00 Canadian and Overseas. Prices include postage.

### Zoonotic Diseases, 2nd Edition

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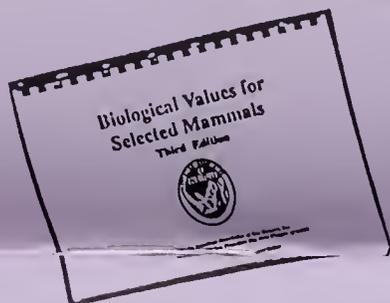
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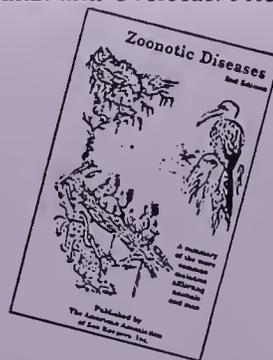
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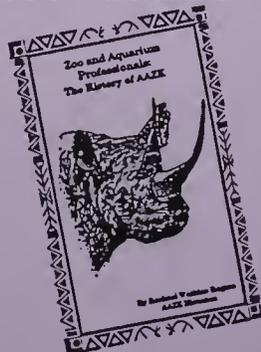
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# Exhibition and Breeding of Aardvarks at the Philadelphia Zoological Garden

By Gina Lynne Wilson

Former Lead Keeper/Small Mammal House-PZG  
Current Coordinator: Earth Tomorrow - An Urban Challenge  
National Wildlife Federation, Vienna, VA

## Introduction

The Aardvark (*Orycteropus afer*) is the only living member of the order Tubulidentata. This nocturnal, solitary animal (whose name translates to earth pig) has such unique features that it is seldom confused with any other species. The Aardvark possesses a long snout, sharp, long claws, a thick muscular tail and large ears. The body is very stocky. Weight can range from 40-70kg. The tongue is long - measuring about 30cm in length.

The teeth are unique in that they are rootless, grow continuously and have no enamel. Each tooth consists of dentine columns that appear as tubes on the base of the tooth (Shoshani, Goldman and Thewissen, 1988). Therefore, the name Tubulidentata meaning "tube-teethed".

Aardvarks are found in sub-Sahara Africa. They inhabit burrows in open plains, grasslands and dense forests. Burrows are dug for shelter and safety from predators. They avoid areas where there is hard soil, rocky ground or any other areas that are difficult to dig.

Aardvarks are rarely found in zoos today. Only eight zoos worldwide exhibit this unique animal. Very little has been written on managing the Aardvark in captivity. This paper describes the diet, exhibition and captive management of Aardvarks at the Philadelphia Zoological Garden (PZG).

## Diet

The Aardvark's diet consists mainly of termites during the wet season and ants during the dry season (Shoshani, Goldman and Thewissen, 1988). The Aardvark uses its sharp claws to break open a termite mound. It then collects the insects with its long, sticky tongue. The Aardvark receives a large amount of protein from ants and termites. For this reason, our captive diet was formulated to also include high levels of protein. The PZG's Aardvark diet is shown in Table 1.

**TABLE 1**  
**Philadelphia Zoological Garden Aardvark Diet**  
**(one adult animal/day)**

20 oz. of Mainstay™ dry dog food (soaked)  
1 can of beef dog food box of Gerber® Mixed Baby Cereal  
4 oz. of vanilla yogurt (increased to 8 oz. during lactation)  
1 Tbsp. of peanut oil  
1 crushed Geval T vitamin tablet  
20 oz. water  
All ingredients are placed in a blender  
and mixed until soupy.

### **Captive Management**

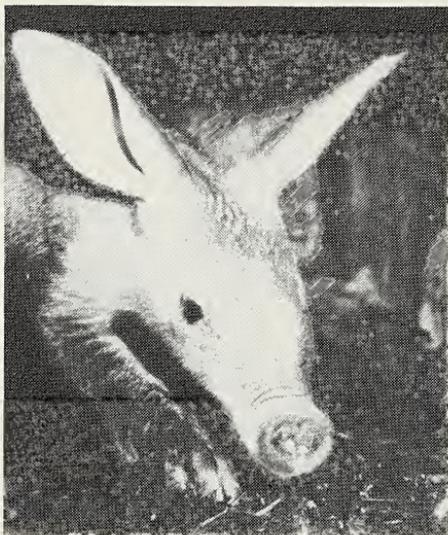
At the PZG, a pair of Aardvarks are exhibited in the rotunda exhibit of the Small Mammal House. It is half circular in shape, with a radius of 6.3 meters. Fiberglass rockwork surrounds three sides of the exhibit. The fourth side is a public viewing area where a waist high plexiglass wall and handrail form a barrier. There is a small den within the exhibit. A Plexiglass window in the ceiling allows visitors to observe the pair in the den.

The exhibit is furnished with various sizes of logs. A large plastic trash can and cardboard boxes have been added to keep the Aardvarks "busy" during public visiting hours. Drinking water is provided by a constantly running fiberglass pool 29.3cm deep in one corner of the exhibit.

The concrete floor is bare except for a small section in the rear of the exhibit that is covered with mulch. The Aardvarks defecate and urinate in this spot. Daily maintenance of the exhibit is effortless in that debris can be hosed directly into a drain. A deodorizing cleaner is used on the cage floor daily. On a weekly basis, the entire exhibit is disinfected and the mulch pile is changed.

Temperature is not easily regulated in this exhibit. Summer temperatures can reach as high as 90° F. During the winter months, the temperature can drop as low as 65° F.

The rotunda is shared with the Echidna (*Tachyglossus aculeatus*) and the Slender-tailed meerkats (*Suricata suricatta*). The lighting schedule is 0800-1700 hours during the winter months and 0900-1800 hours during the summer months.



**The Aardvark (*Orycterops afer*) is the only living member of the order Tubulidentata. The Philadelphia Zoological Garden is one of only eight zoos in the world to exhibit this unusual species. (Photo by Steve Walker, courtesy of the Philadelphia Zoological Garden)**

### **Reproduction**

In December of 1988, the PZG received a male Aardvark on breeding loan from the Cincinnati Zoo. The Aardvark was placed on exhibit with our female Aardvark. During a total of 25 hours, observations on estrus cycle, courtship and breeding behavior were made. Lengths of observation times ranged from 30-60 minutes.

The female exhibited an increased level of activity following the introduction of the male. For example, the female became active three to four hours earlier than usual.

## Exhibition & Breeding of Aardvarks at PZG, Continued

During the introduction period, the male behaved submissively. On many occasions the male was observed leaving his feeding area when the female approached him. The male was also observed avoiding the female's den area. By contrast, the female aggressively sought out the male. She was observed mounting the male numerous times and continually sniffing his genitals.

As each day passed, the male's interest in the female became more evident. By the fifth day the male was initiating contact with the female.

After the initial introduction, the most common form of physical contact between the two was nose to nose contact. This activity was replaced with nose to genital contact with each animal participating equally. On the eleventh day, the male was observed mounting the female.

Following the arrival of the male aardvark, I was able to determine the length of the estrus cycle of our female aardvark. I found her estrus cycle to occur monthly lasting 3-4 days. A small amount of discharge from the vulva was present during the first day of estrus. The discharge became heavier and the vulva more enlarged on the 2nd and 3rd days. The last day of estrus was characterized by a small amount of discharge again and the vulva returning to normal size. During estrus I found there to be a noticeable increase in appetite. At the beginning and end of the cycle, activity was high. During the 2nd day of estrus the female was inactive; leaving her den only to eat. The male's interest in breeding grew significantly during the female's estrus cycle. A total of 26 mounts in a 40-minute observation period was once recorded - though penetration was never achieved.

In August of 1989 only eight months after the introduction, there was a noticeable difference in the size of the female's anterior pair of mammary glands. The nipples had enlarged to twice their normal size. There had also been a continuous increase in appetite and decrease in physical activity. An ultrasound confirmed the female was pregnant.

Using a successful design from the Cincinnati Zoo (Mike Dulaney - personal communication), a large plywood nestbox with a removable top for cleaning was constructed. The nestbox measured 122cm x 122cm x 76.2cm. The opening measured 61cm both in length and height. We hoped it would provide the female aardvark with the privacy she needed. The nestbox was placed in the exhibit in an area that was secluded from the public. Around this time we were able to express colostrum from the anterior pair of nipples.

Near the end of the gestation period, the female began to lose hair on the dorsal surface around the base of the tail. Kingdon (1974) explains that the larger, brighter area of white on the female aardvark's tail tip enables the baby to stay close to its mother during her nightly travels. The hair loss that I observed exposed a larger area of white which may assist the young even more in the event that it is lost.

The female was weighed every four weeks. If in fact the gestation period of an aardvark is 7 months, then we could assume July was the month of conception. At that time the female weighed 52.1 kg. There was a total weight gain of 8.2 kg during pregnancy. The largest weight gain was during the month of October. A total of 4.8 kg was gained. Afterwards weight gain began to decrease. By the 7th month the female weighed 60.3 kg (Table 2).

On 5 February, 1990, the male aardvark was removed from the exhibit due to concern that he might injure the newborn baby. Four days later the female gave birth to a male that weighed 1.7 kg. The placenta was found in the nestbox. The female was caring for her baby and by the second day the baby had gained .15 kg.

On the morning of the third day, it was discovered that the baby had abrasions on the soles of his feet and underneath his tail. Damage was believed to be caused by the baby walking around on the exhibit's concrete floor. The baby's temperature had dropped and he no longer seemed interested in nursing and subsequently, lost weight. Five days after the baby was born, it died. The cause of death was exposure and failure to feed.

**Table 2**  
**WEIGHT GAIN DURING PREGNANCY**

<b>MONTH</b>	<b>WEIGHT</b>
<b>JULY</b>	<b>52.1 kg</b>
<b>AUGUST</b>	<b>52.6 kg</b>
<b>SEPTEMBER</b>	<b>54.0 kg</b>
<b>OCTOBER</b>	<b>58.8 kg</b>
<b>NOVEMBER</b>	<b>58.8 kg</b>
<b>DECEMBER</b>	<b>59.0 kg</b>
<b>JANUARY</b>	<b>59.1 kg</b>
<b>FEBRUARY</b>	<b>60.3 kg</b>

As a result of our experiences, we planned to reconsider three important factors to aid in the survival of the next baby. Nestbox design was an important concern that we would reconsider for the next offspring. Preventing the next baby from leaving the nestbox was a major goal of ours. If the bottom lip of the nestbox was raised a considerable amount, it would hinder the baby from leaving the nestbox.

Substrate amount is a factor that should be mentioned. The soles of the baby's feet and underneath its tail were covered with abrasions. During the night it wandered around the cage with its mother. Covering the entire floor with mulch, pine or wood shavings would aid in keeping the baby from wounding any part of its sensitive skin.

Following the next aardvark birth, the temperature of the nestbox area will be monitored hourly to ensure it is warm continuously. The ideal temperature range is from 75 - 85° F.

Approximately six months after the birth of the previous aardvark, the female became pregnant again. Unfortunately, this baby was born one month prematurely and also died.

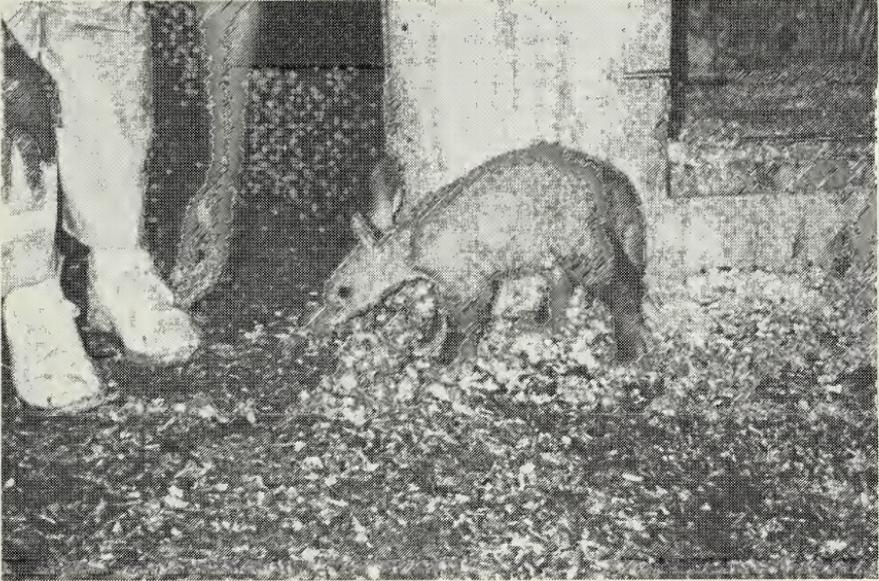
During November 1991, it was evident that our female aardvark was pregnant again. The enlargement of the anterior pair of mammary glands enables us to once again detect pregnancy. An ultrasound confirmed the presence of a fetus. Lactation commenced six weeks following the discovery of pregnancy.

Approximately three months following detection of pregnancy, the male aardvark was transferred to another holding facility. A new nestbox was constructed and placed in the exhibit. The dimensions of the nestbox were similar to the previous one with the exception of a higher bottom lip. The lip was hinged and could be raised an additional 12.7cm, making it impossible for the newborn aardvark to leave the nestbox. Since we determined the impending parturition was to occur during March, we hoped the exhibit temperature would not be a concern. Mulch was sprinkled throughout the exhibit in preparation for the newborn.

On 27 March, 1992, a newborn aardvark was discovered in the exhibit cage. It was sexed as a male and weighed 1.67 kg. The baby was named "Bill" after the Philadelphia Zoo's late

## Exhibition & Breeding of Aardvarks at PZG, Continued

president. The female seemed apathetic towards her infant and consequently, it was decided that zoo staff would care for the newborn until the next morning. During the second day, the placenta was passed and the baby was reintroduced to its mother. The mother accepted the newborn (the passing of the placenta may have favorably affected the maternal instincts of the female) and with constant nudging from the female it began to nurse on its own. The baby was observed nursing 4-7 times during an 8-hour observation period. Sessions would last 15 seconds to 9 minutes with constant nipple switching.



**"Bill", a 1.0 Aardvark, was born at the Philadelphia Zoological Garden in March of 1992. The Zoo staff initially had to pull the infant due to apathy on the part of its mother, but it was eventually reintroduced successfully. (Photo supplied by the author)**

Within a week the aardvark weighed 2.72 kg (See Growth Chart for Aardvark "Bill"). Around the age of six weeks, the baby was observed sampling the adult gruel diet. At 13 weeks it was obvious the baby was beginning to wean. He was often observed nursing midday, then eating the adult diet four hours later. Approximately one month after the commencement of the weaning period, the sire was reintroduced to the mother and baby. By four months of age the amount of nursing decreased considerably. At six and a half months, the baby aardvark was completely weaned.

Through trial and error we were able to determine an effective means of breeding and initiating mother-rearing in our aardvarks. With the decreasing number of aardvarks in captivity, it is even more important that zoos adopt successful aardvark husbandry techniques. This is the only way we can ensure the survival of this unique species.

### **Summary**

- 1) There are only eight zoos worldwide that exhibit aardvarks. The PZG exhibits a breeding pair of aardvarks in a rotunda exhibit cage in the Small Mammal House.
- 2) The PZG's aardvarks diet is high in protein. An additional diet during lactation has been formulated.

**Exhibition & Breeding of Aardvarks at PZG, Continued**

- 3) During the winter of 1988, a male aardvark from the Cincinnati Zoo was placed on exhibit with our female. Following the initial introduction, the female's activity level increased.
- 4) Through observations, our female aardvark's estrus cycle was determined. It was characterized by a heavy discharge, enlarged vulva and an increase in appetite. The cycle occurred monthly lasting 3-4 days.
- 5) Noticeable enlargement of the anterior pair of mammary glands caused us to conclude a possible pregnancy.
- 6) The female gave birth to an infant which died five days later. The cause of death was exposure and failure to feed.
- 7) Nestbox redesign, addition of substrate and controlling the temperature in the exhibit are factors that will be considered during the next pregnancy.
- 8) Our female became pregnant two more times. The first of these two pregnancies resulted in death for the premature newborn. The third pregnancy was successful, resulting in a mother-reared baby.

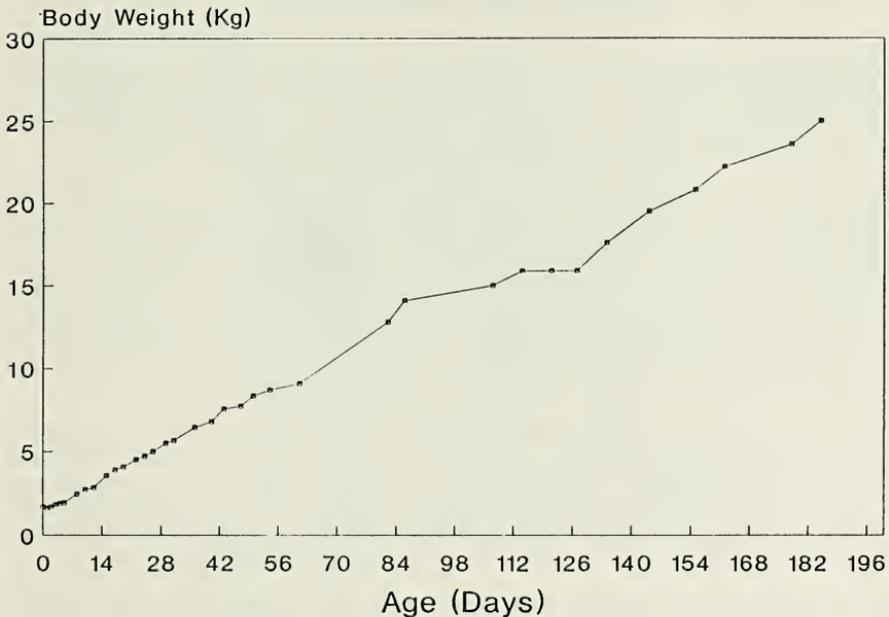
**Aardvarks Born at the Philadelphia Zoo (1984 - 1992)**

<b><u>Name</u></b>	<b><u>DOB</u></b>	<b><u>SEX</u></b>	<b><u>Birth Weight</u></b>
Aava	9/19/84	F	1.8 kg
Aartin	2/9/90	M	1.7
-----	3/4/91	M	1.5
Bill	3/27/92	M	1.7



Author Gina Wilson with 1.0 Aardvark "Bill" at the Philadelphia Zoological Garden. The Aardvark was named for Bill Donaldson, the late president of the Philadelphia Zoological Society. (Photo by John Anholdt, courtesy of Philadelphia Zoological Garden)

## Growth Chart for Aardvark "Bill"



### Acknowledgments

I would like to thank Mr. Karl Kranz, General Curator and Andrew Baker, Ph.D., Assistant Curator at the Philadelphia Zoological Garden for their editorial support with this paper. I would also like to thank zoo docent SallyAnne Aschenbrand for volunteering many hours observing the Aardvarks. My sincere thanks to Mike Dulaney, Area Supervisor at the Cincinnati Zoo for his valuable information on the husbandry of the Aardvark.

This paper is dedicated to the memory of Aardvark lover Bill Donaldson.

AKF reviewers for this manuscript were: Ann Petric, Mammal Curator, Brookfield Zoo, Chicago, IL; and Robert L. Evans, Curator/Mammals, San Antonio Zoological Gardens & Aquarium, San Antonio, TX. The editorial staff thanks Ann and Robert for their invaluable assistance.

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# Other Places to Find Lemurs

By

Robert Berghaier, Senior Keeper  
Philadelphia Zoo, Philadelphia, PA

Madagascar is a difficult and expensive country for internal travel. The nation's roads are in deplorable condition. Therefore getting from one area of the island to another is often a logistical nightmare. As a result, there are only a few areas containing wild lemurs that short-term visitors to Madagascar have a reasonable chance of seeing.

Perinet Reserve is the most accessible. Reached by a scenic four-hour train ride from Antananarivo (often shortened to Tana), Madagascar's capital city, it is one of the most impressive tropical forest parks in the world. The main attraction is the Indri (*Indri indri*) which, at three foot high, are the largest of the lemurs. Each morning the Indri give out loud mournful cries that are surely one of the most haunting sounds in the natural world. There are eight other species of lemurs found here but the Indri are the most commonly sighted. There are also many colorful species of birds, insects and reptiles found at Perinet. Several local residents act as guides and, for a small fee, will find and identify the various species of fauna and flora for you.

There is only one place to stay in Perinet: the Hotel Buffet de la Gare. The quarters in the main hotel can best be described as spartan. However, there are some A-frame bungalows with semi-private bathrooms and shower blocks behind the hotel. The hotel's dining room and bar are very comfortable and serve decent food. Visitors to Perinet need a permit which can be provided through a travel agent or the Bureau of Forests (Eaux et Forêts) in Tana. When I was at Perinet in 1989, the permits could also be obtained at the reserve entrance.

The Berenty Reserve is probably Madagascar's best known natural area. The cat-like Ring-tailed lemurs and the larger and more graceful Sifakas found here have been the subject of several wildlife documentaries and magazine articles. To reach Berenty one must fly from Tana to the southern coastal city of Fort Dauphin. This flight is often overbooked, so if you are not on a packaged tour it is best to have a Malagasy travel agent in Tana arrange the flight. Getting reservations to stay at the limited accommodations at the reserve is also a problem. Again, I would suggest that arrangements be made prior to traveling to Berenty.

Three other species of lemurs, along with the Ringtails and Sifakas, are found at Berenty. There are also some of Madagascar's endemic birds and reptiles to be found here, as well as a large colony of fruit bats. Along with the unique fauna is an example of the island's most unusual flora - the spiny desert forest. The forest has an almost haunted house effect with its thorn covered, misshapen trees.

It is possible to take day trips to Berenty from Fort Dauphin, but the best way to see the reserve is to stay overnight and walk its trails in the evening and the early morning when most of the wildlife is active.

Nosy Komba may be the easiest and most comfortable place to see lemurs. The species found on this island, the Black lemur (*Lemur macaco*), is held sacred by the local people. They are handsome animals. The males are a striking black color while the females are a rich milk chocolate brown. If you feed them bananas, dozens will climb all over you trying to get their share. Fortunately, these lemurs are very gentle and will not bite unless grabbed. Boat trips to Nosy Komba can be arranged through nearly any hotel in Hell-Ville. This far northern port located on the island of Nosy Be can be reached by flying from Tana. For those wishing for a more natural experience, it is possible to visit the Lokobe Reserve on Nosy Be. Lemurs are harder to find here and a Forestry permit is needed.

Parc National Montagne d'Ambre, near the northern port of Diego Suarez, has six species of lemurs and a 30-km long trail system through a lush tropical forest. Be prepared to do lots of walking, because lemurs are difficult to find since they can move quickly and quietly

## Other Places to Find Lemurs, *Continued*

through a forest. Montagne d'Ambre has a variety of plants and animals and a large waterfall. The park is located south of Diego Suarez and a permit from the Forestry Department is needed. The best way to get to Diego is by a flight from Tana.



All travelers to Madagascar should also visit the Parc Tsimbazaza Zoo and Botanical Garden located in Tana. The park has had some recent renovations funded by various European and American conservation organizations. It has an excellent collection of lemurs, many of which are bearing young. It offers the best chance to see the unusual Aye-aye (*Daubentonia madagascariensis*). With a gremlin-like face it is undoubtedly the strangest-looking primate in the world. Tsimbazaza also has excellent examples of Madagascar's plant life - 80% of which are found nowhere else in the world. The park is a short taxi ride from any hotel in town.

If your travels to Madagascar include the east coast port of Tamatave, you should visit Ivoloina Botanical Garden. It is located north of the town and can be reached by taxi. It is not as well-organized as Tsimbazaza, but the grounds have a number of tropical plants and it is a good birding spot. There is also a small zoo on the grounds. Zoo Ivoloina has gotten assistance from Duke University and Wildlife Preservation Trust International of Philadelphia. Its lemur collection is not as varied or numerous as Tsimbazaza's but it does surpass many U.S. zoos. A nice treat is a group of free-ranging Brown lemurs (*L. f. fulvus*) that wanders through the zoo grounds.

Several U.S.-based adventure travel companies run either trips to Madagascar or extensions of 5-7 days which can be added to tours of East Africa. On my trip, I dealt with Lemur Tours in California and Voyages Bourdon in Antananarivo, Madagascar. I found both to be helpful and reliable. For further information contact them at: Lemur Tours, Inc., c/o Rodger Rakotomalala, 904 Irving St., San Francisco, CA 94122 (415) 681-8222. Voyages Bourdon, 15 rue Patrice Lumumba, Antananarivo, Madagascar, Telephone 296-96.



# Elephant Set

(Editor's Note: Beginning with the March issue, this column will contain material on elephant morphology and physiology; nutrition; external diseases including parasites; internal diseases including systemic, gastrointestinal and respiratory; and use of anesthesia. These articles were part of an extensive research manuscript written by Ursula Bechert, DVM of Corvallis, OR.)



## Dental Disorders Trunk, Eye & Ear Problems

By Dr. Ursula Bechert, DVM  
Corvallis, OR

Dental problems are common to both species and include: 1) blocked eruption of the permanent lateral incisors, corrected by surgically opening the sulcus; 2) shattered teeth, treated with root filling, closure with dental cement and fitting with a Tombak crown; 3) failure of forward progression of molars due to fragments of the preceding molar, corrected by removing the fragment; 4) dental caries, seen only in captive elephants (Klos and Land, 1976); 5) medial growth deviations of the tusks, corrected by sawing off the distal third of the tusk or by applying orthodontic devices (Wallach and Boever, 1983); and 6) broken and infected tusks. The last problem is the most commonly encountered.

The endostium of the tusk has great powers of regeneration, as abscesses or bullets are often found completely encapsulated by freshly grown dentin (Gainer, 1986). The pulp contributes to this tremendous healing capacity due to its large size and extensive blood supply.

Captive elephants can break tusks by rubbing them on concrete walls or other hard objects. Continual abrasion wears tusks to the pulp cavity where infection can begin. Elephants often use their trunks to pack soil, feces, water and food into the defect (Wyatt, 1986). Predominant bacterial isolates include non-hemolytic *Streptococcus* species, *Actinomyces pyogenes* and *Staphylococcus* species (McGavin, et al., 1983; Allen, et al., 1984; Wyatt, 1986). Signs of infection include depression, a swollen, warm face, sensitivity over the tusk and exudation from the fracture site (Briggs, et al., 1988). Radiography is difficult because of the size and density of the skull bones. A potential sequelae to severe tusk infection is toxemia and death, making treatment of infections essential (McGavin, et al. 1983).

There are three methods of treating infected tusks, depending on the degree of involvement of the pulp cavity, and depth and severity of infection. The most conservative treatment is endodontic repair. This procedure involves placement of a stainless steel helicoil in the distal 5cm of the infected tusk tract so that a set screw can be easily removed on a daily basis for treatments without stripping the dentin (Wyatt, 1986). Treatment is done by placing a 56cm catheter surrounded by gauze into the tract and flushing 2g of antibacterial compounds into the tract daily for one week, resealing the packed canal with a sterile set screw each time. Flushes are continued for approximately one month with weekly bacterial culture and sensitivity tests run until no growth is found. A permanent larger set screw is then placed and the distal 3cm of the canal is filled with steel-impregnated epoxy. Hemograms are monitored for toxemia daily for one week and then weekly for one month. Radiography of the tusk a year after this treatment showed reactive dentin filling in the tusk defect. In the cases reported by Wyatt (1986), the distal portion of the tusk had to be clipped and recapped every two years as tusk growth pushed the reactive tract distally.

A pulpotomy is useful with a more severe infection where curettage is helpful. The accessible coronal pulp is removed and the chamber flushed with sterile distilled water

## **Elephant Set: Dental Disorders** *Continued*

(Allen, et al. 1984). Formocresol-impregnated cotton balls are placed over the stump, and the distal end is sealed with a zinc oxide-eugenol-formocresol mixture. Appropriate antimicrobial therapy is given orally twice a day.

Extractions of infected tusks are reserved for those infections that have not responded to conservative therapy, often several years in duration. One example involved an elephant which had a longitudinal fracture extending from the tip of the tusk to the sulcus (Briggs, et al. 1988).

### **Trunk, Eye and Ear Problems**

Traumatic trunk injuries can be severe, leading to shock and death due to blood loss from the extensive blood supply (Schmidt, 1986). Trunk paralysis can be caused by parasitic migration around the motor nerves, infections, crushing injuries, tumors placing pressure on the motor nerves, rabies or tetanus.

Eye problems include traumatic injury, cataracts, keratitis, conjunctivitis and retinal atrophy (Schmidt, 1986). Little information is published about these topics.

Frostbite, trauma, ulceration, infection and iatrogenic sloughing are problems of the ear. Trauma is usually due to bites from other elephants which crush the tissues (Schmidt, 1986). Sloughing can occasionally be prevented by applying topical antibiotic ointments, parenteral steroids and frequent warm-water baths. To reduce the chance of iatrogenic sloughing with intravenous drug administration, catheters should be used, irritant drugs should be diluted with saline or sterile water, and a mild xylazine sedative is helpful in reducing motion by the elephant. If perivascular injection occurs, immediately dilute the site with sterile saline a minimum of five times the original volume.

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**Next Month: Part I of Internal Diseases (includes systemic illnesses, gastrointestinal disorders and central nervous system diseases)**



# PARROT WELL-BEING - Does it Deserve More Attention?

By Catherine E. King, Biologist  
Rotterdam Zoo, Rotterdam, The Netherlands



art by Carol Sharp, Hogle Zoo

(This article was originally published in *Psitta scene* (Vol. 4, No. 2, May 1992), a publication of The World Parrot Trust. It is reprinted here with permission of the author.)

After keepers in the bird department at Rotterdam Zoo and I, the bird biologist, furnished some of the parrot cages with fresh natural perching and thick ropes for the parrots to climb on, I was startled to see an article titled "Ape-caged Parrots" in the following issue of "The Nieuwbrieff", an informative, entertaining monthly newsletter put out by the volunteers at Rotterdam Zoo. Some experimental enclosure enrichment projects being undertaken with the parrots and use of rope as well as other cage furnishings was discussed in the article. At the end of the article it was stated that "the disadvantage of large ropes in the parrot enclosure is perhaps that the enclosures now look a bit like primate cages".

It then occurred to me that perhaps evoking the similarity between the two groups of animals, primates and parrots, so far apart evolutionarily but actually very similar in habits and behavior, may in fact be the best way to convince many people of the importance of providing parrots with a stimulating environment.

## What parrots and primates really have in common...

One does not have to delve very deeply into the biology of these groups to conclude that parrots and primates do indeed share many characteristics; in fact parrots can be considered "the primates of the bird world" (Birchall, 1990). Parrots and primates have similar habitats, mostly living in dense forests, though a few species inhabit grasslands or other more open areas. The vast majority of species in both groups are arboreal and supremely suited for climbing; the zygodactylous parrot foot is especially adapted for this purpose. The parrot bill functions analogously to hands (but with a bit more bite), by which the bird pulls itself up while climbing.

Behaviorally they are quite similar, both being extremely social, bright and inquisitive creatures. Few primates or parrots are truly solitary, and many parrots as well as many primates remain in social groups throughout the year. Vision is a primary sense in both primates and parrots, and subtle displays involving colors and postures convey information among group members. The vocal abilities of both parrots and primates are memorable to anyone who has been anywhere in their vicinity when they are excited, and vocal intraspecific communication is extremely important. The majority of species are diurnal while a few members of each group are nocturnal. Both groups primarily feed on seeds, fruits, and other plant materials, though a few species are more carnivorous.

The impressive learning abilities of these groups has been well demonstrated by the amazing array of tricks that they can learn, as often proved historically (and presently) in animal shows. Recently, studies of performance of "object permanence" tasks in several species of parrots has more scientifically addressed these abilities in parrots (Pepperberg and Kosak, 1986; Pepperberg and Funk, 1990). Parrots and primates both have "tool using" members of their taxa. Parrots use their feet to handle food items just as primates use their hands (and sometimes feet) for the same purpose. Both groups delight in manipulation of objects, and their destructive tendencies as they exuberantly explore their environments is well known.

## Unequal emphasis in well-being of primates and parrots...

In short, these groups are quite similar and in fact many of the enrichment ideas that are used for primates in captivity can be applied to parrots. For example, neither type of

## Parrot Well-being: Does it Deserve More Attention?, *Continued*

animal actually uses rope in its natural environment, however, in both cases rope make a very good substitute for natural climbing materials that they would have. One could as easily turn the earlier quotation around and say that a disadvantage to putting ropes in a primate enclosure is that it makes it look like a parrot enclosure.

The only reason why it would seem ridiculous to people to make such a statement is that the well-being of primates has been receiving a great deal of attention for some time, while that of parrots, or any other bird group for that matter, has not. Why this is the case is mystifying, considering that parrots are also very playful animals, and are generally quite popular with people. In fact, parrots do have the same emotional demands and tendency to get bored that primates have. Stereotypic behaviors, and self-mutilation (feather plucking and much worse) are well known for captive parrots whose psychological needs are not met.

### **Environmental enrichment ideas...**

There are a number of ways to enrich the environment for parrots, of which natural-fiber ropes is on reality one of the best. It is durable, and it is not dangerous. Thick rope can be used for climbing and perching and for grooming (as discovered with the Palm Cockatoo at Rotterdam Zoo - when provided with rope they rub the bare facial patches against this material frequently); while thinner ropes (1cm or larger in diameter, depending on chewing habits of the individual parrot) can be used to hang pieces of wood, branches or other objects from, forming a multipurpose structure that can function for swinging, climbing and chewing. It is also ideal from a keeper's point of view, it does not have contact with the substrate (thereby increasing difficulties in raking or sweeping), it does not cause a great deal of mess, and it is low maintenance. Materials hung on a rope can also easily be replaced.

Perching can be considered enrichment materials in the environment of parrots; despite the importance of proper perching to the physical and psychological well-being of parrots, perching is all too frequently unsuitable. Parrots should have perching available at different levels within the enclosure, and perching should have a variety of diameters and textures. This last point is true for other birds as well, not only for psychological but also for physical well-being. Bumble foot, a common foot problem in all sorts of birds is often associated with inappropriate, too regular perching. Natural tree branches with a bark that is not too smooth or too hard, and with a number of horizontally oriented limbs, makes the best perches.

Safe, inexpensive enrichment possibilities are only as limited as the imagination. Anything that is safe for the birds to chew on can be used: willow or other nonpoisonous branches, nonpoisonous weeds or other plant materials, blocks of soft wood, cardboard boxes, paper-towel and toilet paper rolls, paper cups and egg cartons, canning jar lids, cleaned stones and large keys on a safe keychain are just a few possibilities. Rolled up newspaper pushed through the cage wire so that it fits tightly, so that a parrot can perch on and chew on it is a favorite with some birds. Chew toys suitable for dogs, such as rawhide bones, are also often suitable to parrots (pers. obs.; C. Falzone pers. comm.; Murphy, 1992; Seville, 1990; Sun, 1992.).

Other enrichment items include well-known foods that take some time to eat, such as whole nuts in the shell, pieces of corn on the cob, and pomegranates. Hiding food items or putting them in difficult to reach places can also interest a parrot. This can range from methods as simple as putting peanut butter, cranberries, or raisins in a pine cone to more complicated tactics such as drilling holes in pieces of wood and dropping nuts or other food items that do not easily spoil or mold in these (pers. obs.; D. Blomjous pers. comm.; Seville, 1990).

Just as for primates, changing of enrichment material so that they do not become bored with "the same old thing" can be very important. Birds not used to receiving enrichment materials may not initially show interest, or may even be slightly afraid of the new element in their environment, and materials should be presented in a non-threatening manner. Where materials are placed within the enclosure is indeed important in the

## Parrot Well-being: Does it Deserve More Attention?, *Continued*

birds' acceptance of them. For example, when initially introducing birds to enrichment materials is senseless to place these on the ground if the birds spend all their time 2m high in the cage. Seville (1990) recommends hanging toys just within reach of birds, but so that they have to stretch to get it, as a way to catch the bird's interest. Even if the birds do not show interest in an item initially, it may well be that it will later be one of their favorite toys.

The safety of items used should always be considered, and parrots have never failed to amaze with their adroitness at opening, pulling, unscrewing or otherwise undoing things. Items that the bird can get entangled in (such as string), or can catch its band or bill on (such as metal rings that the bird can open) should not be used. Sharp objects, or materials such as glass, most plastics and thin wire than can be broken and swallowed are, of course, not suitable.

### **Costs and benefits of parrot environmental enrichment...**

An added bonus to providing an "enriched environment" may be an improvement in breeding success, as graphically demonstrated in an experiment in the Avian Sciences Department at the University of California at Davis (Brice, 1992). Of course, providing enrichment materials to parrots takes just as much time as it does for primates. But, if it is judged to be important enough to make that time for primates, it should also be likewise considered that important for parrots. If suitable items are used, a good program need not take more than an average of a few minutes a day per enclosure. Taking good care of any animal costs time, but in parrots this is richly rewarded by the pleasure that they, their keepers, and in the case of publically held birds, the visitor will receive from the enrichment materials.

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## Chapter News, *Continued from Page 204*

### Memphis Zoo AAZK Chapter

Officers for 1993 are:

President.....Dena Mandino  
Vice Pres.....Danny Tennyson  
Treasurer.....Betty Lee Elliot  
Secretary.....Gail Karr  
Chapter Liaison.....Cindy Pinger

On 17 April the first exhibit, The Commercial Appeal Cat Country, in our renovation schedule opened to the public. Some of the species in Cat Country include

cheetahs, jaguarundis, clouded leopards, fishing cats, and Sumatran tigers. This was a long-awaited project in Memphis and we are all excited and very happy that Cat Country is now a reality. To open at the Memphis Zoo in 1994: Primate Canyon and Animals of the Night.

The Memphis AAZK participated in "Bowling for Rhinos" for the third year on 1 May. We raised over \$1200.00 for the cause.

--Cindy Pinger, Chapter Liaison



**L.I.N.K.**  
**(Liaison and Information Network for Keepers)**

Coordinator for the LINK System: Mark de Denus, Assiniboine Park Zoo, 2355 Corydon Ave., Winnipeg, Manitoba, Canada R3P 0R5. (204) 837-2916 (h).

**Regional Coordinators**

- ALABAMA** - Fred Alvey, Zoo Atlanta, 800 Cherokee Ave. S.E., Atlanta, GA 30315  
**ALASKA** - Vacancy  
**ARIZONA** - Bruce Eneboe, Reid Park Zoo, 1100 S. Randolph Way, Tucson, AZ 85716  
**ARKANSAS** - Debbie Jackson or Ann Rademacher, Little Rock Zoological Gardens,  
#1 Jonesboro Dr., Little Rock, AR 72205  
**CALIFORNIA (Northern)** - Jean Lai, Oakland Zoo, 9777 Golf Links Rd., Oakland, CA 94605 and  
Ruby Lara, Sacramento Zoo, 3930 West Land Park Dr., Sacramento, CA 95822-1123  
**CALIFORNIA (Southern)** - Johnny Merk, EFBC, HCR #1, Box 84, Rosamond, CA 93560  
**COLORADO** - Suzanne Chacon-Brennan, Denver Zoo, City Park, Denver, CO 80205  
**CONNECTICUT** - Jeanette Nadeau, Roger Williams Park Zoo, Providence, RI 02905  
**DELEWARE** - Theresa Maas, Philadelphia Zoo, 34th & Girard Ave., Philadelphia, PA 19104  
**FLORIDA** - Rick Smith, 5752 Stoneridge, Orlando, FL 32839  
**GEORGIA** - Fred Alvey, Zoo Atlanta, 800 Cherokee Ave. S.E., Atlanta, GA 30315  
**HAWAII** - Michelle Suenishi, Hilton Hawaiian Village, 2950 Ena Rd., Honolulu, HI 96815  
**IDAHO** - Vacancy  
**ILLINOIS** - Pat Swieca, 5710 W. Cullom Ave., Chicago, IL 60634  
**INDIANA** - Dan Powell, Potawatomi Zoo, 500 S. Greenlawn, South Bend, IN 46615  
**IOWA** - Carla Wieser, Omaha's Henry Doorly Zoo, 10th St. & Deer Park Blvd., Omaha, NE 68107  
**KANSAS** - Gretchen Ziegler, Topeka Zoo, 635 S. W. Gage Blvd., Topeka, KS 66606  
**KENTUCKY** - Scott Wright, Cleveland Metroparks Zoo, 3900 Brookside Park Dr., Cleveland, OH 44109  
**LOUISIANA** - Michelle Asselin, Audubon Park & Zoological Gardens, P.O. Box 4327, New Orleans, LA 70115  
**MAINE** - Jeanette Nadeau (see addresses under CT)  
**MARYLAND** - Theresa Maas, Philadelphia Zoo, 34th & Girard Ave., Philadelphia, PA  
**MASSACHUSETTS** - Jeanette Nadeau (see addresses under CT)  
**MICHIGAN** - Dan Powell, Potawatomi Zoo, 500 S. Greenlawn, South Bend, IN 46615  
**MINNESOTA** - Tim Hill, Minnesota Zoological Gardens, 13000 Zoo Blvd., Apple Valley, MN 55124  
**MISSISSIPPI** - Jeannie Frazier, Jackson Zoological Park, 2918 W. Capitol, Jackson, MS 39209  
**MISSOURI** - Vacancy  
**MONTANA** - Vacancy  
**NEBRASKA** - Carla Wieser (see address under Iowa)  
**NEVADA** - Patricia Simonet, Wildlife Safaris, P.O. Box 6735, Incline Village, NV 89450  
**NEW HAMPSHIRE** - Jeanette Nadeau (see addresses under CT)  
**NEW JERSEY** - Theresa Maas, Philadelphia Zoo, 34th & Girard Ave., Philadelphia, PA 19104  
**NEW MEXICO** - Bruce Eneboe, Reid Park Zoo, 1100 S. Randolph Way, Tucson, AZ 857716  
**EAST NEW YORK** - Frank Leonard, Bronx Zoo, 185th & Southern Blvd., Bronx, NY 10460  
**WEST NEW YORK** - Alan Baker, Burnet Park Zoo, 500 Burnet Park Dr., Syracuse, NY 13204  
**NORTH CAROLINA** - Lucy Segerson, North Carolina Zoo, Rt. 4, Box 83, Asheboro, NC 27203  
**NORTH DAKOTA** - Bob Debets, Assiniboine Park Zoo, 2355 Corydon Ave., Winnipeg, Manitoba  
Canada R3P 0R5 (204) 986-4040 [w]  
**OHIO** - Scott Wright, Cleveland Metroparks Zoo, 3900 Brookside Park Dr., Cleveland, OH 44109  
**OKLAHOMA** - Debbie Jackson or Ann Rademacher (see addresses under AR)  
**OREGON** - Anna Michel, Washington Park Zoo, 4001 SW Canyon Rd., Portland, OR 97221  
**PENNSYLVANIA** - Theresa Maas, Philadelphia Zoo, 3400 W. Girard, Philadelphia, PA 19104  
**RHODE ISLAND** - Jeanette Nadeau (see addresses under CT)  
**SOUTH CAROLINA** - Lucy Segerson, North Carolina Zoo, Rt. 4, Box 83, Asheboro, NC 27203  
**SOUTH DAKOTA** - Bob Debets (see address under ND)  
**TENNESSEE** - Gail Karr or Cindy Pinger, Memphis Zoo & Aquarium, 2000 Galloway, Memphis, TN 38112  
**TEXAS** - Ann Marie Greco, 5903 Danny Kaye #2104, San Antonio, TX 78240  
**UTAH** - Suzanne Chacon-Brennan, Denver Zoo, City Park, Denver, CO 80205  
**VERMONT** - Jeanette Nadeau (see addresses under CT)  
**VIRGINIA** - Theresa Maas, Philadelphia Zoo, 34th & Girard, Philadelphia, PA 19104  
**WASHINGTON** - Elandra Aum, Woodland Park Zoo, 5500 Phinney Ave. N, Seattle, WA 98103  
**WEST VIRGINIA** - Theresa Maas, Philadelphia Zoo, 34th & Girard, Philadelphia, PA 19104  
**WISCONSIN** - Wayne Hazlett, 3768 S. 89th St., Milwaukee, WI 53228  
**WYOMING** - Vacancy  
**DISTRICT OF COLUMBIA** - Theresa Maas (see address under PA)  
**Province of Ontario** - Neil Porter, Metro Toronto Zoo, Box 280, West Hill, Ontario M1E 4R5 Canada  
**Provinces of Manitoba & Saskatchewan** - Bob Debets (see address under ND)  
**Province of Quebec** - Vacancy  
**Provinces of Alberta & British Columbia** - Grant Tkachuk, 10139 157th St., #206, Edmonton, Alberta T5P 2T9

*Institutions wishing to advertise employment opportunities are asked to send pertinent data by the 15th of each month to: Opportunity Knocks/ **AKF**, 635 Gage Blvd., Topeka, KS 66606. Please include closing dates for positions available. There is no charge for this service and phone-in 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.*

**CHIMPANZEE CAREGIVER**...two full-time positions open. Requires two years college level course work, two years experience in the care of exotic animals; OR an equivalent combination of experience which provides the required knowledge, skills and ability. Primate experience a plus. Assist in the responsibility of caring for approximately 80 chimpanzees (*Pan troglodytes*) in a breeding colony. Must be willing to make at least a two-year commitment. Excellent benefits. EOE. ALL applicants must have a negative T.B. skin test, negative hepatitis B surface antigen test, and evidence of a measles booster or natural disease prior to employment. Send letter of interest (with requested salary), resume, and three letters of reference to: Jo Fritz, Director, Primate Foundation of Arizona, P.O. Box 20027, Mesa, AZ 85277. Closing date is 1 July 1993.

**HERP/BIRD KEEPER/LECTURER**...full-time position. Looking for a person with both reptile and bird background. Should have knowledge and experience in the care of large exotic reptiles such as boas, pythons, iguanas and monitor lizards. May assist in the handling of these reptiles during educational programs given to the public on a daily basis. Will have an opportunity to work with native Sonoran Desert herpetofauna and observe them in a natural setting as our facility is located about 30 miles outside the Phoenix area in an undisturbed natural Sonoran Desert region near the community of Fountain Hills, AZ. Bird experience is important as we are expanding our avian collection, which consists now of mostly parrots. Educational bird programs are also presented to the public on a daily basis. Salary range is \$12,000-\$14,500. Position open until filled. For more information contact and send resumes to: Luke Thirkhill, Curator of Birds & Reptiles, Out of Africa Wildlife Park, P.O. Box 17928 Fountain Hills, AZ 85269 FAX (602) 837-7379/PHONE (602) 837-7113 Tuesday through Sunday.

**HERPETOLOGY KEEPER/ASSISTANT**...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. Salary \$18,220.00 to \$25,771.00 depending on experience. Excellent benefit package. Application closing date 9 July 1993. Submit resumes to: Nancy Foley, Director of Human Resources, The Toledo Zoological Society, P.O. Box 4010, Toledo, OH 43609.

**ZOOKEEPER**...accepting resumes for full-time Keeper positions, BIRD (psittacines, cranes, waterfowl) and MAMMAL (ungulates, primates, cougars, cheetahs). Degree or equivalent zoo related experience. Daily duties include care, feeding, habitat upkeep, breeding programs, record keeping, medical coordination, training, acquisitions, etc. Must be willing to work weekends/holidays. Starting salary \$15,000-\$20,000 with year-end bonus and benefits. Excellent growth potential. Salary commensurate with experience. Send resume/references to: Washington Zoological Park, 19525 SE 54th, Issaquah, WA 98027. Positions open until filled.

**ZOO DIRECTOR**...Salisbury Zoo is a well-established, AAZPA certified facility dealing in recreation, conservation and education. The position requires a B.S. in biology, zoology or related field along with at least 10 years of experience in zoo operations, three of which must be in a supervisory position. The qualified applicant must be strong in public relations and able to demonstrate an ability to supervise the zoo staff as well as interfacing with existing public support groups. Interpersonal skills and oral and written communication skills are a must. The Director will be responsible for the supervision of the daily activities of the zoo, budget management, long term and short term exhibit planning and promotion of the zoo and its image. Starting salary range is \$27,661.00 to \$31,772.00 depending on experience and ability. Resumes will be received at the following address: City of Salisbury, Department of Public Works, P.O. Box 4118, Salisbury, MD 21803, Attn: Mr. Thomas D. Plotts, P.E., Director. Closing date is 30 June 1993.

**ZOOKEEPERS**...opportunity to work with seven African elephants. Requires one year's experience handling elephants. College-level courses in animal science desirable. Send resume/cover letter by 1 July 1993 to: Personnel Dept., Wildlife Safari, P.O. Box 1600, Winston, OR 97496.



# AAZK Membership Application

Name \_\_\_\_\_ check here if renewal [ ]

Address \_\_\_\_\_

City \_\_\_\_\_ State/Province \_\_\_\_\_ Zip \_\_\_\_\_

## U.S. Members

- \$30.00 Professional/U.S.  
*Full-time Keepers*
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*Other staff & volunteers*
- \$25.00 Associate/U.S.  
*Those not connected with  
an animal facility*
- \$50.00 or up Contributing/U.S.  
*Individuals*
- \$50.00 or up Institutional/U.S.  
*Organizations / Institutions  
(requires Board approval)*

## Canadian Members

- \$35.00 Professional/Canada  
*Full-time Keepers*
- \$30.00 Affiliate/Canada  
*Other staff & volunteers*
- \$30.00 Associate/Canada  
*Those not connected with  
an animal facility*
- \$55.00 or up Contributing/Canada  
*Individuals*
- \$55.00 or up Institutional/Canada  
*Organizations / Institutions  
(requires Board approval)*

## International Members

- \$40.00 International  
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## Library Only

- \$20.00 Library  
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