



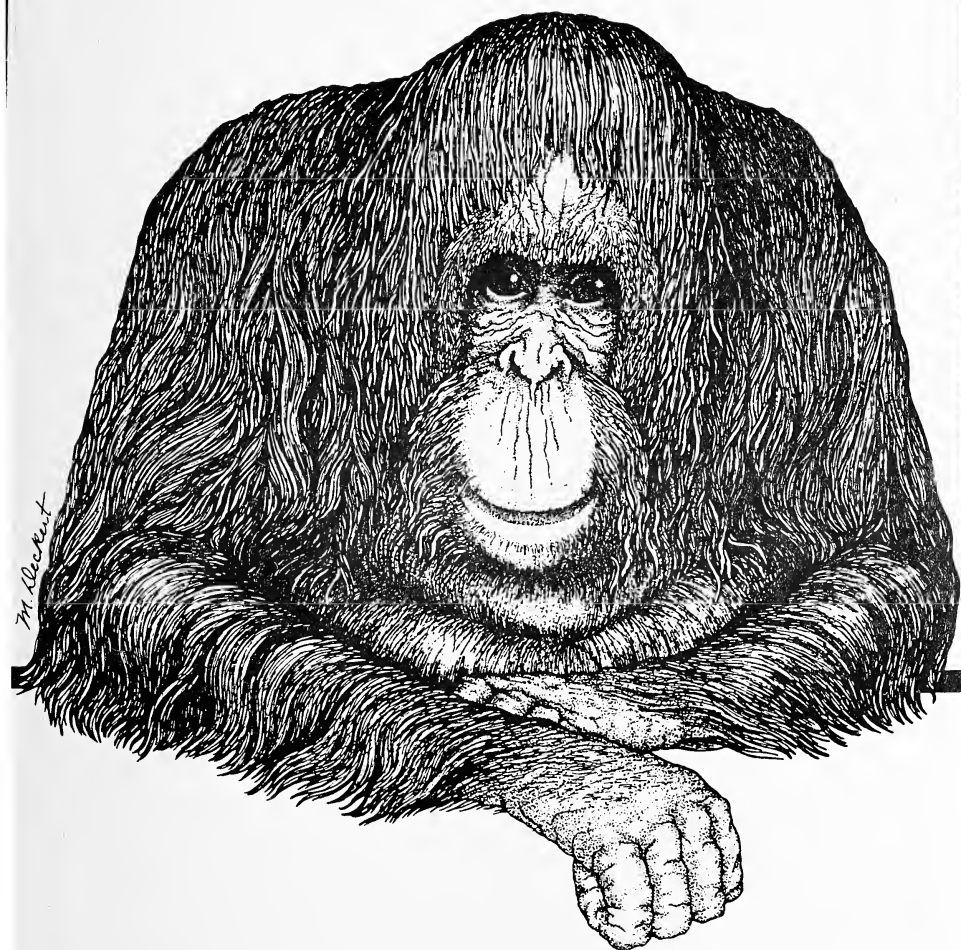




# Animal Keepers' Forum

January 1994

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*Dedicated to Professional Animal Care*

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Animal Keepers' Forum (ISSN 0164-9531) is a monthly journal of the American Association of Zoo Keepers, Inc. 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, Woodland Park Zoo (Mammals)

Teri Maas/Maggie Liguori, Philadelphia Zoo (Birds/Nonpasserines); Kim Livingstone, L.A. Zoo (Passerines)

Jeanne Bocconelli, Newark Museum Mini-Zoo (Reptiles); Linelle Lone, Denver Zoo (Amphibians)

Diet Notebook, Mammals, Vol. II - Susan Bunn Spencer, Grand Rapids, MI





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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 25½cm (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") 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 as space allows. However, long articles must be sent by U.S. mail. Phone is (913) 272-5821 Ext. 31. FAX (913) 273-1980.

## **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 Bornean Orangutan (Pongo pygmaeus pygmaeus) named Sally, former matriarch of the Orangutan troop at the Los Angeles Zoo. Sally came to Los Angeles in May of 1956 and was an estimated 37 years old at the time of her death in December of 1989. During her 33+ years at L.A., Sally produced seven offspring (2.5), was an exemplary mother and very popular with Zoo visitors. Her daughter Eloise suffered paralysis in her arm and leg as a result of the umbilical cord being around her neck at birth. When Eloise gave birth to a son, Michael, she was not able to care for the infant, and it was subsequently successfully raised by Sally. Bornean orangutans are a highly endangered species due primarily to habitat loss in their native range. This cover was drawn by Mary Deckert, a docent at the L.A. Zoo and a very talented artist. Thanks, Mary!*

# Scoops

and

# Scuttlebutt

## 1993 Index Included This Month

The index of *Animal Keepers's Forum*, Vol. 20, Nos. 1 - 12, 1993 appears at the back of this month's issue. We would like to thank Pam Talbot, a volunteer at Woodland Park Zoo, Seattle, WA, for again compiling this comprehensive index. Maintaining the index is a tremendous amount of work and takes time, patience and careful typing skills. Our sincere thanks once again to Pam for her hard work. In using the index, please note the legend of symbols which will assist you in knowing what a particular listing contains.

## Correction on Donation -- Please Note

In the December issue of *AKF*, an article in this column recognized a \$253.12 donation sent to the Association by the Central Florida Chapter. The article said the funds were generated at a camp-out at Silver Springs, but were actually raised from the raffle of a medium sized brooder donated by Dean's Animal Supply. We apologize for the error.

## Has Anyone Seen the Conference Photo Album?

AAZK's newly appointed Historian, Heidi Fowle, is interested in gathering as much AAZK history as possible and she needs your help. A call has gone out to all Chapters to add Heidi (address listed below) to their mailing lists for Chapter newsletters, minutes of Chapter meetings, photographs and write-ups on Chapter fundraisers, etc. We would also like to encourage individual AAZK members to contribute memorabilia (photos from conferences, local zookeeper events, etc.) to the AAZK archives. We would especially like to be able to document fundraising and public education events held by Chapters, so please consider sending a photo of the event along with a brief description of the activity to Heidi. All Chapters are especially asked to send a sample of any item especially produced for Bowling for Rhinos (i.e. pin, patch, T-shirt, Poster, etc) for the BFR file. News clippings of such events are also requested.

You may send items to Heidi, an animal care specialist at Discovery Island - Walt Disney World, at the following address: Heidi Fowle, 2515 Emma St., Orlando, FL 32806.

We are also trying to determine the whereabouts of the Conference Photo Album which was initially begun at the Winnipeg Conference 1986. It was believed to have last been sighted at the Toledo Conference in 1991. If anyone has it or knows where it is, please contact AO.

## **Chapters Renewal Packets in the Mail This Month**

All Chapters are reminded that Recharter Packets were mailed this month and will be due back at AO by **1 March 1994**. If your Chapter does not receive a packet, contact Barbara Manspeaker at AO. We request that you return the entire completed packet and your charter renewal check together in the same mailing. Receiving portions of the packet piecemeal will delay your Chapter's recharter for 1994. **Please remember that all Chapter members and officers must be current members of AAZK, Inc.**

## **AAZK Research Grants for 1994 Available**

The American Association of Zoo Keepers, Inc. announces the availability of two \$750.00 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., SE, Atlanta, GA 30315. The deadline for submissions is **1 March 1994**.



## ***From the President.....***

A question has arisen concerning a name change for ESP. The Ecosystem Survival Plan program (Adopt-an-Acre, Conservation Parking Meters and ESP program plan) is now under the auspices of the Center for Ecosystem Survival. ESP National Coordinator Norman Gershenz has obtained a 501(3)(c) nonprofit tax status for the Center. AAZK Inc., will continue to wholeheartedly endorse this important conservation project, but will no longer be a signatory party on ESP/Parking Meter contracts.

From September '92 - September '93, the Conservation Parking Meters in zoos and aquaria collected \$79,250.73. Chapters also participate in the Adopt-An-Acre program which raised \$55,746.55, and the Preakness Clean-up which earned \$8,600.00. These monies were used for the purchase and protection of endangered rainforest habitat in Central and South America.

Some members have expressed an interest in lobbying for support of various bills or causes such as the reauthorization of the Endangered Species Act. This is a reminder that AAZK Chapters may not lobby as a group for any purpose as this might jeopardize our tax exempt status. Members as individuals may lobby for any cause. The only stipulation is that letters are not to be written on AAZK letterhead stationery nor the wording of such letters suggest or state outright that the lobby effort is on behalf of AAZK, Inc. or a particular AAZK Chapter.

If you have any questions, please ask a Board member for clarification. We are here to serve you. With your support, we are looking forward to a prosperous new year for AAZK.

Janet McCoy, AAZK President  
Metro Washington Park Zoo, Portland, OR



# Coming Events

## A Seminar of Behavior Modification Through Positive Training Techniques

February 25-26, 1994

Cincinnati, OH

Greater Cincinnati AAZK would like to invite neighboring AAZK members to our monthly meeting. Ted Turner, Curator of Training at Sea World of Ohio, will be our guest speaker. He will be discussing his training techniques and psychological principles - how we as keepers can redirect negative behavior in exotics to positive workable behavior (i.e. vomit throwing gorillas, abusive mothering and simply shifting animals by targeting).

There will be a potluck dinner at 6 P.M. and time to share any news. The lecture will follow from 7-11 p.m. There will be a more indepth full day training on Saturday from 9 a.m. until 5 p.m. The cost to AAZK members is \$25.00, Non-members \$45.00. Housing is available upon request. To make reservations for Friday and/or Saturday, please call or write Becky Jones, 541 Terrace Ave., Cincinnati, OH 45220. (H) (513) 861-6123, (W) (513) 281-4701 ext. 8349.

## The Annual Conference of the National Wildlife Rehabilitators Association

March 2-6, 1994

Wilmington, DE

Tri-State Bird Rescue and Research, Inc. will be host to the symposium which will feature speakers on rehabilitation, education, administration, etc. Major sessions will include Habitat Assessment & Reintroduction Techniques; State & Federal Permit Forum; Veterinary; Waterbirds; and Mammals. Hands-on Workshops include Radio-Telemetry Techniques, Parasitology and Hematology. Publications of all previous symposiums are also available for reference to those in the field. For more information, contact: NWRA, 14 North 7 Avenue, St.Cloud, MN 56303 (612) 259-4086.

## 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.

## ARAZPA/ASZK Annual Conference

April 17-22, 1994

Darwin, NT, Australia

Joint meeting of the Australasian Regional Association of Zoo Parks and Aquaria and the Australasian Society of Zoo Keepers will be hosted by Territory Wildlife Park and Tipperary Sanctuary. For further information contact: Michelle Nuske, Conference Coordinator, Territory Wildlife Park, P.O. Box 771, Palmerston, NT 0831, Australia.

## Callitrichid Symposium

May 1, 1994

Hershey, PA

A symposium on the primate family Callitrichid will be held by the New World Primate Taxon Advisory Group preceding the 1994 Northeastern Regional AAZPA meetings. The symposium will focus on topics of husbandry, nutrition, behavior, reproduction, and field research. Poster, video, and oral presentations are invited. Deadline for submission of abstracts is **15 February 1994**. Registration fee will be \$25.00. For more information, contact Andy Baker or Beth Bahner, Philadelphia Zoo, 3400 W. Girard Ave., Philadelphia, PA 19104, (215) 243-1100, FAX: (215) 243-0219.



# Births & Hatchings



**Buffalo Zoological Gardens (Buffalo, NY)**...announces the following B&H from January 1992 to September 1993:

**Mammals** - 1.2 Addax (*Addax nasomaculatus*) [E/SSP]; 1.0 Gaur (*Bos gaurus*) [E/SSP]; 7.10.11 Cotton-top tamarin (*Saguinus oedipus*) [E]; 9.7.12 Chinchilla (*Chinchilla laniger*) [E]; 8.7.2 Clouded leopard (*Panthera nebulosa*) [E/SSP]; 13.11 Markhor (*Capra falconeri cashmirensis*) [T]; 6.2 Roan antelope (*Hippotragus equinus cottini*) [T]; 0.0.1 Lowland gorilla (*Gorilla g. gorilla*) [E].

**Birds** - 2.1.9 White-crested turaco (*Tauraco leuolophus*) [U]; 2.0.3 Scarlet macaw (*Ara macao*) [T]; 0.0.2 Golden eagle (*Aquila chrysaetos*) [T] [release program]; 2.0.1 White-naped crane (*Grus vipio*) [E/SSP]; 0.2.5 Lady Ross' turaco (*Musophaga rossi*) [U]; 0.0.1 Cinereous vulture (*Aegypius monachus*) [T]; 0.2 Andean condor (*Vultur gryphus*) [E/SSP].

**Reptiles** - 0.0.1872 Puerto Rican crested toad (*Peltophryne lemur*) [E/SSP] [release program]; 0.0.3 Solomon tree skink (*Corucia zebrata*) [T] [1st time birth and twinning for institution - 0.0.1 twin DNS]; 0.0.2 European glass lizard (*Ophisaurus apodus*) [1st time hatching for group and institution]; 0.0.6 Timber rattlesnake (*Crotalus horridus*) [E] [release program]. *submitted by Sherri Doherty, Secretary, Western New York Chapter, AAZK, Buffalo, NY.*

**Sedgwick County Zoo (Wichita, KS)**...reports the following significant B&H for 1993:

**Mammals** - 0.1 Columbian black spider monkey (*Ateles fusciceps robustus*) [CITES II - 1st for pair]; 1.0 Sumatran orangutan (*Pongo pygmaeus abelii*) [SSP - 1st for pair]; 1.0.1 New Guinea singing dog (*Canis familiaris hallstromi*) [1st for pair - 0.0.1 DNS]; 0.0.6 African wild dog (*Lycaon pictus pictus*) [1st for pair and zoo - SSP - 0.0.3 DNS]; 1.0 Black rhinoceros (*Diceros bicornis michaeli*) [1st for pair, zoo, state - SSP/E].

**Birds** - 0.0.1 Verditer flycatcher (*Muscicapa thalassica*) [1st zoological hatching]; 1.0 Large niltava (*Niltava grandis*) [1st zoological hatching in U.S.].

**Amphibians and Reptiles** - 0.0.5 Neará poison dart frog (*Phyllabates bicolor*) [1st hatching for pair and zoo - CITES II - 0.0.4 DNS]; 0.0.87 Green and black poison dart frog (*Dendrobates auratus*) [CITES II]; 0.0.3 Spotted pond turtle (*Clemmys guttata*) [1st hatching for pair and zoo]; 1.1.15 Jackson's chameleon (*Chamaeleo jacksonii*) [1st for pair and zoo - CITES II - 0.0.14 DNS]. *submitted by Joyce Kaplan, Chapter Liaison and Zookeeper, Sedgwick County Zoo, Wichita, KS.*



## Beloved Panda Tohui Dies at Chapultepec Zoo

The first naturally-conceived panda born in captivity outside of China, died in mid-November at Mexico City's Chapultepec Zoo. The AP report said she died in her sleep at the age of 12 years. Pandas normally live up to 20 years in captivity. While no cause of death had been announced, Tohui had been diagnosed with a chronic intestinal inflammation. The panda's name, Tohui, means "child" in the language of Mexico's Tarahumara Indians. She had been a favorite of Mexican school children since her birth in 1981.

## **AAZK Award Nominations Are Now Being Accepted for 1994!**

The AAZK Awards Committee would like to begin accepting nominations for the **Certificate of Excellence in Exhibit Renovation (CEER)** to be presented at the 1994 AAZK Conference in Omaha. The deadline for all award nominations is **1 June 1994**. All award nominations received after 1 June will be reviewed for 1995, 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 the 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, Exhibit Management and Visitor Point of View/ Other Information. Items the committee is looking for are the following:

- A. **KEEPER INVOLVEMENT:**
  - a) degree of keeper involvement with conceptual development of exhibit
  - b) degree of keeper involvement with facilitation of completion of exhibit, (fund raising, promotion, assist with construction)
  - c) contribution to educational experience (graphics, conservation message)
  - d) originality - is it something new and different, or has it been tried before
- B. **EXHIBIT FUNCTIONALITY:**
  - a) versatility - indoor/outdoor, four seasons, protection from elements
  - b) accommodates and encourages animal's natural behavior - climbing structures, land area, height, water
  - c) hard (gunite, concrete) vs soft (grass, dirt) environments - as to animal needs
  - d) sight lines valuable to animal as well as visitor - important to some animals (polar bear, chimps)
  - e) physical and visual barriers for animal's use, animal safety
  - f) flexible entrance/exits (hoofstock - more than one entrance)
  - g) ability to exhibit natural social grouping
  - h) breeding success
- C. **EXHIBIT MANAGEMENT:**
  - a) how management of exhibit interfaces with other zoo divisions (grounds, maintenance - simple repair, paint)
  - b) keeper serviceability, overall maintenance of exhibit and surroundings
  - c) adequate drains and properly located
  - d) quality and versatility of holding areas - ease of separating animals, moving, breeding, sick
  - e) keeper sight lines - can you see animal when they come into holding or when shifting them between areas, keeper safety
  - f) ease of providing time change items (browse, logs, feed, novel objects)
  - g) environmental control (ease of seasonal adjustments - ventilation, heat)
- D. **VISITOR POINT OF VIEW/OTHER INFORMATION:**
  - a) educational experience (conservation message)
  - b) immediate and sustained viewer interest
  - c) sight lines - not see doors, drains, fencing - does it have esthetics
  - d) bonus point - local awards, commendation, "wow" factor
  - e) include anything else pertinent to the renovated exhibit that you think is important



# 1993 Conference Proceedings Order Form

If you are interested in obtaining a copy of the Proceedings containing the papers presented at the 20th National AAZK Conference held in Atlanta, GA, you will need to fill out and return the form on the opposite page no later than 10 February 1994. 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	\$18.00
Non-Member	\$25.00

Postage for U.S. orders is included. Canadian and overseas orders should add \$3.00 for Air Mail postage to Canada and Surface postage elsewhere. Overseas orders wishing Air Mail service should add \$10.00. Make checks payable to AAZK, Inc.

**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.

The following papers are included in these Proceedings: Creating a Rain Forest in Seattle ~ Lowry Park and Florida Wildlife: A Commitment to Conservation and Restoration ~ Endangered Species Act Workshop ~ The Development of an Enrichment Masterplan ~ Exotic Animal Dentistry ~ The Value of Hands-On Management in the Bird Department at the Houston Zoological Gardens ~ Snake Bite Procedure Training Program ~ It's a Big World Out There (And What You, As A Zookeeper, Have To Offer It) ~ Behavioral Training of *Hylobates lar* at the Indianapolis Zoo ~ The Effects of Exhibit Expansion on the Behavior of a Mandrill Troop ~ The Captive Breeding and Management of the Blackbacked Duiker at the Memphis Zoo ~ The Captive Maintenance and Propagation of *Pongona vitticeps*, Inland Bearded Dragon ~ Aiding in the Development of Captive-born North American River Otters ~ Case History of the Hand-rearing and Reintroduction of Two Male Spectacled Langurs ~ Animal Enrichment at the Columbus Zoo ~ Don't Wait - Just Do It! ~ In Situ Conservation in the Ex Situ Community: Keepers Saving the Wild ~ Quarantine: Why is it Necessary? ~ A Nocturnal Behavioral Study of Three African Elephants at Zoo Atlanta ~ Reproductive Management of African Lions at the Topeka Zoo ~ Rhino Training ~ 1993 Bowling for Rhinos Workshop ~ Veterinary Emergency and Critical Care Medicine - CPR - for the Smaller Species of the Family Felidae ~ Update on Ngare Sergoi Rhino Sanctuary ~ Environmental Enrichment Workshop/Video Exchange.

Feel free to photocopy the form on the adjoining page to place your order.





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I wish to order \_\_\_\_\_ copy(s) of the 1993 Atlanta Conference Proceedings.

# of copies x price per copy = \$ \_\_\_\_\_ Additional postage (if applicable) is \$ \_\_\_\_\_

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Send this Order Form along with check or money order or payment authorization via credit card to: AAZK Conference Proceedings, 635 S.W. Gage Blvd., Topeka, KS 66606.

You may also order the 1993 Conference Proceedings by telephone using a Visa or Mastercard. Call 1-800-242-4519 (U.S. or 1-800-468-1966 (Canada).



**ORDERS MUST BE RECEIVED BY 10 FEBRUARY 1994**

Proceedings are only available by sending in your order form now. Once the initial printing is done, complete sets of Proceedings will no longer be available. After the deadline, only individual copies of papers will be available at \$2.00 each. So ORDER NOW!

# 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) 986-6921 [w]; (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** - Vacancy  
**IDAHO** - Vacancy  
**ILLINOIS** - Pat Swieca, 5710 W. Cullom Ave., Chicago, IL 60634  
**INDIANA** - Vacancy  
**IOWA** - Carla Wieser, Omaha's Henry Doorly Zoo, 10th St. & Deer Park Blvd., Omaha, NE 68107  
**KANSAS** - Vacancy  
**KENTUCKY** - Scott Wright, Cleveland Metroparks Zoo, 3900 Brookside Park Dr., Cleveland, OH 44109  
**LOUISIANA** - Vacancy  
**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** - Vacancy  
**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** - Frank Leonard, Bronx Zoo, 185th & Southern Blvd., Bronx, NY 10460  
**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) 986-6921 [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** - Vacancy  
**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  
**Atlantic Canada** - Bernard Gallant, RR # 7, 1081 Ryan Road, Moncton, N.B., E1C 8Z4

# Staff Exchange - 1994

By  
*Dale Frerking, Staff Exchange Coordinator  
Kansas City Zoo, Kansas City, MO*

In January 1993, shortly after publication of last year's "Staff Exchange" report, a steady stream of letters began materializing for us to keep current with. That clued us to the fact that there is a lot of interest in Staff Exchange, although we were fairly certain of that already.

For new AKF readers and others, Staff Exchange is a Membership Service of AAZK, Inc. We 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. It is recognized that participants and institutions gain new and broader knowledge of techniques, tools, natural history, and husbandry philosophies when exposed to others' operations; often increasing enthusiasm and a sense of responsibility to the community of wildlife care providers as a whole.

One useful resource is the staff Exchange Access List. This document lists all the institutions (zoos, aquariums, animal farms, living museum collections, etc.) that have expressed interest in, or responded to previous information requests from this Project. Currently listed are 70 entries from the U.S., Australia, and New Zealand, although we do hear from other zoos and countries in routine correspondence. Last year we reported that the Exchange Access List would be updated. This has been done and is now being sent out to individuals who would like to write and ask for it.

In our continuing dedication to creating a world-wide network of institutions that are interested in exchanging staff as an on-the-job training tool, we are corresponding in a number of areas. Animal care facilities in Mexico, Canada, and India have or will be contacted to consider participation on the Access List, along with many American zoos that have not previously registered with the Project. Inquiries have been made to The Association of Zoological Horticulture; and International Zoo Educators regarding their exchange programs for possible inclusion/association with the AAZK Exchange List in the future. We have also spoken with ZCOG (Zoo Conservation Outreach Group) who are in need of personnel to utilize in Central American areas.

As always, any individuals or institutions worldwide are welcome to write for information on exchanging, or adding their facility to the Access List. Requesting information or registering on the Access List in no way obligates any participation in an exchange or visit. This project is not a governing body, nor will we set up exchanges; our purpose is information dissemination.

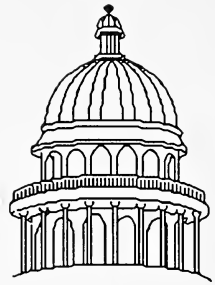
From the correspondence received, it is apparent that there is much interest in exchanges. It is also apparent that there is much diversity in institutional procedures and availability for exchanges. Many zoos successfully complete exchanges of varying lengths of time, and of those, some are registered with this Project and some are not. Some zoos' inherent policies discourage possibilities for staff exchange; some zoos financial, union, or insurance intricacies deter them from seriously exploring exchanges. Many zoos simply don't address it until a proposal is on the table. The key words in most cases are perseverance, flexibility, and creativity. Opportunities are available for those who will find them. Rewards of knowledge and professional interaction are in store for those institutions and individuals who take the opportunities.

For more information contact: Dale Frerking, AAZK Staff Exchange Coordinator, Kansas City Zoo, 6700 Zoo Drive, Kansas City, MO 64132-4200.



# Legislative Outlook

*Compiled by  
Phyllis Nilson-Wojcik  
Legislative Advisor*



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## **Importation of Exotic Birds to the United States: Final Rule Implementing the Wildbird Conservation Act of 1992**

Agency: Fish and Wildlife Service, Department of the Interior  
Action: Final Rule  
Federal Register/Vol. 58 No 219/Tuesday, November 16, 1993

Summary: On October 1992, the Wild Bird Conservation Act of 1992 (WBCA) was signed into law, the purposes of which include promoting the conservation of exotic birds by: ensuring that all imports into the United States of species of exotic birds are biologically sustainable and not detrimental to the species; ensuring that imported birds are not subject to inhumane treatment during capture and transport; and assisting wild bird conservation and management programs in countries of origin. This final rule implements the prohibitions stipulated in the WBCA and provides permit requirements and procedures for some allowed exemptions. This rule also replaces the feather importation quota regulations.

Effective Date: this rule is effective November 16, 1993.

For further information contact: Dr. Susan Lieberman, U.S. Fish and Wildlife Service, Office of Management Authority, 4401 N. Fairfax Dr., Room 420 C, Arlington, VA 22203.

## **Wild Bird Conservation Act of 1992 - "Summary of Effects"**

*Fact Sheet published by USFWS 11/93*

The Wild Bird Conservation Act (Act), a significant new step in international conservation efforts to protect exotic birds subject to trade, became effective on October 29, 1992. The Act focuses on bird species listed on the Appendices to Convention on International Trade in Endangered Species (CITES). If you import birds, you must now meet requirements imposed by this new law in addition to existing requirements imposed by CITES, the Endangered Species Act, the Migratory Bird Treaty Act, or other regulations that may apply.

It is important to note that the Act does not cover exotic bird products or all birds. The following birds are exempt from the provisions of the Act:

- birds native to the 50 States and the District of Columbia
- domestic poultry, sport-hunted birds, museum specimens, and dead scientific specimens.
- birds in the families Phasianidae (pheasants and quail), Numididae (guineafowl), Cracidae (guans and currasows), Meleagrididae (turkeys), Megapodidae (megapodes), Anatidae (ducks, swans and geese), Struthionidae (ostrich), Rheidae (rheas), Dromalinae (emus), and Gruidae (cranes).

## **Importations Allowed Under the Act**

### **-PERMIT REQUIRED-**

The USFWS may issue permits to allow importation of otherwise prohibited species if the Service determines the importation does not undermine the species' survival. A permit must be issued by the Service prior to importation. Permits may be issued only for the following purposes:

- scientific research;
- zoological breeding or display;
- pet importation when owners are returning to the U.S. after at least a year's absence;
- cooperative breeding programs, if the programs have been approved by the Service.

In addition, the Service allows birds listed under CITES that were exported from the U.S. by their owners to return to the U.S. These importations are allowed provided the birds were exported legally with a CITES permit and a copy of that permit is presented when the birds are to be returned to the U.S. Also, owners must accompany these birds when they are returned to the U.S.

### **-PERMIT NOT REQUIRED-**

The Act provides for certain otherwise prohibited importations without a permit provided the Service has approved the species, the captive breeding facility, or a scientifically based management plan for the species. The Service has not approved any species, breeding facilities, or management plans to allow for imports without a permit. In the future, the Service will publish an approved list for each of the following categories:

- certain approved captive-bred species,
- certain species from approved foreign captive breeding facilities, and
- certain wild-caught species from countries with approved management plans.

Until the Service has issued approved lists of species, their import will not be allowed.

APPLYING FOR A PERMIT TO IMPORT BIRDS - Permit applications and any other information you may need are available from the Office of Management Authority.



## **Elephant Hospital Opens in Thailand**

In Thailand, there is a whole new and horrendous meaning for the term "working for peanuts". Bangkok officials opened a hospital this past summer to treat severely ill elephants that, according to an article in *The New York Times* (July 26, 1993) "...had been fed fistfuls of amphetamines so they could work longer hours hauling logs from the jungle."

These drug-addicted elephants were not the new facility's only patients. As reported in *The Times*, the hospital, run by The Forest Industry Organization, also had to provide medical care for a number of elephants that had broken legs, caused by grueling working conditions. The decision to open the hospital was made by The Forest Industry Organization after 13 sick elephants had been turned over to it; in addition, 19 elephants were seized for violations of forestry laws. --from *Animal Watch*, Winter '93 ASCPA





# Book

# Review

## Lemurs of Madagascar and the Comoros The IUCN Red Data Book

C. Harcourt and J. Thornback, 1990  
IUCN Publications Services  
219c Huntington Rd., Cambridge CB3 0DL, UK  
Hardback, 240 pp.

*Review by Scott T. Willard  
Graduate Research Assistant  
Texas A&M Agricultural  
Research Center, Overton, TX*

"Its mission is to support conservation and sustainable development by collecting and analyzing global conservation data so that decisions affecting biological resources are based on the best available information." This is the mission of the World Conservation Monitoring Centre, a joint venture between the IUCN, WWF and UNEP, who compiled the following publication. On an island from which all the primates are declining each year, except *Homo sapiens*, a book such as Lemurs of Madagascar and the Comoros seems in earnest. Lemurs are found nowhere else in the world and fourteen species of lemur have already vanished since the arrival of humans on this 587,000 sq. km. "microcontinent". This book is an excellent compilation of the 30 remaining lemur species recognized for Madagascar. It provides an incisive look into the world of a unique primate and discusses options for their continued conservation.

In Lemurs of Madagascar and the Comoros, authors Caroline Harcourt, a primatologist, and Jane Thornback, compiler and editor of the IUCN Mammal Red Data Book, compiled what appears to be the extent of our current knowledge on lemurs into an easy-to-read, organized guide to a little understood group of primates. The book begins with two prefaces which emphasize a need to fill glaring gaps in our basic knowledge of lemurs. The IUCN Threatened Species Categories list follows, which defines the varying degrees of threat for species identified as being threatened by the IUCN. The Introduction is an excellent synopsis of Madagascar's flora and fauna. It provides information concerning the island and its inhabitants as well as outlines the extent to which lemur habitats are disappearing. Two maps compliment the text concerning the distribution of vegetation types and a look at the progressive deforestation of rain forests in eastern Madagascar over time. A list of the lemurs of Madagascar and their degree of threat follows the introduction.

The next section of the book deals with the protected areas which are recognized in Madagascar. The nature reserves and protected parks are divided into six categories of protected areas which are defined in the text. A listing of which lemurs are present in each protected area is provided along with maps which pin-point the locations of each protected area. Maps also illustrate major river systems and the location of some towns which may later be used as reference points in the text. The IUCN/Species Survival Commission Primate Specialists Group (PSG) role, goals and conservation efforts follows providing the reader with an outlet from which further information about Action Plans and primate conservation may be obtained.

The remainder of the book is devoted to the data sheets for the threatened lemurs of Madagascar. Each data sheet is divided into eight sections (summary, distribution, population, habitat and ecology, threats, conservation measures, captive breeding and remarks) followed by a list of references. Many species also have subspecies which are also described in the same fashion. Black and white photographs are present for many of the species. They are clear and well defined and provide an interesting view of the diversity of lemurs which currently exist. Where multiple subspecies exists, maps have been provided to illustrate distributions and approximate limits of ranges. The text within the data sheets is easy to read and full of interesting facts about lemur reproduction, behavior, diet, conservation efforts and much more.

## Book Review, *Continued*

The book contains three appendices which follow the data sheets. Appendix A and B are data forms and a request for information for those who may be in a position to provide further information to the IUCN concerning a species of lemur. Appendix C deals with information on national and international legislation protecting lemurs.

Dr. Russell A. Mittermeir, Chairman of the IUCN/SSC Primate Specialist Group, states that "Additional measures taken by the PSG include determining ways in which man and his fellow primates can coexist in multiple use areas...". As evident in this book, the face of Madagascar has changed, pushing many lemurs and other fauna to extinction. This displacement of habitat is primarily the result of human encroachment into the delicate balance of nature. Current conservation efforts are working "to promote and encourage the protection and sustainable utilization of living resources."

Books such as Lemurs of Madagascar and the Comoros provide valuable information from which conservation strategies may be formulated for individual species and their habitats. I would highly recommend this book to anyone interested in primate diversity, as well as conservation. It will be of great use to researchers and other interested individuals, as well as provide a model from which future compilations may be developed for other species.

### Mammals of the Neotropics - The Southern Cone Volume 2: Chile, Argentina, Uruguay, Paraguay

Kent G. Redford and John F. Eisenberg  
The University of Chicago Press, 1992  
5801 S. Ellis Ave. Chicago, IL 60637  
Paperback: 430 pgs. \$39.50

*Review by Robert W. Berghaier*  
*Animal Keeper*  
*Zoological Society of Philadelphia*

Mammals of the Neotropics, Volume 2 is the second volume of John Eisenberg's Mammals of the Neotropics. Volume I covered the northern South American countries of Panama, Columbia, Venezuela, Guyana, Suriname and French Guiana. These two books and Louise Emmons' Neotropical Rainforest Mammals: A Field Guide (reviewed in *AKF* May 1992) examine the somewhat neglected mammal fauna of South America. Until the recent appearance of these publications there were no comprehensive works that covered the mammals of the Neotropics. This state of affairs was in marked contrast to what was in comparison a myriad of books on African and North American mammals.

Volume 2 looks at the little known mammalian fauna of the southern third of South America. This area contains species and ecosystems that have not often been studied by English-speaking biologists. Fortunately, the area has not been neglected by the mammalogists of Argentina and Chile. This volume contains numerous references, many in Spanish, of the field research that has been conducted in this region. The book performs a great service by making the work of these individuals accessible to English-speaking wildlife biologists.

Even though this volume covers only four countries, among them they contain a diverse mix of habitats and species. Most readers familiar with the natural history of this part of South America are aware of the mountain habitats of the Andes where guanacos are found. They may also know of the vast grasslands of the pampas that were the preferred home of the pampas deer. However, how many know that the tropical forest habitat of the black howler monkey covers most of eastern Paraguay? It also enters the western part of that country as well as northern Argentina and Uruguay via river gallery forest. The cerrado savanna, where the maned wolf roams, also penetrates these areas. Also found in the region are lesser known ecosystems such as the dry but cool Patagonian steppe where cavys are found. Furthermore, there is a cool, moist Mediterranean-type forest which is the habitat of the pudu deer. In contrast is the hot, dry scrub forest of the Chaco where the Chacoan peccary was discovered in 1974. Each of these ecosystems contain little known and often endemic species of mammals. In all, the southern most end of the continent contains a diverse assemblage of over 350 different mammals, all of which are covered in this volume.

## Book Review, *Continued*

The book contains an introduction and fourteen sections. The introduction reviews the history of mammal studies and fossil records of the region. It also explains how the book is organized and should be used.

Section 1 is an excellent review of the complex biogeography of the area. It examines the effects of climatic change on the region's vegetation. The most interesting aspect to me was that the lower 15% of the continent functions biologically more like a peninsula than as part of a continuous landmass. Therefore, the impact of climate change, particularly glaciers, had more effect here than on the rest of the continent. That explains the diversity of ecosystems and mammal species found there.

Sections 2 through 12 cover the ten mammal orders found in the region on a species-by-species basis. Each animal's account includes its respective measurements, description (often including a sketch of a skull - very important for small mammal identification), distribution (along with a range map), life history and ecology information. At the end of these sections is a series of eighteen plates, seven in color, that have drawings of most animals that are discussed in the text.

Section 13 is a clearly written and interesting review of some selected mammalian community ecologies of the area. Of particular interest is a review of South American canid niches and environments. Section 14 covers the devastating impact of humans and their accompanying exotics on the region's natural mammal populations. This section reviewed the slaughter of wildlife on the Argentinan Pampas in the last century, which equaled our own destruction of game on the North American Great Plains. The book concludes with an index of the scientific and common names of species covered in this volume.

The Mammals of the Neotropics, Volume 2 would be an excellent addition to any mammalogists' library. The relatively inexpensive cost also makes it affordable for zoo libraries and for keepers who wish to have more detailed information about South American mammals in their care.



## **Polar Bears on Barter Island Will Punch Your Lights Out**

The Associated Press reported in December that polar bears on Barter Island, Alaska, have developed a special fondness for knocking out runway lights on the island's airstrip located about 360km above the Arctic Circle. The airstrip is illuminated with 1500 colored lights and the animals knocked out as many as 26 lights in a single night.

Peggy Kelly, Air Force radar station chief on the island said, "The polar bears seem to be fascinated with these lights as if they were toys. They've been seen punching the lights like a punching bag until they break."

Tracks in the snow show the bears appear to be single-minded in their actions as they move in a straight line from one light to another.



## **Information Please**

I would like to establish a protocol for seabird rehabilitation. The most common birds that come in are terns, boobies, noddies, and tropic birds. Information on tube feeding diets, supplements, etc. would be greatly appreciated. Please contact Kara Wells, Wildlife Technician, Unit 404, Suite 101, 1270 N. Marine Dr., Tamuning, Guam 96911.





# AAZK Logo Accessories/Chapter Products

**AAZK LOGO AUTO DECALS AND STICKERS:** Window Decals are \$2.50 each. Stickers come in two sizes: Large for 75¢ and Small for 25¢ each. These decals/stickers can be ordered from the Administrative Office, 635 S.W. Gage Blvd., Topeka, Ks 66606-2066.

**COLDER HOLDER:** Heavy-Duty Foam Colder Holder with the AAZK logo imprint. The cost is \$3.50. Please send your order along with payment to: AAZK Little Rock Chapter, c/o Britt Thompson, #1 Jonesboro Drive, Little Rock, AR 72205. Please make checks payable to: AAZK Little Rock Chapter.

**AAZK T-SHIRTS and SWEATSHIRTS:** The price for a t-shirt is \$8.50, which includes postage. The t-shirts are available in tan, blue, and brown in sizes S, M, L, and XL. The material is 50/50 polyester and cotton. The AAZK logo is located on the left front pocket area of shirt. The sweatshirt is 50/50 polyester and cotton in grey or maroon with a black AAZK logo. The sweatshirts are available in sizes M, L, and XL. The price of the sweatshirt is \$15.00 plus \$3.00 for shipping. Please send your order along with payment to: AAZK T-shirt/Sweatshirt, c/o Britt Thompson, AAZK Little Rock Chapter, #1 Jonesboro Drive, Little Rock, AR 72205. Please make checks payable to: AAZK Little Rock Chapter.

**AAZK MAGNETIC KEEPER SAFETY SIGNS:** The unique, black (keeper in area) and red (animal in area) on white magnetic signs are a must in any safety conscious zoo. They are 6" x 8" and can be flipped upsidedown to warn of a keeper in an animal area. The cost of the magnetic sign is \$10.85 each plus \$1.00 for postage and handling. Please send order along with check or money order made payable to Flint Hills AAZK Chapter and send to: AAZK Magnetic Signs, Sunset Zoo, 11th & Poyntz, Manhattan, KS 66502.

**MESH SHOPPING BAGS:** These 16" x 19" white nylon mesh bags have the AAZK rhino logo printed on the navy canvas top. They are reuseable, strong, and have a squared bottom for easier filling. Each bag costs \$4.00 plus \$1.00 for postage for a total of \$5.00. Please send order along with check or money order made payable to Philadelphia Chapter AAZK and send to: Philadelphia Chapter AAZK, Philadelphia Zoo, 3400 W. Girard, Philadelphia, PA 19104.

**AAZK KEYCHAIN:** This keychain has a thermometer on the front and the AAZK logo. On the back is a wind chill chart. Thermometer is encased in durable acrylic and is approximately 1"x2" in size. The price of the keychain is \$4.00 which includes postage. Please send your order along with payment to: Sara Weller, c/o Dallas Zoo, 621 E. Clarendon, Dallas, TX 75203. Please make checks payable to Dallas Zoo AAZK Chapter.

**AAZK BUMPER STICKER:** This silk screened 3" x 9" bumper sticker has kelly green lettering, black border/center line and the AAZK logo on a white background. The slogan reads "ZOO PARKS/Modern Arks". These bumper stickers are priced \$2.00 each for 1-49 and \$1.55 each for 50 or more stickers. The postage is an additional \$.30 per each 5 bumper stickers ordered. Please make checks payable to the Jacksonville AAZK Chapter and mail to: Jennifer Gerez at the Jacksonville AAZK Chapter, P.O. Box 8498, Jacksonville, FL 32239-8498.

**AAZK 25th ANNIVERSARY POCKETKNIFE:** This pocketknife has five functions (2 blades, scissors, toothpick and tweezers). The price of the pocketknife is \$3.75 which includes postage. Please make checks payable to the Memphis AAZK Chapter and mail to: Dena Mandino, Memphis AAZK Chapter, 2000 Galloway, Memphis, TN 38112.

**AAZK LICENSE PLATE FRAME:** This white license plate frame features the rhino logo with the words American Association of Zoo Keepers, Inc across it in green. The price of the license plate frame is \$5.00 which includes postage. Orders from Canada please send an additional \$1.00 to cover postage. Please make checks payable to the Detroit AAZK Chapter and mail to: Michelle Seldon-Koch, Detroit AAZK Chapter, P.O. Box 39, Royal Oak, MI 48068.

**AAZK LOGO FLYING SAUCERS (Frisbees):** These saucers are made from recycled plastic and are emblazoned with the AAZK logo in black on bright green. Available from the Beardsley Zoo AAZK Chapter for \$5.00 by contacting Rob Tomas, c/o Beardsley Zoo, 1875 Noble Ave., Bridgeport, CT 06610.



# USFWS, International Paper Join Forces to Conserve Threatened Species

In late November, Interior Secretary Bruce Babbitt joined International Paper Executive Vice-president Mark Suwyn in announcing plans aimed at balancing timber activities with the conservation of two rare species found in Alabama, Mississippi and Louisiana.

The two groups have completed development of a habitat conservation plan to protect the Red Hills salamander (*Phnaeogathus hubrichti*), listed as threatened under the Endangered Species Act. In addition, the company has committed to developing a similar plan for the western population of the Gopher tortoise (*Gopherus polyphemus*), also listed as threatened. Both plans will allow some timber harvesting to go forward within the historic range of the two species.

"International Paper is making a good faith effort at protecting these species while at the same time acknowledging the community's needs for a reasonable timber supply," said Secretary Babbitt. "They deserve a great deal of credit for looking down the road and trying to head off problems before they occur. These kinds of plans show the Endangered Species Act has the flexibility to allow companies to operate while preserving threatened ecosystems. In the South, these cooperative efforts are especially important because 90% of the region's land is privately owned."

USFWS Director Mollie Beattie, whose agency has direct responsibility for administering this habitat conservation plan, said, "Today we have gained the wisdom to know that the health of reptiles, amphibians, and other life forms tells us a great deal about the health of the world we live in. Someone once said the desert tortoise is not about the tortoise--it's about the desert. And the future of the Red Hills salamander is not just about the salamander--it's about the forests of the Red Hills of Alabama."

The plan provides for long-term conservation of the Red Hills salamander on International Paper lands while allowing limited "taking" of the salamander during some forest management activities. Under the provisions of the plan, International Paper will establish no-harvest zones on more than 4,500 acres of high-quality salamander habitat, and maintain buffers around these zones. Within buffers, limited timber practices will be allowed. In addition, International Paper will train employees to identify salamander habitat, establish buffers, and conduct timber activities within buffer zones in compliance with terms of the plan.

International Paper owns about 569,000 acres of forestland in Alabama, including 29,500 acres within the historic range of the salamander. The habitat conservation plan covers 6,400 acres in southern Alabama, including areas of optimum habitat which support the highest concentrations of the Red Hills salamander. The company has also announced it has begun work on a similar--and potentially much larger--plan for the western population of the Gopher tortoise. The company owns 125,000 acres of potential Gopher tortoise habitat in Mississippi, Louisiana and Alabama.

"We took the initiative in developing the habitat conservation plans because we recognize our stewardship responsibilities as a major landowner in this country," said International Paper's Suwyn. "Since we own a significant portion of land which is prime habitat for the salamander, and a very large acreage of potential habitat for the Gopher tortoise, it is only logical that we set the industry standards for these species. We view these projects as examples of private industry and governmental agencies developing creative solutions to natural resource issues."

Under the Endangered Species Act, "take" of listed species is prohibited. Take includes shooting, harming, harassing, or killing listed species or in some cases, destroying their habitat. However, the Act allows "incidental take", or limited take associated with otherwise legal activities, once a habitat conservation plan is approved by the USFWS. Currently, there are 17 habitat conservation plans nationwide covering about 23 endangered or threatened species. There are approximately 80 plans in the works.

>excerpted from Department of the Interior News Release 11/16/93



# AMERICAN ASSOCIATION OF ZOOKEEPERS



"A KEEPER'S PERSPECTIVE"

1994 NATIONAL CONFERENCE  
OMAHA, NEBRASKA

# Conference '94 ~ Omaha, NE

October 9 - 13, 1994

## FIRST CALL FOR PAPERS

"A Keeper's Perspective" is the theme for the 1994 AAZK National Conference in Omaha, NE. Proposed papers exploring the areas of conservation, reptiles/amphibians, aquaria, invertebrates, and enrichment are encouraged; however, general sessions will be held for topics not covered by the above areas.

Abstracts should be limited to two paragraphs, and should describe the significance of the topic and briefly review results, conclusions, or benefits of the topic. The following information must also be included with the abstract:

- \* Name of presenter/author(s)
- \* Zoological affiliation
- \* Position/title
- \* Title of paper
- \* Equipment Needed

Abstracts that do not contain proper submission information will be returned with a letter suggesting alteration necessary for possible acceptance.

Upon acceptance of a paper abstract, a letter of notification will be mailed to the presenter, along with a copy of "Guidelines for Typing Papers for AAZK Conference Proceedings". A typed copy (meeting Guideline) of each paper is due at the time of presentation for publication in the Conference Proceedings.

Presentations will be limited to fifteen minutes, followed by a five-minute question period.

Abstracts will be accepted for review until **15 July 1994**. If accepted, presenter will be notified in writing by **15 August, 1994**.

Please send to:

Cathy Socha, Chairperson  
Program Committee  
Omaha AAZK Chapter  
3701 South 10th Street  
Omaha, NE 68107-2200

# Conference '94

## FIRST CALL FOR POSTERS

AAZK members are invited to consider a poster format for presentation at the 1994 AAZK National Conference in Omaha, NE, October 9-13.

Formal poster sessions will be held concurrent to one or more paper sessions, although posters will generally be accessible while other conference activities are taking place, allowing them to be viewed during breaks, etc. In addition, poster authors will be encouraged to make themselves available whenever possible to discuss their work informally.

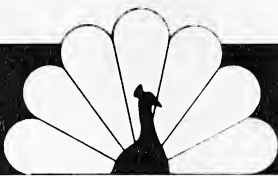
Poster abstracts should follow the same guidelines as those for papers. Under "Equipment Needed", please specify "Poster Presentation".

Please note that the **15 July 1994** deadline for submission also applies to poster abstracts. Likewise, poster authors will be notified in writing by **15 August 1994**, if accepted for presentation.

More extensive information on poster presentation will appear in subsequent issues of AKF.

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# The History of Ngare Sergoi

By  
Ian Craig  
*Lewa Wildlife Conservancy*

The concept of Ngare Sergoi and the goals for which AAZK, the Ngare Sergoi Support Group (NSSG) and Anna Merz have strived continue to expand and flourish to include a diversity of species and an entire ecosystem, way beyond our original dreams.

We started with a crisis situation of the Black rhino. They were being killed within the country to a point whereby the population could never recover. There seemed no solution to reverse this trend until Peter Jenkins conceived the idea of a small, high-security fenced area to contain the remnants of a once flourishing population, a holding situation until this trend could be reversed. The construction and development of Ngare Sergoi is a well-recorded history and the concept was a success. Animals brought in from isolated corners of Kenya with no chance of survival, let alone any prospect of breeding, flourished, bred and produced offspring. Where there had been despair there was suddenly hope and alternatives. Ngare Sergoi was a pilot project. The Kenyan Government realized that this was the only option and built two new rhino sanctuaries at Nakuru and Nqulia. Both of these sanctuaries have been successful, maintaining viable breeding populations of Kenya's Black rhino.

At Ngare Sergoi, together with the help of many supporters, the Sanctuary expanded to 10,000 acres from its original 5,000 acres. With the extended area the population could also expand. During this period, the Management Team developed new techniques in the management of the fenced areas, fencing designs and principles of Black rhino management in fenced areas.

With the rhino situation both at Ngare Sergoi and nationally now stable, we were able to look at other areas within the ecosystem that required care and attention in this changing world.



**Translocation of Black and White rhinos from areas in Kenya where they are threatened to the safe haven of Ngare Sergoi requires the coordinated efforts of many individuals, reliable truck transport, veterinary assistance and a bit of good luck. The Sanctuary currently houses 18 Black and 11 White rhinos and breeding efforts have been successful with both species. (Photo courtesy of Andy Lodge, NSSG, Inc.)**

## The History of Ngare Sergoi, *Continued*

Elephant were still under severe poaching pressure in the North of the country; small-holder farmers at the same time were having their very existence destroyed by crop marauding elephant in the south of Lewa and Ngare Sergoi. Together with the financial support of AAZK, NSSG, Anna, and many other individuals, the game guards from Ngare Sergoi started working in conjunction with the Kenya Wildlife Service on elephant surveillance in the Mathews Range. Since November 1990, no elephant have been poached in this area where previously in excess of 30 animals were being killed each year. This exercise continues and twice yearly our game guards spend extensive periods of up to six weeks in the bush just looking and listening in the remote area in order to keep these elephants safe.



**Some 220 elephants inhabit the protected 10,000 acres which make up the Ngare Sergoi Sanctuary and the Ngare Ndare Forest Preserve. Because the elephants had caused problems by damaging crops of local residents, 52-acres of specially designed fence was erected around the Preserve to keep the elephants and agricultural interests separated.** *(Photo courtesy of Andy Lodge, NSSG, Inc.)*

To the South, again AAZK and NSSG came to the rescue where the elephant damage to small holders' crops was extensive. Fifty-two kilometers of specifically designed fence was erected around the Ngare Ndare Forest, preventing the elephant from entering the agricultural area. Dr. Richard Leakey opened the fence, citing the project as a model of cooperation between the local community, Government and private enterprises. This fence was the first specifically built to contain this problem and it has been nearly 100% successful, with only one incident of an elephant breaking through. The elephant on one side and the local community on the other now live in harmony as opposed to conflict.

The concept of this fence, once again with AAZK and NSSG's help, expanded to include the entire area of Lewa Downs. With the increasing population of Kenya and the flourishing wildlife numbers within Lewa, again there had been conflict between small holder agriculture along Lewa's boundaries and the wildlife living on Lewa. This is now solved 100%.

With Kenya's expanding populations, the pressure on wildlife areas increases. With this fact upmost in our minds, the Management Team of Ngare Sergoi next started to address the related problems. The community needed schools - it was a fact that adjoining wildlife areas would only be able to conserve their wildlife if it could be proved that wildlife provides a direct financial benefit to the local people and could improve their standard of living. School children born and brought up within 10 kilometers of wildlife areas had never seen an elephant. Financial assistance was sought and four schools are being constructed to modern standard. A

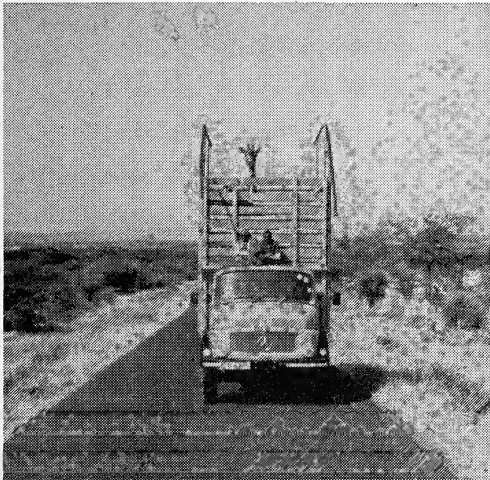


## The History of Ngare Sergoi. *Continued*

plan is being formalized through the Kenya Wildlife Service to obtain World Bank funding for a small tourist lodge in the adjoining communal lands so the landowners can directly benefit from tourism and their wildlife.

The Ngare Sergoi lorry (truck) provided by AAZK, having completed the translocation of 184 giraffe, will be used to help transport materials to construct this lodge. The marketing, design and operation will be under the wing of the newly-formed "Lewa Wildlife Conservancy". The beneficiaries will be the local people and their wildlife.

Two to three school visits to Lewa are planned monthly with the AAZK lorry carrying up to 60 children on a sightseeing tour of the Conservancy. They will hopefully return home enriched and fascinated by what they see.



**The lorry at left was purchased with funds from "Bowling for Rhinos". It has been used to translocate 184 giraffe which had overpopulated the Sanctuary. Current plans for the lorry include taking Kenyan schoolchildren on tours of the Lewa Wildlife Conservancy in order to increase their awareness of the animals indigenous to their country. Many children there have never seen a Rhino or an Elephant. The area is home to over 40 species of wildlife including Sitatunga and Grevy zebra as well as over 100 species of birds (Photo courtesy of Andy Lodge, NSSG, Inc.)**

These are all the salient points for which we, together with AAZK and NSSG, strive to maintain and build upon. The other side is that rhino horn is in demand now more than ever--demand is higher than the supply. There is a trade ban on ivory--this has helped but once again ivory is moving, albeit slowly, and will the ban hold beyond 1994? The fact remains that a trend has been severed, but to hold this stable costs money--no longer capital items to be purchased, but rather the day-to-day maintenance of what has been built up over the past 10 years. Such expenses include fuel, lorry tires, aircraft maintenance, radio repairs, as well as uniforms and wages needed for the hardworking staff who have devoted the prime years of their working lives to this cause.

The "Lewa Wildlife Conservancy" now had all the capital equipment and expertise required, thanks to the generous support of many individuals. It is a stated objective of the Conservancy to formulate a plan to be self-sufficient financially within five years and for the wildlife to directly support the machine required to give them their stability and peace. This is an ambitious goal, but on paper a possibility nevertheless. In the meantime, we ask for the continued support of AAZK to look after this varied and wonderful ecosystem.

The Conservancy now includes, under common wildlife policy, 145,000 acres (58,000 acres fenced) from a start of 5,000 acres. The staff employed has grown from one senior officer and 30 men to four senior officers and 160 employees.

## The History of Ngare Sergoi. *Continued*

The recurrent budget has grown from \$3,500 per month to \$18,500 per month. The Conservancy now holds 18 black rhino, 11 white rhino, 220 elephants, 12 sitatunga, 390 Grevy zebras (being 12% of the remaining wild population in the world), at least 40 different species of wildlife and over a hundred different species of birds.

A full inventory of the plants is being collected by a research team from South Africa helping to formulate a long-term management plan to secure the future of this diversity.



Anna Merz, shown above with Samia, the rhino she hand-reared, has devoted her life to the preservation of the rhinos of Africa. Her dedication and commitment have inspired hundreds of AAZK members to become involved in "Bowling for Rhinos" - a national fundraiser which helps support Ngare Sergoi. (Photo courtesy of Andy Lodge, NSSG, Inc.)

## Chapter News

### Attention Chapters !

Please keep us advised of your activities and projects. If you have not gotten into the habit of submitting news items to this column, we hope you will.

Share your ideas on fundraising and projects with other AAZK Chapters. Announce your new officers, present a new logo, make the other Chapters aware of your conservation efforts. Items for this column should be to us by the 15th of each month. Thanks!

### Central Florida AAZK Chapter



Central Florida Chapter's September meeting held at Sea World included a Keeper Quiz which was a surprising success. Names of the members who attended were thrown in a hat and random teams were picked. Twelve slides were shown and members were asked to write the common name, as well as the scientific name and habitat of the species pictured. After the quiz (high score was 37%) we went over to the Shamu stadium to watch the newest baby Shamu and mom.

Keepers from seven different parks came to the Fall Fling at the Springs Camp-out on 24 October at Silver Springs. Keepers from Silver Springs overwhelmed us with their warm southern hospitality. Activities included a barbecue, bonfire,

## Chapter News, *Continued*

continental breakfast, and a behind-the-scenes tour of the animal park. We thank all of the people who made the weekend a great experience.

At the November meeting nominations for new officers were made. President Mike Cothran wore his sacred flowered shirt and led the meeting for the last time. Mike's enthusiasm will be hard to replace. All of us thank Mike for the effort he has made over the past two years. Newly elected officers for 1994 are:

President.....Bonnie Brietbeil  
Vice Pres.....Jamie Sincage  
Secretary.....Nelia Lake Stephens  
Treasurer.....Nancy Schrader  
Liaison.....Alyce Orr

Finally, the Pot Luck Christmas Party at Bonnie's had the holiday spirits flowing with a turkey and all the trimmings. Have a Happy New Year!

--Rick Smith, Florida RC

### Western New York AAZK Chapter

Our second annual Bowling for Rhinos event was held on 22 June 1993 at the Broadway Sports Center. This successful event raised over \$1400.00 for the Ngare Sergoi Rhino Sanctuary. As a thank-you to all bowlers, they were given T-shirts with the AAZK Bowling for Rhinos logo on them. It was a fun time for all involved in this worthwhile event. A thank-you goes out to Catherine Meyer for coordinating this event.

Our Chapter, recognizing the importance of enrichment for the well being of the animals under our care, is trying to become more involved in this aspect of our duties as zoo keepers. We currently subscribe to the informative *Shape of Enrichment* magazine. One of our members, John Heine, attended the first ever Enrichment Conference held this July in Portland, OR, and gave a presentation on it at our November meeting.

We are also using money from fundraising events and donations, such as the donation of \$220.00 from Niagara Community College's Animal

Management Program, to purchase tools for building enrichment devices and for purchasing enrichment items such as Boomer Balls® and different types of rope. We hope to keep experimenting with different methods to provide enrichment activities for the animals at our Zoo.

Funds are raised for our chapter through member dues, pop can recycling, numerous bake sales, as well as other fundraising efforts. Our chapter recently made a donation of \$250.00 to help improve a scenic overlook on the Iroquois National Wildlife Refuge. For our donation the name of our organization will be recognized on a plaque at the site.

--Sherri Doherty, Secretary

### Fort Worth Zoo AAZK Chapter

Below is the new logo recently adopted by the Fort Worth Zoo AAZK Chapter. The concept was developed by Lisa Weedn, a Bird Keeper II, and the artist was H.T.D. Weedn of the zoo's Education Department.

Enclosed with the logo was a note from Lisa which stated: "Being a zoo keeper means much more than taking care of individual species, we are all active participants in the international conservation, research and education projects that benefit our planet. We are Keepers of our world!"



## Chapter News, Continued

### Rocky Mt. AAZK Chapter

Officers for 1993 were: President - Linelle Lone; V.P. - Ann Zobrist; Secretary - Karen Stern; Treasurer - Marlene Kumpf; and Chapter Liaison - Vickie Kunter.

New Officers for 1994 are:

President.....Ann Zorbrist  
Vice President.....Susan Nolan  
Treasurer.....Suzanne Chacon  
Liaison.....Vickie Kunter

Bowling for Rhinos was held at Athmar Lanes on 22 April. We had 97 bowlers and raised more than \$8400.00.

Plans are underway for the AAZK 1995 National Conference. We are involved in many different fundraising activities from selling shirts of various styles to giving lectures. We hope many people will attend - it should be great!

We were honored to receive the 1993 Nature Conservancy Conservation Award for our efforts towards the Ecosystem Survival Plan. With our Conservation Parking Meter located just outside the Zoo's new Tropical

Discovery exhibit, we have hopes of collecting even greater sums of money toward this worthy project in the coming year.

--Vickie Kunter, Chapter Liaison

### AAZK Honolulu Chapter

Newly elected officers for 1994 are:

President.....LeeAnn Anderson  
Secretary.....Susan Brant  
Treasurer.....Charlene McKee  
Liaison.....Linda Kinney Meier

We hope to be a little more active in AAZK this year and have already come up with some ideas we would like to try for events and/or fundraisers.

--Charlene McKee, Treasurer



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

Alexandra Burpee, Southwick's Zoo (MA)  
Deborah A. Roth, Burnet Park Zoo (NY)  
Leslie Mitchell, Philadelphia Zoo (PA)  
Rhonda Washington, N. C. Zool. Prk. (NC)  
Bradley Parks, Zoo Atlanta (GA)  
John Beasley, Dreher Park Zoo (FL)  
Amy Graves, Knoxville Zoo (TN)  
Brint Grimes, Knoxville Zoo (TN)  
Jim Harrison, Miami Valley Serpenterium (KY)  
Catherine Short, Kentucky Down Under (KY)  
John Hastings, Kentucky Down Under (KY)  
Kathy Hemingway, Little Rock Zoo (AR)  
Melissa Brand, Houston Zoo (TX)

Polly Campbell, Franklin Park Zoo (MA)  
Christine Anderson, Utica Zoo (NY)  
Elmer Franken, Philadelphia Zoo (PA)  
Cynthia Horton, Zoo Atlanta (GA)  
Suzanne Smith, Zoo Atlanta (GA)  
William Pugh, Busch Gardens (FL)  
Greg Bryant, Knoxville Zoo (TN)  
Tina K. Judd, Knoxville Zoo (TN)  
David Groce, Kentucky Down Under (KY)  
Tommy Trousdale, Kentucky Down Under  
Keith Fulkerson, Kentucky Down Under  
Christy Sky, Houston Zoo (TX)  
Brian Potvin, Texas State Aquarium (TX)

Cynthia Digesualdo, Fossil Rim Wildlife Center. (TX)

### **New Contributing Members**

Richard Owens, Volunteer, Philadelphia Zoo, Philadelphia, PA

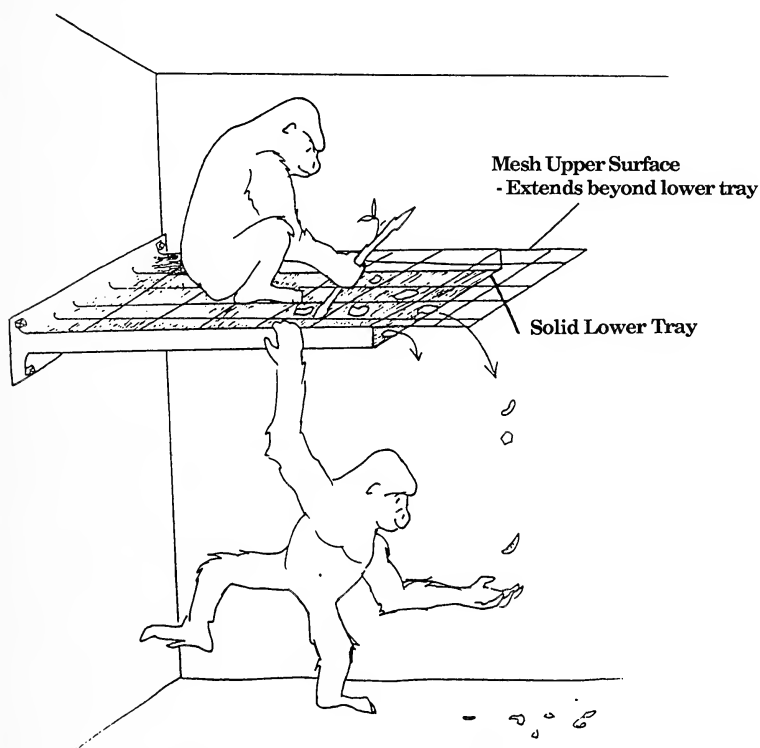
### **Renewing Contributing Members**

Joan Schultz, Owner, Boomer Ball, Grayslake, IL  
John Tobias, Superintendent, Miller Park Zoo, Bloomington, IL  
Gordon Henley, Director, Ellen Trout Zoo, Lufkin, TX  
Tina Riscignolo, Mesa, AZ  
Gerald Murrie, San Diego, CA





Rob Sutherland from the Calgary Zoo created the design shown below. The "Top Mesh Feeder" is intended to increase gorilla food gathering techniques.



**MEERKATE/FENNAC FOXES** - Solid round rawhide balls. They are very hard to get into and last a long time.

**SQUIRRELS** - Fruit-flavored rawhide bone (can get these at a pet store; made for parrots).

"Almond Board" - hard wood with holes drilled through to hammer in almonds, hazelnuts, etc..

--Melanie Haynes  
Pueblo Zoo, Pueblo CO



## Smuggled Peruvian Primates Find Sanctuary at Primarily Primates, Inc.

The lives of three tea-cup sized New World primates have been saved from the lucrative pet trade. According to California officials, William Embody of California confessed to smuggling the three rare Peruvian primates into the U.S. last August. Embody was caught as he attempted to sell the protected primates for \$3,500 each from his car outside a pet store in Corte Madera.

The Marin Humane Society (MHS) was alerted to the case by a concerned resident. With local authorities, Society officers approached Embody and confiscated the three tiny palm-sized monkeys - one Pygmy marmoset (*Cebuella pygmaea*) and two Saddleback tamarins (*Saguinus illigeri*). According to officers, Embody had tightly tied one end of a shoe string around the monkeys' waists and pinned the other end to his shirt. He allowed the primates to cling to him on these makeshift leashes as he attempted to entice possible buyers.

These three male primates are protected species under CITES which governs trade in endangered species and other wildlife. Under CITES, California State Fish and Game Dept., and the U.S. Fish and Wildlife Service (USFWS), Embody faces federal felony charges of up to \$1,800,00 for illegal importation, state misdemeanor violations, and possible jail time.

Authorities further investigated Embody after they issued a warrant to search his residence. While no other primates were discovered, documents were discovered to verify that he had just returned from Peru. Within an hour into the search, Embody confessed to drugging the tiny infant primates with a children's cough syrup and smuggling them through U.S. Customs at Los Angeles International Airport inside his coat pocket. The investigation had, as yet, not led to the prosecution of anyone else.

Despite initial placement with MHS, the USFWS recommended the animals be sent to Primarily Primates in San Antonio, TX, a facility known for its expertise in caring for these rare creatures. After contacting Primarily Primates, MHS officials chose to send the delicate primates to the Texas hill country sanctuary where their individual specialized dietary and life-time needs would be met. The animals were accompanied to Primarily Primates by MHS official Kym Lanham-Snyder and American Airlines allowed the pressure-sensitive primates to travel within the passenger compartment.

Upon their arrival on 15 October, it was learned that the 8-ounce tamarins, Larry & Moe, were less than 6 months old; and the 4-ounce Pygmy marmoset, Curly, was less than 4 months old. That the animals survived at all is amazing since according to Walter Swett, President of Primarily Primates, "Studies have shown that ninety percent of such monkeys smuggled into the country die from travel-related stress".

Primarily Primates, Inc. is a nonprofit organization which is dependent on donations for its existence and continued work. Anyone interested in providing support for the Peruvian infant monkeys or general assistance for the work of this organization, may contact them at: Primarily Primates, Inc. P.O. Box 15306, San Antonio, TX 78212-8506 Phone: (210) 755-4616.

*--excerpted by a news release written by Stephen Rene Tello,  
Corporate Secretary for Primarily Primates, Inc.*



### 1994 AAZPA Regional Conferences

**6-8 March 1994** - Central Regional Conference. For more information, contact Donna Chain, Oklahoma City Zoo, 2101 N.W. 50th St., Oklahoma City, OK 73111 (405) 424-3344.

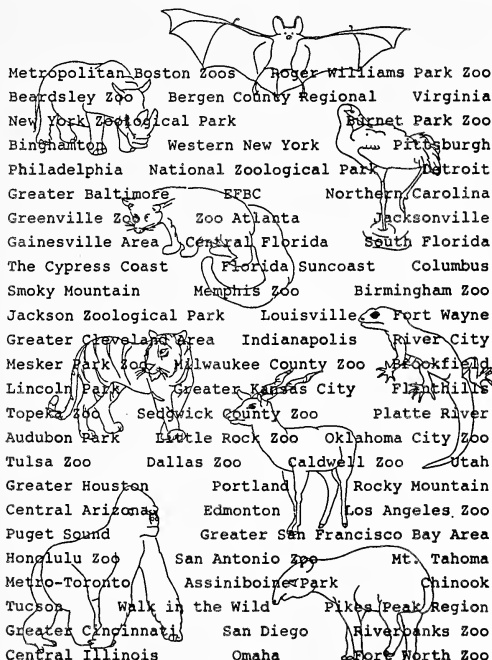
**20-22 March 1994** - Southern Regional Conference. For more information, contact Beverly Rutland, Montgomery Zoo, P.O. Box ZEBRA, Montgomery, AL 36109 (205) 240-4900.

**10-12 April 1994** - Western Regional Conference. For more information, contact Jean Miller, Micke Grove Zoo, 11793 North Micke Grove Road, Lodi, CA 95240 (209) 953-8840.

**17-19 April 1994** - Great Lakes Regional Conference. For more information, contact Carol Pedersen, Blank Park Zoo, 7401 S.W. 9th St., Des Moines, IA 50315 (515) 285-4722.

**1-3 May 1994** - Northeastern Regional Conference. For more information, contact Troy Stump, ZOOAMERICA, North American Wildlife Park, 100 West Hersheypark Dr., Hershey, PA 17033 (717) 534-3862.

# National AAZK Chapters Dedicated to Worldwide Conservation and Professional Animal Care



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 The Cypress Coast    Florida Suncoast    Columbus  
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# Evolution, Innate Behavior, and Single Parent Child-rearing in Black-tufted Ear Marmosets (*Callithrix kuhli*) in Captivity

By Dana LeBlanc, Primate Keeper  
The Lubee Foundation, Inc., Gainesville, FL

On 2 September 1993, the Lubee Foundation, Inc., Gainesville, FL, celebrated the birth of 0.0.2 Black-tufted ear marmosets in its callitrichid collection. Black-tufted ear marmosets are among the least well known of the living New World primates (Natori, 1990), and occur only in the southern Bahia in eastern Brazil where most of its habitat is being modified by man (Mittermeier et al., 1982).

In captivity, marmosets and tamarins are usually maintained in monogamous breeding pairs and family units (Moore, 1989). Single parent child-rearing is a rare phenomenon in callitrichids where in contrast to most other South American primates, the dominant male plays an integral role in early child-care (Rothe, 1977). The communal infant care system observed in callitrichids is presumed to be related to the high infant/adult weight ratios in which relative to adult weights, marmoset and tamarin infants are the largest primate infants which are physically transported (Tardif, 1990).



**While rearing of offspring in the Black-tufted ear marmosets is usually a two-parent effort - with the male doing much of the carrying while the female takes over for nursing - this female at The Lubee Foundation in Gainesville, FL was forced to assume all rearing responsibilities when the male died prior to the twins' birth. (Photo by the author)**

From the standpoint of evolution, the communal infant care system appears advantageous because demands for energy on the breeding female during lactation of twins are enormous (Kirkwood and Underwood, 1984; Goldizen, 1987), and the female would need an opportunity to hunt and gather food unencumbered (Price, 1992). This situation is also compounded with a rapid post partum oestrus in callitrichids which occurs 2-4 weeks following birth (Ziegler et al., 1987) which means the breeding female will also need the time period following parturition to prepare for a second pregnancy.



## Black-tufted Ear Marmosets, Continued

In the current situation, a new pair of Black-tufted ear marmosets were established with a young female that was pulled from her natal group when she showed child carrying capabilities with her siblings. No breeding was observed, but the female showed some increase in weight. Unfortunately, the dominant male became ill and died just prior to parturition, leaving a single parent to both nurse and carry the offspring. From an evolutionary standpoint, this female has two competing innate behaviors through which she is compelled to nurse and defend her young, but at the same time, wanting to rub the infants off after nursing to share the work load with others in a group. This female judiciously carried her offspring for 20 days, at which point she started leaving the infants on top of a nestbox to take short breaks from carrying. Both infants were successfully reared by their single parent, and an unfortunate situation ended without hand-rearing.

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## LIGHTNING FLASH

While we all view lightning as one of nature's mysteries, many do not realize the true phenomena in itself. **Did you know that:**

> Each bolt (with about 100,000 thunderstorms a year) has the capacity to discharge 100 million volts of electricity and up to 300,000 amperes of current. (It takes only 15-20 amps to blow a fuse at home!)

> The core of a lightning bolt is only about 1 inch in diameter. While it may look as big as the sky, it's only because its temperature can be more than 60,000 degrees Fahrenheit (more than five times the temperature on the surface of the sun). The high temperature ionizes the air around the bolt, causing the huge glow across the sky.

> Many scientists believe that lightning may have sparked the chemical evolution of life on the planet. Electricity has been shown to convert pre-life gases abundant on earth to amino acid-like molecules.

>from *Outdoor Photographer/Nature News*, Vol. 8, No. 10, October 1993



*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.*

*The following two (2) positions are available at the New Jersey State Aquarium. For either position send resume and cover letter to: Human Resources, New Jersey State Aquarium, One Riverside Dr., Camden, NJ 08101-1060. EOE.*

**MARINE MAMMAL TRAINER**...performs routine husbandry and exhibit maintenance for a mixed collection of nine gray, harbor and harp seals. Participates in animal training programs and public demonstrations which focus on natural behaviors and adaptations. Requirements include a BS in biology or related field and one year of experience or three years professional marine mammal husbandry and training experience, driver's license and SCUBA certification. Public presentation experience preferred. Salary low \$20's.

**AQUARIST**...responsible for animal husbandry and exhibit maintenance. Assists with animal collection and husbandry protocol development. BS in biology with coursework in Ichthyology, Aquatic Ecology and Invertebrate Zoology and advanced husbandry experience; 3 or more years professional fish husbandry experience may substitute for the degree. SCUBA certification and valid driver's license are required. Low \$20's.

*The following two (2) positions are open at The Philadelphia Zoo. To apply for either position send resume and cover letter to: Human Resources, Philadelphia Zoo, 3400 West Girard Ave., Philadelphia, PA 19104. EOE.*

**REPTILE KEEPER**...requires degree in biology or a related field and a minimum of one year of work experience with reptiles and amphibians. Two or more years experience can substitute for the degree. Must have experience with or ability to be trained in handling of venomous reptiles.

**ANIMAL KEEPER**...requires two years experience or a degree and one year of experience with captive exotics and strong written and oral communication skills. This is an open relief position assigned to areas as needed. Responsible for care, feeding, health/safety of animals; exhibit maintenance; behavior observation; interaction with the public.

**ANIMAL KEEPER/Utah's Hogle Zoo**...prefer Associate's or Bachelor's degree in biology, zoology or related field and one year of primate experience. Responsible for care of a diverse collection of primates, including daily husbandry, exhibit maintenance, observation and enrichment, as well as assisting in veterinary practices, education, public relations and support aspects of the zoo's operation. Salary is commensurate with experience and ranges from \$14,868 - \$23,076, with an excellent benefit package. Please send cover letter, resume and references **by 25 January 1994** to: Kimberly Davidson, General Curator, Utah's Hogle Zoo, 2600 E. Sunnyside Ave., Salt Lake City, UT 84108. EOE.

**ZOO KEEPER/AQUARIUM**...requires high school diploma and preferably a BS in a related field with one year's work experience. Responsible for care of aquarium specimens/terrestrial arthropods, and maintenance of exhibits. SCUBA certification desired. Starting salary \$18,740 per year with benefits. Submit resume **by 31 January 1994** to: Nancy Foley, Director of Human Resources, The Toledo Zoological Society, P.O. Box 4010, Toledo, OH 43609.

**ELEPHANT KEEPER**...requires a basic understanding of animal training and its importance. Also requires the ability to accept direction and work as a member of the team in an extensive hands-on elephant program. Must have interpersonal skills and be team oriented. High school degree required. College degree preferred. Send resume to: Richard M. Hurst, Indianapolis Zoo, 1200 West Washington St., Indianapolis, IN 46222.

## Opportunity Knocks, *Continued*

The following two (2) Bird Keeper positions are open with the Zoological Society of San Diego. For either position send resume to: San Diego Zoo/Human Resources Dept., P.O. 551 San Diego, CA 92112 Attn: Bird Keeper. NO FAXED COPIES. Apply by 15 February 1994.

Position # 1...is a regular position WITH BENEFITS (year round and will start 1 March, 1994).

Position # 2...is a regular position WITHOUT BENEFITS (Seasonal from 1 April, 1994 - 30 June, 1994) assisting the first keeper during peak breeding season.

These are keeper positions on San Clemente Island as per contract with the U.S. Navy. Seven days a week availability required. Room and board provided. Ability to train in artificial incubation and hand-rearing of a passerine bird; follow detailed written protocols; operate a 4WD vehicle and work in an isolated environment. Knowledge of artificial incubation and hand-rearing of baby birds preferred.



## *Publications Available*

The Biology and Management of Australasian Carnivorous Marsupials - Edited by Miles Roberts, John Carnio, Graham Crawshaw and Michael Hutchins and published by the Metropolitan Toronto Zoo and the Monotreme and the Marsupial Advisory Group of the AAZPA. The 165-page book is the outcome of a symposium by the same title held at the AAZPA Annual Meeting in Toronto in 1992. The book is a collection of research and background papers dealing with aspects of the biology of Australasian carnivorous marsupials specifically pertaining to their management in zoos. Topics include:

- \* The status of carnivorous marsupials in captivity including a survey of current space use and future requirements.
- \* A review of the biology and conservation status of the Dasyuridae and Myrmecobiidae. Topics covered include taxonomy, paleontology, ecology, physiology, behavior and conservation.
- \* A discussion of semelparity in dasyurids, the extreme life history strategy in which all breeding age males die at the end of their first breeding season, and a hypothesis for its evolution based on sperm competition.
- \* Diseases of dasyurids in zoos, including a detailed review of the pathology of the tiger quoll.
- \* Management case histories discussing reproduction, husbandry and exhibition of the Tasmanian devil, tiger quoll, kowari, brush-tail phascogale, several New Guinea dasyurids and the numbat.
- \* An extensive 20-year bibliography on the biology of carnivorous marsupials.

Copies may be obtained at the cost of \$US20 each (plus \$US5 for shipping to destinations outside North America) by writing to: Miles Roberts, Department of Zoological Research, National Zoological Park, 3000 Connecticut Ave. N.W., Washington, DC 20008 USA.



# Animal Keepers' Forum 1993 Index

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symbols used with page numbers mean:

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- (E) enrichment options
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- (K) keeper alert
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# Animal Keepers' Forum

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*Dedicated to Professional Animal Care*

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*Animal Keepers' Forum* (ISSN 0164-9531) is a monthly journal of the American Association of Zoo Keepers, Inc. 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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Marilyn Cole, Metro Toronto Zoo	Lesa Scheifele, Norwich, CT - Coordinator
<u>AAZK Training Materials</u>	Lois Johannes, L. A. Zoo - Foreign Keeper
Laura Treschel, Continuing Education Coordinator, Minnesota Zoological Gardens	Sponsorship
Christina Simmons, Keeper Training Package Coordinator, San Diego Zoo	

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<u>AAZPA Liaison</u>	<u>Elephant Managers Association</u>
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<u>Bowling for Rhinos</u>	<u>CAZPA Liaison</u>
Patty Pearthree, Indianapolis Zoo	Tom Mantil, Metro Toronto Zoo

### AAZK PUBLICATIONS : CONTINUING DATA COLLECTION

Zoo Infant Development Project - Harmony Frazier, Woodland Park Zoo (Mammals)  
Teri Maas/Maggie Liguori, Philadelphia Zoo (Birds/Nonpasserines); Kim Livingstone, L.A. Zoo (Passerines)  
Jeanne Bocconcelli, Newark Museum Mini-Zoo (Reptiles); Linelle Lone, Denver Zoo (Amphibians)  
Diet Notebook, Mammals, Vol. II - Susan Bunn Spencer, Grand Rapids, MI



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## Scoops

and

## Scuttlebutt

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## Scoops & Scuttlebutt, *Continued*

Liaisons have been appointed from the following organizations: AAZV Legislative/Animal Welfare Committee; AZA (formerly AAZPA) Accreditation Commission; CAZPA/Accreditation Commission and USDA Western Regional Office/California. These liaisons will be called upon for their input, but the AAZK/ISC will be responsible for the work involved in putting the manual together.

There is no date for publication at this time, due to the nature of the work it is felt best to proceed conscientiously in order to produce a valuable resource. This manual will be useful for training programs and for the zoo keeper who wants to support a high standard of knowledge about their profession. We feel this manual will provide zoo managers with an educational tool for their animal care staff to maintain quality husbandry practices.

More information will be available in future issues of *Animal Keepers' Forum*. For further information or comments on the progress of this committee, please contact: Rachél Watkins Rogers, Chair AAZK/ISC, San Diego Zoo/Mammal Dept., P.O. Box 551, San Diego, CA 92112-0551. (619) 231-1515 Ext. 4672.

### Two ISC Positions Available

Due to recent resignations, two positions are now available for committee members to the newly formed AAZK Inspection Standards Committee. To qualify you must be able to work independently, be an AAZK member 'in good standing', and have good reporting skills. Computer literacy is beneficial, but not essential. These positions require the ability to interpret and simplify, in writing, various standards of inspection (e.g., Animal Welfare Act, AZA Accreditation Commission, CAZPA Standards of Animal Care and Housing, AAZV Animal Welfare Standards, etc.). If you are ready for this type of a project, please submit a resume to Rachél Rogers at the address given above.



## **Call For Papers** **Animal Welfare, The Journal**

The third volume of *Animal Welfare* is in preparation. Submission of manuscripts with implications for improving the welfare of any animals are invited. Please request a free sample pack with instructions for authors from Victoria Taylor, Universities Federation for Animal Welfare, 8 Hamilton Close, South Mimms, Potters Bar, Herts EN6 3QD England.

Major articles in Volume 2 included the social manipulation of captive primates; the human-animal relationship in farming; stress and animal welfare; release to free-ranging behaviors in lemurs; microchip implants in macaques; and pets and humane attitudes. A new section - Technical Contributions - was introduced in 1993 reporting practical methods of improving animal welfare. Subscription rates are £40/US\$80 for UFAW members and £50/US\$100 for others for Volume 3. Back copies of *Animal Welfare* are available.

UFAW also has two new publications which may be of interest to AAZK members. The Behaviour of Captive Polar Bears - a report of the three-year UFAW study of captive polar bears to discover their behavioural needs and provide practical methods of enriching their environments. Price £10/US\$20. The UFAW Handbook on the Care and Management of Cephalopods in the Laboratory - the common octopus has now been brought under the protection of the Animals (Scientific Procedures) Act 1986 in the UK. Price £10/US\$20. These books may be ordered from the address given above.



## Message From the President.....

This is the time of the year to be considering nominations for the various awards that AAZK offers to honor members for outstanding work in various fields of endeavor. We would encourage you to begin thinking of persons who deserve to receive one of the following awards and to complete the nomination process:

The Jean C. Hromadka Excellence in Zoo Keeping Award recognizes the achievement and determination of an individual in the zoo keeping field and in fostering professionalism.

The Meritorious Achievement Award recognizes professional members of AAZK and AAZK Chapters, in good standing, for their extra work performed outside the keeper level of performance.

The Certificate of Merit for Zoo Keeper Education Award recognizes individuals, institutions, and organizations in the zoological community for actively promoting educational programs for zoo keepers.

The Certificate of Excellence in Exhibitory recognizes institutions or organizations in the zoological community, with active keeper participation, for the design and renovation of existing facilities for animals in their care.

Criteria for the various awards started being listed in *AKF* with last month's issue. These awards are the Association's way of recognizing outstanding work by individuals or institutions and also of letting others know of their contribution to our profession. The deadline for award nominations is **1 June 1994**.

For those individuals interested in pursuing a research project, there are two \$750.00 Research Grants available for the coming year. The application deadline is **1 March 1994**. Susan M. Barnard, Zoo Atlanta, is the Research/Grants Chair.

Janet McCoy, President AAZK  
Metro Washington Park Zoo, Portland, OR



## AAZK Announces New Professional/Contributing Members

Laura Trocoli, Bergen County Zoo (NJ)	Monique Teich, Bronx Zoo (NY)
Jennifer Aasa Carney, Utica Zoo (NY)	Jeffrey Phillips, North Carolina Zoo (NC)
Britt Keith, SFCC Teaching Zoo (FL)	Ivan Rea, Busch Gardens (FL)
Dale Moore, Busch Gardens (FL)	Eve Shackleton, Silver Springs Wildlife Prk. (FL)
Jane Herndon, Louisville Zoo (KY)	Anna Zipparro, Columbian Park Zoo (IN)
Kristine Olander, Kansas City Zoo (M)	Donna Chance, Baton Rouge Zoo (LA)
Sherri Blumer, Houston Zoo (TX)	Antonio Garza, no zoo listed, San Antonio, TX
Raul Guzman, El Paso Zoo (TX)	Rodney Addington, Pueblo Zoo (CO)
Elana Lamar-Flanagan, Honolulu Zoo (HI)	Isabelle Bellavance, Montreal Biodome (Quebec)
Michael Crozier, Gatlinburg	Municipal Black Bear Habitat (TN)

## Renewing Contributing Members

Neil Colbert, Bronx Zoo, Bronx, NY  
F.O. Wilson Zoo Library, Oklahoma City, OK  
Jardin Zoologique du Quebec, Quebec, Canada





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## **AAZK Award Nominations Are Now Being Accepted for 1994!**

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 1994 AAZK Conference in Omaha. The deadline for all award nominations is **1 June 1994**. All award nominations received after 1 June will be reviewed for 1995, 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

### **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 Association of Zoos and Aquariums (AZA) and the Canadian Association of Zoological Parks and Aquarium (CAZPA) Newsletters, Animal Keepers' Forum (AAZK), Awards, Honors and Prizes: Volume 1; United States and Canada. The latter is published by Gale Research Company based in Wheaton, MD and may be 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 AAZK's 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 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 Criteria, *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.
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.



## Births & Hatchings

Calgary Zoo (Alberta, Canada)...announces the following 1st time B&H for their facility:

Mammals - 1.1 Red pandas (*Ailurus fulgens styani*) [DNS] - 1st birth for this pair at age 2 years. Newborn female rejected at birth; male well cared for one week but had to be removed and later died due to lacerations inflicted by the female carrying him around excessively. SSP births include 3.1 Addax (*Addax nasomaculatus*); 4.1 Przewalski horse (*Equus przewalski*); and 0.3 Snow leopard (*Panthera uncia*).

Birds - 0.0.7 Chilean flamingos (*Phoenicopterus chilensis*) [1st time at zoo]; 0.0.3 American bittern (*Botaurus lentiginosus*) [DNS]. We also have received 0.0.6 Sandhill cranes from Patuxent Wildlife Reserve. In addition we received 2.3.1 Whooping cranes (*Grus americana*) [E] from Patuxent to begin our breeding contribution to this SSP.

Herptiles - 0.0.9 Ball pythons (*Python regius*) [T]; thousands of *Rhacophorus leucomastix* from Borneo. The adults had been received as Cuban Tree frogs - NOT! More than 100 have been released into our Orchid Gardens. -submitted by Mona Keith, Chapter Liaison, Chinook, AAZK Chapter, Calgary Zoo, Calgary, Alberta, Canada.

Philadelphia Zoological Gardens...reports the following significant births and hatchings:

Mammals - 0.1 Gunther's dik-dik (*Madoqua guentheri smithi*); 0.1 Blue duiker (*Cephalophus monticola bicolor*) [CITES II]; 2.1 Springbok (*Antidorcas marsupialis*); 0.0.1 Egyptian fruit bat (*Rousettus aegyptiacus*) [DNS - fell to floor and was cannibalized by cagemate, an Armadillo]; 1.0.2 Red kangaroo (*Macropus rufus*) [T]; 0.1 Aardvark (*Orycteropus afer*) [CITES II] [DNS due to renal failure and heart abnormalities, survived 4 days]; 3.0 Six-banded armadillo (*Euphractus sexcinctus*) [2.0 DNS, 1.0 pulled and successfully hand-reared].

Birds - 0.0.3 Caribbean flamingo (*Phoenicopterus ruber*) [CITES II]; 1.0 Red-rumped green woodpecker (*Picus erythropygius*); 0.0.6 Vulturine guineafowl (*Acryllium vulturinum*) [DNS past 90 days].

Reptiles - 0.0.7 Tie-dye poison dart frog (*Dendrobates tinctorius*) [CITES II] [DNS]; 0.0.2 Spotted turtle (*Clemmys guttata*) [0.0.1 DNS]; 0.0.4 Grey-banded kingsnake (*Lampropeltis alterna*); 0.0.1 Crocodile lizard (*Shinisaurus crocodilurus*) [CITES II] [Our zoo has had great success with this species]; 0.0.10 Brazilian rainbow boa (*Epicrates c. cenchria*) [CITES II]; 0.0.1 Red cat-eyed snake (*Boiga nigriceps*). submitted by Sandra L. Robbins, Chapter Liaison, Philadelphia Zoo AAZK Chapter.



# Coming Events

## A Seminar of Behavior Modification Through Positive Training Techniques

February 25-26, 1994

Cincinnati, OH

Greater Cincinnati AAZK would like to invite neighboring AAZK members to our monthly meeting. Ted Turner, Curator of Training at Sea World of Ohio, will be our guest speaker. He will be discussing his training techniques and psychological principles - how we as keepers can redirect negative behavior in exotics to positive workable behavior (i.e. vomit throwing gorillas, abusive mothering and simply shifting animals by targeting).

There will be a potluck dinner at 6 P.M. and time to share any news. The lecture will follow from 7-11 p.m. There will be a more indepth full day training on Saturday from 9 a.m. until 5 p.m. The cost to AAZK members is \$25.00, Non-members \$45.00. Housing is available upon request. To make reservations for Friday and/or Saturday, please call or write Becky Jones, 541 Terrace Ave., Cincinnati, OH 45220. (H) (513) 861-6123, (W) (513) 281-4701 ext. 8349.

## The Annual Conference of the National Wildlife Rehabilitators Association

March 2-6, 1994

Wilmington, DE

Tri-State Bird Rescue and Research, Inc. will be host to the symposium which will feature speakers on rehabilitation, education, administration, etc. Major sessions will include Habitat Assessment & Reintroduction Techniques; State & Federal Permit Forum; Veterinary; Waterbirds; and Mammals. Hands-on Workshops include Radio-Telemetry Techniques, Parasitology and Hematology. Publications of all previous symposiums are also available for reference to those in the field. For more information, contact: NWRA, 14 North 7 Avenue, St. Cloud, MN 56303 (612) 259-4086.

## 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.

## Herpetology Weekend

April 8-10, 1994

Slade, KY

Co-sponsored by the U.S. Forest Service, Kentucky State Parks, and the Kentucky Dept. of Fish and Wildlife Resources. Activities will include field trips, night hikes, photo opportunities and a tour of the Miami Valley Serpentarium. Presentations include those by Jim Harrison of the Serpentarium; Dave Dennis of Ohio State University and Sherman Minton, author of Amphibians and Reptiles of Indiana. Programs start at 8:00 a.m. on Friday, 8 April at the Activities Center, Natural Bridge State Resort Park. Collecting is Prohibited. For additional information contact: Natural Bridge State Park, Slade, KY 40376 (606) 663-2214 or 1-800-325-1710 or Stanton Ranger District, Stanton, KY 40380 (606) 663-2852.

## Coming Events, Continued

### ARAZPA/ASZK Annual Conference

April 17-22, 1994

Darwin, NT, Australia

Joint meeting of the Australasian Regional Association of Zoo Parks and Aquaria and the Australasian Society of Zoo Keepers will be hosted by Territory Wildlife Park and Tipperary Sanctuary. For further information contact: Michelle Nuske, Conference Coordinator, Territory Wildlife Park, P.O. Box 771, Palmerston, NT 0831, Australia.

### Callitrichid Symposium

May 1, 1994

Hershey, PA

A symposium on the primate family Callitrichid will be held by the New World Primate Taxon Advisory Group preceding the 1994 Northeastern Regional AZA meetings. The symposium will focus on topics of husbandry, nutrition, behavior, reproduction, and field research. Registration fee will be \$25.00. For more information, contact Andy Baker or Beth Bahner, Philadelphia Zoo, 3400 W. Girard Ave., Philadelphia, PA 19104, (215) 243-1100, FAX: (215) 243-0219.

### 1994 Western Association of Fish and Wildlife Agencies Annual Meeting

May 14-19, 1994

Anchorage, AK

Theme for the meeting is "Partnerships in Conservation, a Vision for the Next Century". Issue sessions and speakers are planned on conservation partnerships, the Endangered Species Act, the economics of fish and wildlife, the politics of managing predators, etc. Hotel rooms at the Anchorage Hilton are \$78 per night and reservations must be made by 14 March. For registration information call 1-800-WAFWA94.

### 14th Annual Conference of the Association of Zoo Veterinary Technicians

September 25-29, 1994

Cleveland, OH

Held at the Cleveland Metro Parks Zoo. If you would like more information, please contact Rhonda Kesak, Cleveland Metro Parks Zoo, 3900 Brookside Park Drive, Cleveland, OH 44109; (216) 661-6500, ext. 259.

### Association of Avian Veterinarians

Sept. 27 - Oct. 1, 1994

Reno, NV

Conference site is the Nugget Hotel. The program will offer a wide variety of continuing education opportunities with concurrent programming to satisfy a broad range of interests. A Core Seminar, Basic Avian Medicine Symposium, Main Conference, and Practical Labs will be included. For further information or to request a Call for Papers application, contact the AAV Conference Office, 2121 So. Oneida St., Ste. 325, Denver, CO 80224-2552, (303) 756-8380, FAX (303) 759-8861.



## **These Mangoes Come At A High Price**

The Reuters News Service recently reported that at the Ekongoro Zoo in Windhoek, Namibia, a 20-year-old man was mauled to death by lions. The man had crossed a 3.5 meter double fence and a ditch to get onto the zoo grounds, apparently to steal mangoes. A keeper at the facility said that the lions were let out of their enclosure at night to deter would-be thieves from crossing the perimeter fences. The animals were found next to the dead man's body when officials opened up the zoo the following morning.



By Kayla Grams, Topeka Zoo and  
Gretchen Ziegler, Wildlife Safari Park

**OTTERS:** Otters have large PVC tunnel about 2 feet long that stays submerged - they love to swim through it, alone or together. They also love pie tins to surf with.

--Jean Lai, Lead Keeper  
Oakland Zoo, Oakland CA

**KORI BUSTARDS:** Add one bale of peat moss to exhibit. Our birds love to dust bathe in it. Smaller bustard species may also appreciate it. Add more as necessary. Live food such as crickets, mealworms, and mice are relished by Kori's. Different fruits or vegetable items not normally in the diet are also enjoyed as occasional treats.

--Sara Hallager  
National Zoological Park

**WOOLLY MONKEYS:** Woolly monkeys, *Lagothrix lagotricha*, at the Louisville Zoo are housed in a natural troop structure, with outdoor islands, additional enrichment promotes added activity and gives keepers a feeling of satisfaction.

Woollies spend a large part of the day eating, so enrichment is geared towards variety in diet and feeding methods. The contents of the daily fruit and vegetable diet is varied to prevent boredom. The monkeys become excited when offered an item, such as cooked sweet potatoes, once per week rather than daily. Sunflower seeds, puffed rice cereal, air-popped popcorn, and insects are broadcast in the straw bedding, so they spend more time naturally foraging for these foods. Juveniles often play in the straw bedding - sliding in it, throwing it, and carrying it with their tail. Browse is offered throughout the growing season; the monkeys spend much time eating the leaves, stripping the bark and playing with the branches. Alfalfa hay and alfalfa sprouts offered during the winter supplement browsing material. Vegetable greens and berry treats are occasionally hidden indoors or outdoors. During the summer the monkeys enjoy juice frozen in ice cube trays.

Two novel enrichment ideas have shown good results with our troop. A pumpkin with the top cut off and several slits cut down the side provides hours of activity and seeds to eat. A large sunflower seed head hung in the fork of a tree is a unique way to offer seeds. The first time they saw a pumpkin or sunflower head they were scared but, they quickly adjusted to the new objects which offer them activity and enjoyment.

It has been unnecessary to give the monkeys added toys unless an individual must be separated. Troop members have daily contact with keepers through hand-feeding, medicating, and giving of vitamins.

As we strive to improve the health and well-being of all primates in our care, it is important to utilize enrichment options whenever possible.

--Silvia Logsdon, Keeper III  
Louisville Zoological Garden





# AAZK Logo T-Shirts & Sweatshirts

AAZK Logo T-Shirts and Sweatshirts are available from the Little Rock Zoo AAZK Chapter. The AAZK Rhino Logo is imprinted on the left front pocket area of each shirt. Both T-shirts and Sweatshirts are of a 50/50 poly/cotton blend.



T-Shirts and Sweatshirts are available in Large and X-Large ONLY. Prices including postage are: \$10.00 for T-shirts and \$20.00 for Sweatshirts.

T-Shirts are available in Tan, Maroon, or Teal Green.

Sweatshirts are available in Gray or Forest Green.

Colder Holders with the AAZK Rhino Logo are available in orange, red, and gray for \$3.50 each.

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Send orders to:     Britt Thompson  
                          Little Rock Zoo  
                          #1 Jonesboro Drive  
                          Little Rock, AR 72205

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## T-Shirt/Sweatshirt/Colder Holder Order Form

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Sweatshirt: COLOR\_\_\_\_\_ SIZE\_\_\_\_\_ QUANTITY\_\_\_\_\_ TOTAL COST\_\_\_\_\_

Colder Holder: COLOR\_\_\_\_\_ QUANTITY\_\_\_\_\_ TOTAL COST\_\_\_\_\_

AMOUNT ENCLOSED \$\_\_\_\_\_

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# PUBLIC FEEDING - A Survey

reprinted from *International Zoo News*  
No. 248, Vol. 40/7, Oct/Nov. 1993

Charles G. Wilson, Director of Memphis Zoological Gardens & Aquarium, recently conducted a survey among U.S. zoos on the subject of public feeding. The results are summarized below and compared to those from a similar survey in 1976, with Mr. Wilson's comments added; they indicate a clear shift in the balance of opinion on this subject.

The sample size in 1976 was 54 zoos responding out of 56 sent questionnaires; in 1993 21 zoos responded out of 22.

1. *Do you allow public feeding of animals?* 1976 - Yes 31, No 23; 1993 - Yes 3, No 17. "It would appear most zoos are moving away from allowing the public to feed in general. Two zoos recently adopted complete no-feeding policies."

2. *Do you allow public feeding only in certain areas?* 1976 - Yes 26, No 19, n/a 9; 1993 - Yes 7, No 13, n/a 1. "Of those zoos allowing public feeding, all restrict this activity to children's zoo settings or waterfowl and fish. There also appears to have been a decline in allowing public feeding in these areas."

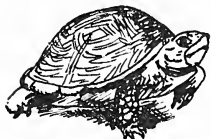
3. *Do you sell animal foods?* 1976 - Yes 34, No 20; 1993 - Yes 5, No 16. "A marked change."

4. *Do you have feed vending machines for waterfowl or fish?* 1976 - Yes 16, No 37, n/a 1; 1993 Yes 7, No 14. "Proportionately about the same."

5. *Do you have problems from public feedings, whether allowed or not?* 1976 - Yes 34, No 20; 1993 - Yes 8, No 13. "Proportions would suggest that problems are decreasing. Of the eight zoos indicating problems, five specifically noted that the problems were minor, and one zoo noted that they use security personnel or volunteers to stop feeding in 'trouble spots.'"

6. *Do you feel zoos should allow public feeding?* 1976 - Yes 25, No 29; 1993 - Yes 7, No 13, No answer 1. "It would appear that there has been a philosophical change occurring in the last 17 years."

If other zoos around the world wish to participate in the survey, please send the survey answers to: Charles Wilson, Director, Memphis Zoological Gardens & Aquarium, 2000 Galloway, Memphis, TN 38112, USA. He will compile them and resubmit them on a world-wide basis as data will allow.



## Homemade Nutritious Turtle Treat

--from *Wildlife Health News Research Staff*



You can make your own turtle treat with little trouble. Follow the recipe below:

- 1 pound of lean ground meat (chicken, turkey or beef)
- 1/2 pound of mixed vegetable (carrot, broccoli, cauliflower, mushroom, or cabbage)
- 1/2 cup commercially prepared Trout Chow
- 1 Tablespoon vitamin powder
- 1 Tablespoon calcium carbonate
- 3 drops STAT (purchase from veterinarian...high protein and keeps electrolytes balanced)
- Two envelopes unflavored plain gelatin

Using a food processor, grind vegetables and meat until a smooth consistency is achieved. Then heat until the mixture just about boils. This will curdle the mixture. While mixture is cooling, grind Trout Chow to a fine powder. Add all other ingredients at this time. Pour mixture into muffin tins and refrigerate. When it sets, cut into cubes and freeze in ziplock bags.



# Ngare Sergoi Sanctuary Update ...1993 in Review



*from Anna Merz, Founder*

In April of this year the Lewa Wildlife Conservancy came into existence, of which the Rhino Sanctuary is an important and integral part. Over the past decade Lewa Downs has become an ever increasingly important sanctuary for the beleaguered wildlife of the northeast of Kenya; not only for rhinos but also for elephants, the beautiful Grevy zebra of which about 10% of the world's population are living on Lewa Downs, and now even Sitatunga. A small population of these rare antelope were translocated to the Lewa Swamp when their habitat on the shores of Lake Victoria was taken for development. They have settled down well and are breeding.

The idea behind the creation of the Conservancy is to safeguard both the land and the wildlife on it. To prove that cattle and wildlife can exist together and to prove that multiple land use for semi arid rangelands is best for the land, the soil, the animals and the people; both those who depend on it directly, and those who live on the circumference. We also wish to develop the tourist potential of this place ourselves instead of letting out camping concessions. We want people to stay here long enough to learn about what we are trying to do; to not just go on game drives, but to enjoy the wonderful experience of viewing wild animals on foot, on horseback and with camels--to not just see but also to learn about what they are seeing so when they leave they leave not just as friends but as ambassadors for what we are trying to achieve.

Equally important is our desire that those who live on our periphery should also benefit from our efforts. To this end we want to develop cottage industries and handicrafts which will, in particular, help the women of the area. We want to increase our help to local schools and clinics. We want to bring school children in for game drives and talks; to educate some of our rangers in English so that they can share with our guests their great knowledge of the local plants and animals so that all expeditions become more of an exciting experience. Needless to say, to get this underway means money, but if we are successful in raising the required capital we all believe that with a great deal of hard work from us all, within five years the Conservancy could be financially independent, and that is our aim and ambition.

My big thanks this year are to all of you who have helped us in any and every way - financially, with your ideas and with your encouragement. Thank you for coming to stay with me or for visiting with me. Thank you for all I have learned from you. In particular, I thank Andy Lodge and the Ngare Sergoi Support Group and Patty Pearthree and the American Association of Zoo Keepers, Inc. Where would we have been without you? Please continue to help us for a few more years and then I hope that we can not only stand alone, but also join with you to help other rhinos in other places. The whole of Lewa Downs and the Ngare Ndare Forest Reserve is now a rhino sanctuary. For being able to do this we are mainly indebted to AAZK and the Support Group. We have also received the wholehearted support of the Kenya Wildlife Service, who recently brought us four more male Black rhinos and we have been promised a further four female Black rhinos. As of now we have 18 Black and 11 White rhinos.

But please do not feel for one minute complacent about the future of the world's rhinos. The population in Zimbabwe has experienced the most appalling crash; it is now believed that fewer than 200 Black rhinos exist from 2,000 just two years ago. Dehorning of Zimbabwe rhinos has not worked, even the stub of horn left is worth killing the animal for. Within the last six weeks I have heard that between 70 and 90 dehorned rhinos are believed to have been poached in the Hwange Park. The trade in horn must stop. None of the range states, not even South Africa, are in a position to monitor a controlled trade. The only hope for the rhino is stopping the trade in horn and imposing sanctions on those countries--particularly

## Ngare Sergoi Sanctuary Update, *Continued*

Taiwan-- or the consuming countries, China, South Korea, Thailand, and shamefully, still Hong Kong. In Taiwan, the big dealers are gambling on the rhino becoming extinct so that their stockpiles of horn will then become even more valuable. Please, everyone who reads this and cares about the rhino becoming extinct, boycott goods made in these countries named above, see your family and friends do likewise and exercise all the political and consumer pressure you can. We in the field can only operate a holding action until such time as the trade in horn is killed.

Samia, now nearly nine, was mated by Kenu in April. He was the rhino we captured south of Marsabit in January. He has also bred her several time subsequently, so perhaps next year I will be a rhino grandmum?? And the big question is, having been hand-raised herself, will she be able to cope with her offspring? Samia was also filmed this year for David Attenborough's new TV series so with any luck you may one day see her munching on the dry looking acacia brush on your TV screen. She has also caused a certain amount of consternation by bringing her boyfriend home to visit. On these occasions, fascinating as they are, no one can get either in or out of my compound.

At the end of September I fielded a kick from a horse that landed me in the hospital with three broken ribs and a punctured spleen. All now are thankfully mended and the credit side of this was a week's holiday on the coast for Pluto (Anna's dog) and myself. I had forgotten how lovely the Indian Ocean coastline is with its silver sands, palm trees and the lush vegetation. I couldn't swim but Pluto had fun once he got over his puzzlement at strange tasting waves and even stranger scuttering crabs, and his size ensured that no beach boys hassled me.

At the end of October the drought broke and we have now had six inches of rain and the eastern side of Lewa has had several inches more; the flowers are exquisite and the animals regain condition fast. Last month my friend Eva came out from Switzerland and we borrowed some camels from Charlie and went down to the group ranch in the north for a few days. There we are also trying to encourage the right sort of tourism to benefit the local people. Sitting on camels is a perfect way in which to enjoy both the animals and the landscape. Pluto, who accompanies us, had to learn that camels can kick at both ends.

A few days ago I had a very exciting experience watching Kenu mating Juniper. She is still living with her mother Juno as Juno lost her newborn calf last year. At first Juno did not agree with the attention her daughter was receiving and every time Kenu tried to mount Juniper, Juno knocked him off. Eventually, however, Juno went out of sight and Kenu mounted Juniper. It was a awe-inspiring sight and I and my two trackers were fascinated. I was taking notes when suddenly a huge snort behind us scattered us like three startled rabbits. Juno, whom we had forgotten, was not approving of Peeping Toms at her daughter's nuptials!

--Anna Merz



### A GUIDE TO AMERICAN ZOOS & AQUARIUMS

by Darcy & Robert Folzenlogen

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—Russell Smith, General Curator  
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# World's Tigers in Desperate Straits Immediate Increased Protection Needed

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*FOCUS, a publication of World Wildlife Fund,*  
1250 Twenty-Fourth Street, NW, Washington, DC 20037  
Nov./Dec. 1993, Vol. 15, No. 6

At the turn of the century, about 100,000 tigers stalked the forests and grasslands of Asia. Today, according to a tiger status report from IUCN Cat Specialist Group, between 4,400 and 7,700 survive. The report was presented at a recent Standing Committee meeting of the Convention on International Trade in Endangered Species (CITES). Without immediate, increased protection, tigers could face extinction in the wild in fewer than 10 years.

In the last 50 years, three of the eight subspecies of tiger have become extinct. The Bali tiger, the smallest subspecies, vanished from Indonesia in 1937. The Caspian tiger, once found as far west as Turkey, disappeared in the 1970s. The Javan tiger, noted for its distinctive narrow stripes, was last seen in 1981, although WWF researchers are now performing a tiger survey in Java in response to tracks reported by Javan villagers (see sidebar story).

The following account gives the current status of the other five subspecies, according to the document prepared for the CITES meeting by Peter Jackson, the chairman of the IUCN Cat Specialist Group:

**South China tiger** (*Panthera tigris amoyensis*) Population estimate: virtually extinct, with scattered individuals thought to number fewer than 50. Range: southern China.

**Siberian tiger** (*Panthera tigris altaica*) Population estimate: 250-400, severely threatened by poaching. Range: almost all in the Russian Far East.

**Sumatran tiger** (*Panthera tigris sumatrae*) Population estimate: 400-500, threatened by loss of habitat and poaching. Range: Sumatra.

**Indo-Chinese tiger** (*Panthera tigris corbetti*) Population estimate: status unclear, but may number 800-1,400 threatened by poaching and habitat loss. Range: Cambodia, Laos, Malaysia, Thailand, Myanmar (Burma), Vietnam.

**Bengal tiger** (*Panthera tigris tigris*) Population estimate: 3,000-5,300, threatened by poaching and habitat loss. Range: mostly in India.

WWF has been at the forefront of tiger conservation since it helped initiate "Operation Tiger" in India twenty years ago. After intensive research, WWF and the government of India established a system of 19 special reserves that have allowed the Bengal tiger population to more than double. WWF then worked with the government of Nepal in Bardia

(Continued on following page)

## WWF Hoping to Capture Javan Tigers on Film

Declining wildlife habitat on Java, increasingly under pressure from the Indonesian island's population of 150 million, has led to the extinction of a number of species. The Javan tiger was thought to be one of them. In 1980, there were only three to five of the big cats left, with the last sightings in 1983. Through a new effort, however, WWF is hoping to determine whether the animal still survives.

In 1990, villagers reported seeing tiger tracks and dung in eastern Java's Meru Betiri National Park, a 190-square-mile park, virtually the last area of lowland rain forest in Java.

In 1991, Indonesia's Directorate General of Forest Protection and Nature Conservation asked WWF to do a survey, using the photographic technique developed by former WWF field officer Mike Griffiths to monitor Javan rhino populations. Since March, cameras connected to pressure pads have been set up along animal trails in Meru Betiri. When an animal steps on a pad, it triggers the camera, capturing itself on film. Although the technique is not new, Griffiths modified the system to withstand extended periods in Indonesia's tropical rain forests.

(Continued on following page)

## World's Tigers in Desperate Straits, *Cont'd*

and Chitwan and with the government of Bhutan in Royal Manas National Park, which also borders critical tiger habitat in India.

As a result of the recent upsurge in poaching, WWF is now again intensifying its tiger conservation activities. In addition to the work of TRAFFIC, WWF's wildlife trade-monitoring program, which aims to curb the illegal trade in tiger parts, WWF is initiating new anti-poaching and habitat conservation activities. For example, WWF recently helped field staff to purchase radio transmitters for park guards in India's Jaldapara National Park. With these radios, rangers will be able to maintain contact with each other while monitoring park boundaries and can also coordinate operations when pursuing poachers.

In the Primor'ye region of Russia's Far East, WWF is working to develop a protected-area strategy for some of the most diverse forests in Russia, which are severely threatened by developers. These forests are home to Siberian tigers and Amur leopards as well as reindeer, sable, lynx and bear.

On the Indian subcontinent and throughout Southeast Asia, WWF is working to expand current protected areas and to develop wildlife corridors between reserves where possible. As a result of habitat destruction, the numbers of prey species have dwindled. Hunger drives the tiger to attack humans and domestic livestock. Expanding protected habitat and linking populations with wildlife corridors enables tigers and other species to move freely from one reserve to another without confronting local people or livestock. Equally important, the corridors make it possible for different populations of tigers to interbreed, enhancing the gene pool and increasing the odds for long-term survival of the species.



## WWF Hoping to Capture Javan Tigers on Film (*Cont'd from previous page*)

At Meru Betiri, 10 cameras have been placed along trails of reported sightings. If tigers are photographed, 30 more cameras will be set up throughout the park and its outlying areas.

Initial films from five cameras have turned up tigerless. In addition, says tiger expert Peter Jackson, "It seems unlikely that there would be more than a handful of Javan tigers, so it's hard to be optimistic about the animal's future survival." But even if no tigers are found, WWF hopes the photo survey will answer other important questions about the park's ecology and large mammals such as the leopard, banteng, barking deer, and Javan wild dog. The results will be used for future management of Meru Betiri's extensive remaining forests, which provide water catchment protection for more than 100,000 people living in the surrounding lowlands.

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## Rare Flowering Plant Making Remarkable Comeback

A prescribed burning program in Virginia has drastically improved the survival chances of a plant so rare that it was down to only four individuals.

The plant, Peter's Mountain mallow, is a beautiful perennial that grows four to five feet tall and produces up to 20 delicate pink blooms. When first discovered in 1927, there were 50 plants at the site, located at a secluded Nature Conservancy preserve in Giles County. By 1991, only the four remained. Determined not to allow this plant to vanish into extinction, a team of scientists from The Nature Conservancy, Virginia Tech and the state's Department of Conservation and Recreation, set out to rescue the plant in 1986. They suspected that a key factor attributed to the mallow's decline was fire suppression. Growth rings on trees at the site indicated that the area had a history of wildfires. These fires had been suppressed in recent years by people threatened by their uncontrolled nature.

In 1988, the scientists discovered a large bank of dormant but viable seeds embedded in the soil surrounding the plants. Lab tests revealed that, like many fire-dependent plants, fire causes the hard coat of the tiny mallow seeds to crack open and let water in. Only after this popcorn-popping effect occurs did the seeds germinate. Fire also destroys competing vegetation that shades and crowds out the light-loving mallows.

In May 1992, the Conservancy, the U.S. Forest Service, and the Virginia Department of Forestry joined a burn crew led by the Virginia Division of Natural Heritage to light test fires. Sure enough, a few seeds sprouted amidst the charred ash. A year later, stewards conducted another burn and this time, approximately 500 seeds sprouted.

The new growth does not ensure recovery of the mallow, as many seedlings will perish from heat, drought, and natural predation, but now there's a fighting chance, says Michelle St. Clair, the Virginia Chapter's director of Science and Stewardship. "This project epitomizes what the Conservancy and its partners working together can do. Like the bald eagle and the buffalo, man had brought Peter's Mountain mallow to the brink of extinction. But with hard work, good science, and a bit of luck, we can bring it back," she said. "This shows us that simply setting aside land to protect rare or endangered species does not necessarily guarantee their protection. The remarkable comeback of Peter's Mountain mallow through the use of prescribed burning demonstrates the important role that this type of land management tool plays," said Conservancy president John Sawhill.

As to the importance of protecting this seemingly obscure species, Sawhill added: "Protecting species one by one is a way to protect the larger biodiversity on the earth -- the millions of different plants, animals, and natural communities that represent the building blocks of the natural world. Without it, the food, shelter, clean air and water that we all depend upon would be lost."

The studies and burning were mainly funded by the U.S. Fish and Wildlife Service.

The Nature Conservancy, an international non-profit organization, was incorporated in 1951 and is based in the Washington DC area with chapters in every state. The Conservancy works to preserve plants, animals and natural communities that represent the diversity of life on Earth by protecting the lands and water they need to survive. The Conservancy and its members have been responsible for protecting more than 7.5 million acres in the United States and Canada. It has helped like-minded partner groups preserve millions of acres in Latin America and the Caribbean.

--GreenDisk Oct/Nov 1993, Vol. 2, No. 3



## AAZK Logo Accessories/Chapter Products

**AAZK LOGO AUTO DECALS AND STICKERS:** Window Decals are \$2.50 each. Stickers come in two sizes: Large for 75¢ and Small for 25¢ each. These decals/stickers can be ordered from the Administrative Office, 635 S.W. Gage Blvd., Topeka, Ks 66606-2066.

**COLDER HOLDER:** Heavy-Duty Foam Colder Holder with the AAZK logo imprint. The cost is \$3.50. Please send your order along with payment to: AAZK Little Rock Chapter, c/o Britt Thompson, #1 Jonesboro Drive, Little Rock, AR 72205. Please make checks payable to: AAZK Little Rock Chapter.

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**AAZK KEYCHAIN:** This keychain has a thermometer on the front and the AAZK logo. On the back is a wind chill chart. Thermometer is encased in durable acrylic and is approximately 1"x2" in size. The price of the keychain is \$4.00 which includes postage. Please send your order along with payment to: Sara Weller, c/o Dallas Zoo, 621 E. Clarendon, Dallas, TX 75203. Please make checks payable to Dallas Zoo AAZK Chapter.

**AAZK BUMPER STICKER:** This silk screened 3" x 9" bumper sticker has kelly green lettering, black border/center line and the AAZK logo on a white background. The slogan reads "ZOO PARKS/Modern Arks". These bumper stickers are priced \$2.00 each for 1-49 and \$1.55 each for 50 or more stickers. The postage is an additional \$.30 per each 5 bumper stickers ordered. Please make checks payable to the Jacksonville AAZK Chapter and mail to: Jennifer Gerez at the Jacksonville AAZK Chapter, P.O. Box 8498, Jacksonville, FL 32239-8498.

**AAZK 25th ANNIVERSARY POCKETKNIFE:** This pocketknife has five functions (2 blades, scissors, toothpick and tweezers). The price of the pocketknife is \$3.75 which includes postage. Please make checks payable to the Memphis AAZK Chapter and mail to: Dena Mandino, Memphis AAZK Chapter, 2000 Galloway, Memphis, TN 38112.

**AAZK LICENSE PLATE FRAME:** This white license plate frame features the rhino logo with the words American Association of Zoo Keepers, Inc across it in green. The price of the license plate frame is \$5.00 which includes postage. Orders from Canada please send an additional \$1.00 to cover postage. Please make checks payable to the Detroit AAZK Chapter and mail to: Michelle Seldon-Koch, Detroit AAZK Chapter, P.O. Box 39, Royal Oak, MI 48068.

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# San Diego Chapter Keeper

The American Association of Zoo Keepers

The San Diego Chapter of AAZK is proud to announce that their new color magazine, *the Keeper*, is available nationwide by subscription only. Originally a chapter newsletter, every issue covers topics more keepers want to know about. The January issue focuses on Marketing the Environment; the next issue covers the ethics of animal rights groups. Published four times a year, every issue is 18-24 pages. A limited number of

subscriptions are available; send in the application today! The cost is just \$12 a year. (Canadian and foreign add \$5 additional for postage). Make checks/money orders payable to the San Diego Chapter of AAZK.



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Mark De Denus  
LINK Coordinator

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# A Case Report of the Captive Propagation of Crested Wood Partridge (*Rollulus roulroul*)

By  
J.P. Therien and Susan Rifai, Keepers  
Capron Park Zoo, Attleboro, MA

Owing to the low reproduction rate of some captive gallinaceous birds, we would like to share a model for assisted parent-rearing of the Crested wood partridge or roulroul (*Rollulus roulroul*) which is indigenous to Sumatra, Borneo, and peninsular Thailand.

The Roulroul pair was housed in a heavily planted indoor rainforest exhibit with a Kalwall® ceiling, and a series of terraces filled with a substrate of soil and pink bark mulch. Rockwork waterfalls, a stream, and pool flowed through the exhibit. The temperature at ground level was maintained at 18° C minimum. Humidity of 80-90% was maintained by a Mee® fog system. Although the birds had access to all levels and all trees, they preferred to nest at lower ground level in a dug-out nest with a leaf matter roof. Occasionally, a stray egg was laid at upper terrace levels.

When the nest of five eggs was discovered by keepers, the fogger was turned off, because the nest was near a fog nozzle. We hoped the eggs would develop better if the nest was drier. The normal incubation period for Roulroul eggs is recorded at 18 days (Fowler, 1978). Of these five eggs, three chicks hatched on 22 August 1993.

After the eggs hatched, the male Roulroul exhibited protective behaviors. Our male ran energetically around the chicks and female, scratching in the substrate and food pans beside them. Furthermore, when the group was approached by the staff, the male aggressively flew at the head of the keeper, brushing wings against the keeper's head.

To better control and simplify the environment, the parents and chicks were carefully netted and placed in a specially prepared off-exhibit room. The room, 3.6 X 1.8 X 3.0 (ht) meters, consisted of concrete block walls with chain-link ceiling. Extra worries about accidental drownings and aggression from the remaining nine bird species in the exhibit were eliminated. Finally, other conditions were now more easily regulated, such as clean substrates, and frequency of feedings and medications.

Due to the fact that the birds were flighty, considerable cover was placed in this room to calm them. Many branches of pine and oak with leaves attached were crisscrossed on the floor. Several heaps of straw and two, small open kennel crates on the floor completed the furnishings. The heaps of straw proved to be well liked by the parents. They constructed and used straw ground-nests in a corner and along a darkened wall. To reduce the risk of ingesting moldy food lost in the substrate, the sand and straw was changed once a week, or as needed around feeding areas.

A constant worry was appropriate and clean food. To avoid feeding moldy food, softbill diet and other foods were changed at 0800 and 1200 hours. All moist food was removed at dusk, leaving only water and layer pellet trays.

Their diet consisted of a variety of foods in the hope of supplying most of their nutritional needs. This included the following for two adults and three fledglings:

300g layer pellet mix (1 part layer pellet, 1 part game bird feed)  
20 live whole medium mealworms, placed in the pellet dish  
5 soaked and squeezed ZuPreem® Monkey Chow biscuits  
120g Soft Bill Diet plus 0.2g Nekton S® (a sprinkle)

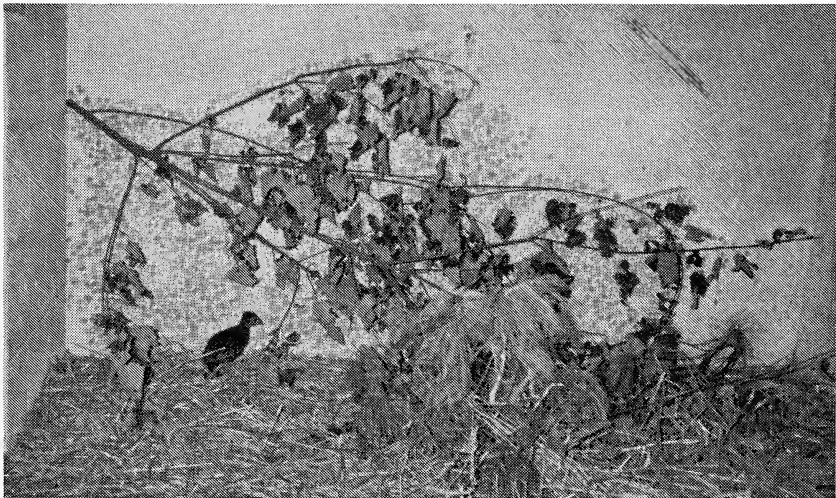
## Captive Propagation of Roulroul, *Continued*

### Soft Bill Diet:

Dry Mix (refrigerate)	1 log Low Iron Softbilled-Fare® by Reliable Protein Products 2700g layer pellets 900g finch seed 120g Petamine®
Daily Ration (for 2 adults and chicks)	70g Dry Mix 15g banana (1/8 banana, mashed) 10g orange, minced 10g kale, minced 5g carrot, raw, shredded 5g raisins, soaked 10g high protein dry dog food, soaked
	Mix together

Water for both adults and chicks was placed in one shallow dish, and changed two to three times a day. Sulmet®, (sodium sulfamethazine) in a dilution of 4ml per liter of water, was given at intervals of 7 days on medicated water, then 4 days on plain water. This regimen was carried out for the first 30 days of life to prevent or alleviate an avian coccidia infection; a possible cause of death in young chicks.

We were pleased to see the three chicks quickly growing and fledging at 13 days. Soon, the young were attempting short flights. At 15 days, the three precocious chicks could fly to the chain-link ceiling at three meters.



**Roulroul chicks stay near a straw-heap shelter after separation from the parents at 46 days after hatching. (Photo by S. Rifai)**

On the 18th day after hatching, an unfortunate incident occurred. One afternoon a chick was found dead; whereas the two adults and remaining chicks appeared well. A broken neck was the likely cause of death, since all five birds frequently flew around the room. Thus, the remaining young chicks and adults had their wings clipped on one side, which

## Captive Propagation of Roulroul, *Continued*

slowed and lowered their flights noticeably. Still the birds were an excitable bunch, making each keeper's approach a slow and quiet one.

The two chicks continued to grow and fledge. The characteristic downturn of the tail-partridge style--began to appear at 39 days. At this time, their wings were clipped again. Both wings were clipped considerably to slow their flights, thus preventing further injuries.

Finally, it came time to separate the two young from the parents in order to ready them for shipment to another zoo. The separation was carried out 48 days after hatching. For several days after separation, the chicks hid in one straw nest and seemed to eat very little. The adults, on the other hand, settled back to their usual routine in a couple of hours. Six days after separation, the two young Roulrouls were observed eating normally.

In conclusion, the care of the Crested wood partridge in their reproductive state is labor intensive. However, it is definitely vital that zoo staff develop skills in careful captive propagation of these and other less common birds, knowing that rainforest habitats of Southeast Asia are being destroyed at a progressively rapid pace.

### Acknowledgments

We would like to thank Dennis Branchaud, Superintendent of Parks, Attleboro, MA for his constant encouragement in captive avian propagation.

### Literature Cited in This Article

Fowler, M.E. (1978) Zoo and Wild Animal Medicine. W.B. Saunders, Co., Philadelphia, PA, p. 319.



## Information Please

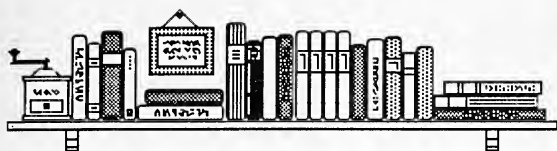
If anyone knows of a dealer that supplies catapillars as a food source, please send me their name and phone number. We have two Giant anoles (*Anolis barahonae*) that aren't eating very well and catapillars make up approximately 90% of their diet in the wild.

We are also experiencing hair loss problems with three species of mice (*Acomys cahirinus*, *Mus minutoides*, and *Lemniscomys barbarus*). We have done skin scrapings and found no mites, so we suspect that it might be a dietary problem. Any suggestions or comments? Please send any responses to: Diane Callaway, Omaha's Henry Doorly Zoo, 3701 S. 10th Street, Omaha, NE 68107 (404) 733-8401 Ext. 251.

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Help, help, help! We're being overrun with rats. The zoo in Peterborough, Ontario is an accredited facility by the CAZPA. We like to think that we run a good clean facility but during the past year or so we are seeing quite a few rats, especially last summer. They're even so bold as to wander through our primate displays in search of something to eat right in the middle of the daytime. Try explaining this to some of the zoo patrons. The darn rats have it made, food which at times gets tossed into the exhibits and a river flows right beside the zoo supplying them with something to drink. We have contracted pest control people to come in and try to get rid of them but, of course, they are limited to what poisons they can use because of the zoo animals and birds. Needless to say, we're not having too much luck. If anyone out there has any ideas, we'd sure like to hear from you. Please contact: Wally Davidson, Curator, Riverview Park and Zoo, P.O. Box 4125, Peterborough, Ontario, K9J 6Z5, Canada.





# Book Review

## The Last Panda

By George B. Schaller - 1993  
University of Chicago Press  
5801 S. Ellis Ave., Chicago, IL 60637  
291 pgs. hardbound \$24.95

*Review by Mike Seidman  
Keeper III, Arizona Trail  
Phoenix Zoo, Phoenix, AZ*

Schaller wrote this book to confess the mundane and dark sides of endangered species conservation, to speak of bureaucracy and politics, indifference and greed.

A mere 13% of Chinese forests remain and populations of pandas are disjunct and fragmented; however at the current rate, Schaller wryly notes, pandas will go extinct from poaching before inbreeding becomes a critical problem. Furs are worth a fortune in Hong Kong, Taiwan, and Japan.

Meanwhile Chinese conservation efforts are plagued by lack of coordination among levels of government. Local officials are negligent, often deliberately so, while, instead of funding anti-poaching patrols and forest protection, the central government spends its limited money building large, high-tech labs and increasing the captive population.

Schaller is dismayed by pandas in captivity.

"Their dignity has been taken away. Beneath the surface of their present lives was an inarticulate agony that filled me less with pity than with indignation. Was Hua's future to be electroejaculated once a year instead of struggling with others of his kind for the right to mate? Was Zhen's future to be drugged again and again and artificially inseminated? Removed from their culture--their society and pattern of life--their lives would be tranquil but empty, a tragedy."

Nor is "love" of captive pandas saving them. The panda's round face and large eyes, its bold black and white pattern, too bold and hence slightly comic, and its ambling gait, releases a flood of mushy paternal emotions in people who will pay outrageous sums to glimpse even a sleeping panda. Those who stand to profit from this cannot resist. And so, when it comes to pandas, zoos tend to revert to their aboriginal role, displaying the oddities of nature to indulge paying customers.

"Hunched in corners of their iron-barred cages, most would pass their years viewed by an enthusiastic public that sees only a clownish face, not the haunting image of a dying species."

On the face of it, this book is a condemnation of the Chinese who seem to lack the will to save the panda in the wild. But it's really about the world all of us share, a world in which human growth is out of control, in which all natural resources are being converted to human biomass and every human desire can be indulged for a price. Increasingly, it's a world without room for wildness or the non-human.

Book Review, *Continued*

Preserving Eden: The Nature Conservancy

By Noel Grove, 1992  
Henry N. Abrams, Inc. 100 Fifth  
Ave., NY, NY  
Hardback \$39.95

*Review by Missy Betcher Lodge  
Editor, H.O.R.N.  
Ngare Sergoi Support Group  
Columbus, OH*

When one says "Nature Conservancy" most people either think of the group that acquires property to preserve land and species or else they think of Norman Gershenz's parking meter project. But, what is the history of The Nature Conservancy (TNC), the organization's long-term goals, its philosophy on conservation?

These are just some of the issues addressed by Noel Grove in Preserving Eden: The Nature Conservancy. The first part of the text, entitled "Nothing Should Become Extinct" examines the organization, from its evolution in 1951 from the Ecological Union to its first land purchase in 1955 to its goals as proposed by now science director Bob Jenkins. Of particular interest is the explanation of species ranking used by TNC to indicate species rarity.

Part two, "Islands of Life", evaluates several examples of TNC projects, such as the Alligator River National Wildlife Refuge, where the first red wolves were reintroduced into the wild. "The Business of Saving Species" explains the "quiet approach" philosophy under which TNC operates. This philosophy appeals to donors contributing large sums or land as well as to the 600,000 members paying annual dues. This technique has also allowed TNC to form unique partnerships with businesses and the federal government.

The final section, "Blueprint for Future Landscapes" discusses the future of TNC and the five and a half million acres it currently protects. TNC leaders realize that conservation agencies must shift from preserving "ecological islands" to preserving linear corridors, thus allowing for species migration and providing buffer zones from human development. One method being explored is the formulation of partnerships for improved land use.

The work of Stephen Krasemann, named Wildlife Photographer of the year four times, accompanies the text. Beautiful, glossy photographs, often full or double page spreads, bring the work of TNC to life. Readers can visualize TNC scientists at work, the plant and animal species in danger, and the untainted beauty of preserved lands.

The Nature Conservancy has kept a low profile throughout its history. When polled, only 17% of the public named TNC as one of the five best known environmental groups, and only 18% named it as the most successful group in land acquisition. Now, TNC officials would like more visibility but, admirably, they do not want to put money into public relations that could go into conservation.

Preserving Eden should assist TNC to increase its visibility. This is an interesting, informative text which will educate readers to the importance of conservation and the past/present/future role The Nature Conservancy plays in preserving our environment. Even supporters of TNC will have greater respect and appreciation for the organization after reading Grove's book.





# Chapter News

## Chinook Chapter AAZK (Calgary)

New officers for 1994 are:

President/  
Chapter Liaison.....Mona Keith  
Vice Pres.....Barb Campbell  
Treasurer.....Laurie McGivern  
Secretary.....Elaine Willms

We had four excellent speakers throughout this past year. In February, David Henry, a University Professor and Red fox expert, gave a slide program on Red foxes in Canada. In April we enjoyed an informative presentation by Kent Brown, a Canadian Field Biologist, on the Woodland caribou of Jasper National Park.

In September, one of our Veterinarians, Dr. Sandie Black, inspired us with a look at her two previous projects in Ghana and Columbia, where she advised the developing zoos there. In November, we once again pulled from our own well-traveled staff. Chris Junck, from our Education Dept., showed a video on his recent adventures while guiding a group of people through Zimbabwe.

For Zoo & Aquarium month in 1993, instead of our usual "Keeper Talks" we, with the help of our enthusiastic Docents, ran mini-Zoolympic events for three weekends for the kids that came to the Zoo. On the last weekend we had a fundraising bakesale. It was well received by all the kids.

We pushed our annual Zoolympics up to July instead of our usual Fall timing. We also changed the venue last year from the Zoo grounds to the Zoo Ranch, which is not open to the public. The events were as creative as ever. The theme this year was animal health care! Use your imagination! The rainstorm that hit the city that afternoon just skirted us. Whew! The food was great and we

had a raging bonfire around which to present the well-earned awards. We also again had T-shirts commemorating the special day.

We have renewed our sponsorship of Prakash Amte, our Indian Keeper.

--Mona Keith, Chapter Liaison

## San Diego AAZK Chapter

A lot happened during November and December in San Diego. Our speaker for November was Denise Wagner--we called it swinging through Africa. She had recently traveled from Zimbabwe to Botswana in Aug/Sept. 1993, and I caught her while the trip and funny anecdotes were still fresh in her mind. It was a great slide show and talk.

In December we had an early Christmas party and a great talk on Falconry by Kim Caldwell who taught falconry in England for a year, previously worked at Marine World Africa USA (bird show), and now works at the San Diego Sea World's bird show. It was held at the Chula Vista Nature Center - a lovely and educational setting for our AAZK Christmas party. Both talks were very educational. In January we had a talk on Koalas by keepers from the San Diego Zoo.

We've done a lot of fundraising as well. First, the Fire Victims Fund raised about \$4,000.00 for some employees who lost their homes in our Southern California fires. Both worked at the San Diego Zoo. We also had a swap meet fundraiser for the Palic Zoo in former Yugoslavia. I wish luck to all the Chapters raising money for them. We raised about \$400.00.

We have advertised our newsletter, *The Keeper*, in *AKF* and have already been encouraged by the response. Our profits go to worthy conservation and animal benefiting causes. Best of luck in 1994 to everyone.

--Nicki McGahey, Secretary

## Chapter News, Continued

### Honolulu AAZK Chapter

Elected Vice President for the Honolulu Chapter is Elena Lamar-Flanagan.

### National Zoological Park AAZK

At our Chapter meeting in May, Lee Miller (current Chapter Treasurer) and Kathy Kelly (current Chapter Liaison) gave a slide presentation featuring the Cleveland Zoo, Toledo Zoo, and the Fort Wayne Children's Zoo where they received a behind-the-scenes tour from mammal keeper, Elaine Kirshner. Lee, Kathy and Brian Phillips, an exchange keeper from Australia, visited these zoos on their return trip from the 1991 AAZK Conference hosted by the Toledo Zoo.

This year's annual Preakness Clean-up was the most successful ever. The one-day, all volunteer conservation project raised \$8,600.00. The funds were sent to The Nature Conservancy to purchase additional land (@one acre/\$100) for permanent protection at the La Amistad National Park in Costa Rica.

Bruce Weissgold of World Wildlife Fund-TRAFFIC spoke at our June meeting. Bruce's presentation documented the world-wide exploitation of wildlife and wildlife products. He brought several examples of wildlife products that had been confiscated from illegal trafficking for attendees to examine.

In July we held a business meeting at which Lee Miller reported the current status of our Chapter's treasury and Kathy Kelly gave an update of the NZP-AAZK outreach project for new Chapter members.

Jamie Doyle of the Smithsonian Migratory Bird Center, gave a presentation at our August meeting, on the recent decrease in migratory bird populations and discussed suspected and proven contributing factors for this decline. The Center was founded in 1990 and its directives are to provide research and education and also to make policy recommendations.

Carol Prima (current Chapter Secretary) recently traveled to the Poco das Antas Biological Reserve in the coastal rainforest of Brazil to participate in the reintroduction program of the Golden lion tamarin back to the wild.

Two of NZP's Chapter members received recognition at the 1993 AAZK Conference held in Atlanta, GA. Kathy Ruffino (current Chapter Vice-President) received an "Excellence in Journalism Award" for her presentation/publication "Captive Breeding of the White-backed Mousebird" given at the 1992 Conference in San Diego, CA. Kathy Kelly received a "Certificate of Recognition" for her role in the NZP-AAZK outreach project, M.A.R.C. (Making A Realistic Contribution). The National Zoo received a "Certificate of Appreciation" for its cooperation and financial support of M.A.R.C.

In early November, three boxes (81 pounds) of wildlife educational materials were sent to Andy Lodge, Coordinator, Ngare Sergoi Support Group, for transport to Kenya to be used to teach African schoolchildren.

Eric Krussman (current Chapter President) gave a slide presentation at our November meeting entitled "Costa Rica - A Zoo-renovation Project". Eric and his wife, Rosemary, spent a month in Costa Rica as project team members to help Costa Rican zoo staff renovate their Joyas del Bosque tropical exhibit from an old aquatic exhibit into eight small exhibits representing various habitats of their country. Eric and Rosemary assisted in all phases of the renovation from installing plumbing and flooring and collecting exhibit materials and animals to teaching proper husbandry techniques to the keeper staff.

This year's NZP-AAZK sale table at the NZP employee Christmas party raised \$725.00 for our treasury. This was our most successful year ever and we're already thinking of ideas of how to "match" or "exceed" this year's amount next year.

--Kathy Kelly, NZP/AAZK Liaison

## Chapter News, Continued

### EFBC AAZK Chapter

New officers for 1994 are:

President.....Karla Losey  
Vice Pres.....Nancy Edwards  
Secretary.....Nancy Vandermey  
Treasurer.....Renee Richardson  
Liaison.....Kay Munsey  
Alternate.....Louisa Chabot

It's been a busy quarter at the Exotic Feline Breeding Compound in Rosamond, CA. The two cubs born in July (a Leopard and a Fishing cat) are healthy and very playful.

Our new gift shop, a large addition to the compound which was funded by the Virginia Blackwood Foundation, opened on 16 October. It was built through many donations of money, materials and time which the Blackwood Foundation coordinated.

Our main fundraiser of the year, the annual Fabulous Feline Follies, was held on 13 November. This black-tie dinner features a live auction and raffle, with all proceeds going towards the construction of a natural habitat enclosure for EFBC cats. This year's theme was "The Elusive Black Panther". Construction began in December on a natural habitat enclosure for our Amur leopard, a particularly endangered subspecies. The all-volunteer staff held a Christmas party of 18 December, while the cats got a special Christmas dinner on the 24th. We hope the new year brings more cubs, and an improved California economy!

--Nancy Vandermey, Sec'y

### River City Chapter

(Grand Rapids, MI)

New officers for 1994 are:

President.....Tim Sampson  
Vice Pres.....Amy Harris  
Secretary.....Jan Reed-Smith  
Treasurer.....Cheryl Schuneman  
Liaison.....Deanne DeMyer

Our major fundraiser for 1993 was a spaghetti dinner featuring a

presentation by Charlene Jendry. She is a member of the great ape staff at Columbus Zoo who lived and worked at Karisoke Research Center in Rwanda during Sept., Oct. and Nov. of 1992. She was part of a program initiated by the Dian Fossey Gorilla Fund which enables keepers to observe free-ranging gorillas and assist in camp-related activities. This experience provides an opportunity for keepers to augment their husbandry techniques for captive gorillas.

Charlene's talk, which included slides, video and artifacts, was very informative and enjoyed by all. The spaghetti dinners and crazy bread were donated by Little Caesars. All profits (\$428.47) went to the Dian Fossey Gorilla Fund.

--Deanne DeMyer, Liaison

### Philadelphia Zoo Chapter AAZK

It has been a fairly quiet Fall as we continue to concentrate on fundraising for both our zoo and for important projects locally and abroad.

Funds continue to accumulate in our "Critter Fund" which is a separate source of funding created to purchase enrichment items such as rope, Boomer Balls®, cargo nets, floats, etc. for our collection. During our zoo's Christmas Festival of Lights, our Chapter set up an informational table displaying these used "toys" and collected donations from the public. This event netted around \$170.00 alone while an in-house "penny drive" among the staff brought in an additional \$400.00.

This past Fall we were fortunate to have Debra Meyers from the Philadelphia Chapter of The Nature Conservancy come and give a lecture/slide presentation. It focused on their "Campaign for the Delaware" which we support through our zoo's viewfinders. This project helps protect crucial river habitat in all of the states this river travels through from New York State to Delaware.

## Chapter News, Continued

Money was donated from our budget to help complete an in-house project in our reptile building. The money will help to renovate a desert exhibit which houses rattlesnakes, coachwhip and beaded lizards.

--Sandra L. Robbins  
Chapter Liaison

### Metro Toronto Zoo AAZK Chapter

Officers for 1994 are:

President.....Charles Guthrie  
1st Vice Pres.....Maria Franke  
2nd Vice Pres.....Monica Wrobel  
Treasurer.....Mark Bongelli  
Secretary.....Karyn Tunwell  
Chapter Liaison.....Eric Cole  
Conservation Officer...Ariel Shamir

"Bowling for Rhinos" raised \$2720 last year. Our thanks to Lynn and Tom Saunders, and Heidi Manicki for taking on the job of organizing it all.

For Chapter meetings this year we are hoping to host four high profile guest speakers, one each on mammals, birds, herps and fish. We hope to sell tickets for these events and also to broaden our membership base.

We also intend to undertake some small local conservation project; we are looking at conducting a breeding bird survey of the local river valley.

Fundraising activities will be geared towards specific causes, thus focusing our efforts. We already have a few underfunded conservation organizations in mind to support.

Black-footed ferret T-Shirts, a major fundraising success, as they are sold in the zoo's gift shop now, are still available to the general membership. All sizes are \$15.00. Write to: M.T.Z. AAZK Chapter, P.O. Box 280, West Hill, Ont., M1E 4R5 Canada.

--Eric Cole, Chapter Liaison

### Topoka AAZK Chapter

Our new officers for 1994 are:

President.....Kayla Grams  
Vice Pres.....Warren Waters  
Secretary.....Tori Mason  
Treasurer.....Stan Dibble  
Liaison.....Darrin Webb

In February, Darrin and Tori gave a presentation on ecology to local junior and senior high youth groups. It was well received with everyone gaining just a little more knowledge about the world around them.

In April, our chapter participated in Bowling for Rhinos with the Kansas City Chapter. This year we will be hosting our own event.

In June, we celebrated Conservation Weekend at the the zoo. Our Chapter set up an information booth featuring recycling, the Dian Fossey Gorilla Fund, and Rhinos. We sold hand, foot and body prints from various animals in our collection. That same weekend, Joe Collins, Director of Natural History at the Dyche Natural History Museum in Lawrence, KS, gave an interesting talk on convergent evolution for our Chapter and zoo staff.

Most of 1993 our showcase was dedicated to our zoo's rainforest, which was devastated by a fire in November of 1992. The money raised from our Spiral Wishing Well was used to purchase a bird release cage for the keepers to use when they began releasing birds back into the building.

At the present time our showcase has an Environmental Enrichment theme. Proceeds raised will go into a fund to be used by the zoo's Environmental Enrichment Committee.

Our Chapter helped send three members (Kayla, Tori, and Gretchen) to the National AAZK Conference in Atlanta, GA. Kayla and Gretchen and Michelle Acuña (Arizona-Sonora Desert Museum) gave an enrichment workshop and Kayla gave a paper on African lion management.

## Chapter News, Continued

Our Chapter has said good-bye to three members. Gretchen Ziegler's leadership, professionalism and friendship will be missed. Her initiative in renovating our zoo's old Binturong unit sparked renewed interest in our AAZK Chapter. She is currently employed at Wildlife Safari in Winston, OR. Melissa Starr and Ragan Fairchild have left to pursue other career opportunities.

We ended the year on a fun note -- Christmas caroling (no pun intended). Our Chapter sang at the Kansas Neurological Institute for the mentally disabled. It was a lot of fun and very much appreciated by the KNI patients and staff. Afterwards we all gathered for warm cobbler and a Christmas Story.

--Darrin Webb, Chapter Liaison

### IMPORTANT CHAPTER TAX NOTICE

If your Chapter has received a 1993 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 1994**. 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.



## New Condor Breeding Center Established

According to the December 1993 issue of *ZOONOOZ*, the magazine of the Zoological Society of San Diego, the California Condor Recovery Program is making another step forward with the establishment of a third breeding site. On 23 September, 1993, six pair California condors (*Gymnogyps californianus*) left Southern California to take up residence at the World Center for Birds of Prey in Boise, ID. The 12 birds (7 from the San Diego Wild Animal Park and five from the Los Angeles Zoo) will form the nucleus for a new captive breeding population at the facility which is operated by the Peregrine Fund. Enclosures at the World Center for Birds of Prey are modeled after those being used at SDWAP and L.A.

*ZOONOOZ* goes on to report that 1993 was their most successful year yet in the Condor Recovery Project. Nine young hatched at SDWAP and six at the L.A. Zoo. Because captive reproduction had done very well the past few years, both facilities had reached their maximum carrying capacities, thus necessitating the establishment of a third site for captive Condor populations.

Because of the program's success a number of birds have been returned to the wild including five released in 1993 in Los Padres National Forest. These birds joined five others that had previously been released at this protected site.



## INTERNATIONAL COMMUNITY MARKS 10 YEARS OF EFFORTS TO CONSERVE MIGRATORY SPECIES

The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention) celebrated the tenth anniversary of its operation on 1 November 1993.

Migratory species -- which include birds, antelopes, bats, dolphins and marine turtles -- are exposed to many man-made and natural threats. The fact that these animals often have to travel over vast distances in search of food and places to breed and raise their young makes them more vulnerable than more sedentary ones.

Protecting them is difficult and complex since targeted measures can only be carried out effectively when a species' migration route and the threats along it are known. As far as the protection measures themselves are concerned, many countries that host migratory species must work closely together to plan and carry out conservation measures in a coordinated way. So far, this has happened all too rarely.

The White stork (*Ciconia ciconia*), which Germany has chosen to be "Bird of the Year" in 1994, could serve as an example. The threats it faces come not only from the degradation of wetlands in Europe, its food source, but also from increasing human settlements, and the drainage and transformation of former natural sites into agricultural land. Hunting pressure and the widespread use of pesticides along migration routes across the Balkans and the Middle East, down to South Africa, are also important contributors to the decline in their numbers.

This anniversary provides an opportunity to look back and to possibly forecast future developments with regard to conserving migratory species. While the 1980s were characterized by limited progress, the past two to three years have revealed a more dynamic development of the Convention. There are now 42 Contracting Parties to the Convention, from all continents. By joining the Convention, these countries have committed themselves to strictly protecting migratory species that are threatened with extinction. In addition, they are encouraged to take coordinated conservation actions for these and other non-endangered migratory species within the framework of specialized agreements with other countries.

So far three agreements of this kind have been concluded: the Agreement on the Conservation of Seals in the Wadden Sea (between Denmark, Germany and the Netherlands); the Agreement on the Conservation of Bats in Europe (which will enter into force in early 1994); and the Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas (which is likely to enter into force in March 1994).

In addition to these, a number of countries have signed a Memorandum of Understanding aimed at ensuring the survival of the Siberian crane (*Grus leucogeranus*), whose west and central Asian populations are seriously threatened with extinction. A similar memorandum will be finalized later this year for the endangered Slender-billed curlew (*Numenius tenuirostris*), of which only 400 perhaps are now surviving.

A proposal for a comprehensive Agreement on the Conservation of African-Eurasian Migratory Waterbirds has just been submitted to 115 Governments throughout Africa, Europe, Asia Minor, the Arctic and western Siberia. This Agreement, so far the largest of its kind, will provide protection for 212 migratory species over their entire range. Negotiations to conclude it are planned for the next Conference of the Convention Parties, which is scheduled to take place in June 1994 in Nairobi, Kenya.

The next decade will hopefully bring more progress:

-- The number of Parties will continue to grow, thus allowing for extension of the beneficial conservation actions that the Convention is intended to stimulate;

## Migratory Species Protection, *Continued*

-- The sense of common responsibility to conserve our planet's biological diversity will intensify, including a willingness to strengthen efforts to conserve vulnerable migratory species throughout their range;

-- More agreements will be developed to conserve, among others: migratory waterbird species in the Asia-Pacific region; small cetaceans of the Mediterranean and the Black Seas; and antelopes in arid zones, such as the Sahelo-Saharan region and central Asia.

One may ask: why do we need so many agreements and administrative work? Until now, there was no comprehensive framework to allow scientists and administrators of those countries regularly frequented by migratory species to coordinate and organize research and continuous monitoring aimed at establishing the nature of threats, and to plan and carry through concerted actions. To illustrate the current situation: how can it be possible that, while in Germany and Scandinavia the nests of rare bird species are being carefully monitored during the breeding season, only a few hundred kilometers away birds of the same species are being hunted or caught in nets?

If the increase in human population and global development continues at the present rate, the world's existing natural areas that are important for the survival of migratory species will disappear within a few generations. Therefore, it is imperative that key sites be conserved and that those which have been made uninhabitable are at least partially restored. For its part, the Bonn Convention will continue to act on the challenge issued by the first United Nations environment summit, 21 years ago in Stockholm, and will continue to promote internationally coordinated conservation work for the benefit of migratory species.

The Convention is serviced by a small secretariat in Bonn, administered by the UN Environment Programme (UNEP) and financed through contributions from the Contracting Parties, with additional support from the German Government.

--*GreenDisk Oct/Nov 1993, Vol. 2, No. 3*



## Biology Fund Established

The Sophie Danforth Conservation Biology Fund was established by the Roger Williams Park Zoo and the Rhode Island Zoological Society to help protect the world's threatened wildlife. Each year grants up to \$1,000 are awarded to individuals for projects and programs that enhance biodiversity and maintain ecosystems. Field studies, environmental education programs, development of techniques that can be used in a natural environment and captive propagation programs that stress an integrative and/or multi-disciplinary approach to conservation are considered. Deadline: May 1, 1994. Grants are awarded in July, 1994. For further information contact: Dr. Anne Savage, Director of Research, Roger Williams Park Zoo, Elmwood Ave., Providence, RI 02905; Tel.: (401) 785-3510, Fax: (401) 941-3988. --*GreenDisk, Oct/Nov 1993, Vol. 2, No. 3.*

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### 1994 AZA Regional Conferences

**6-8 March 1994** - Central Regional Conference. For more information, contact Donna Chain, Oklahoma City Zoo, 2101 N.W. 50th St., Oklahoma City, OK 73111 (405) 424-3344.

**20-22 March 1994** - Southern Regional Conference. For more information, contact Beverly Rutland, Montgomery Zoo, P.O. Box ZEBRA, Montgomery, AL 36109 (205) 240-4900.

**10-12 April 1994** - Western Regional Conference. For more information, contact Jean Miller, Micke Grove Zoo, 11793 North Micke Grove Road, Lodi, CA 95240 (209) 953-8840.

**17-19 April 1994** - Great Lakes Regional Conference. For more information, contact Carol Pedersen, Blank Park Zoo, 7401 S.W. 9th St., Des Moines, IA 50315 (515) 285-4722.

**1-3 May 1994** - Northeastern Regional Conference. For more information, contact Troy Stump, ZOOAMERICA, North American Wildlife Park, 100 West Hersheypark Dr., Hershey, PA 17033 (717) 534-3862.



**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) 986-6921 [w]; (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)** - Vacancy  
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**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** - Vacancy  
**IDAHO** - Vacancy  
**ILLINOIS** - Pat Swieca, 5710 W. Cullom Ave., Chicago, IL 60634  
**INDIANA** - Vacancy  
**IOWA** - Carla Wieser, Omaha's Henry Doorly Zoo, 10th St. & Deer Park Blvd., Omaha, NE 68107  
**KANSAS** - Vacancy  
**KENTUCKY** - Scott Wright, Cleveland Metroparks Zoo, 3900 Brookside Park Dr., Cleveland, OH 44109  
**LOUISIANA** - Rhonda Votino, 3535 Houma Blvd., Apt. 109, Metairie, LA 70006  
**MAINE** - Jeanette Nadeau (see addresses under CT)  
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**MISSISSIPPI** - Jeannie Frazier, Jackson Zoological Park, 2918 W. Capitol, Jackson, MS 39209  
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**MONTANA** - Vacancy  
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**NORTH DAKOTA** - Bob Debets, Assiniboine Park Zoo, 2355 Corydon Ave., Winnipeg, Manitoba  
Canada R3P 0R5 (204) 986-6921 [w]  
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**OKLAHOMA** - Debbie Jackson or Ann Rademacher (see addresses under AR)  
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**SOUTH DAKOTA** - Bob Debets (see address under ND)  
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**TEXAS** - Ann Marie Greco, 5903 Danny Kaye #2104, San Antonio, TX 78240  
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**Provinces of Manitoba & Saskatchewan** - Bob Debets (see address under ND)  
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**ELEPHANT KEEPER**...requires at least two (2) years' experience and working knowledge of care, maintenance, and operant training. A degree in zoology or related field and/or elephant management experience preferred. Salary commensurate with experience. Send resume to: Jean Benchimol, General Curator, The Zoo, 5701 Gulf Breeze Prkwy., Gulf Breeze, FL 32561.

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**ANIMAL KEEPER**...requires high school diploma and preferably a B.S. in related field or one year's work experience. Responsible for care, feeding, health/safety of animals; exhibit maintenance; behavior observation; interaction with the public. Send resume to: Debbie Barreda, Natural Bridge Zoo, P.O. Box 88, Natural Bridge, VA 24578.

**KEEPER INTERNSHIPS**...for summer of 1994 May to August. Starting date flexible for 10 weeks. Closing date for application is **15 April 1994**. Stipend of \$1,000 provided by the 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 21802.

The following three (3) positions are available at Soco Gardens Zoo, Maggie Valley, NC. Send resume to: Soco Gardens Zoo, Attn. : Jim Miller, Rt. 1, Box 355, Maggie Valley, NC 28751. Resumes taken until positions filled.

**ASSISTANT SUPERVISOR/KEEPER/GUIDE**...seeking special person to help oversee the operation of a small private varied collection of mammals and reptiles. Must have managerial experience, work well with co-workers and public, neat appearance, zoo keeping and construction experience. Duties include but are not limited to supervision of keepers, training of new keepers, lecturing to public, all phases of animal and reptile care and exhibit maintenance and construction. Salary \$17,000 - \$20,000 dependent upon experience, year-end bonus, health insurance.

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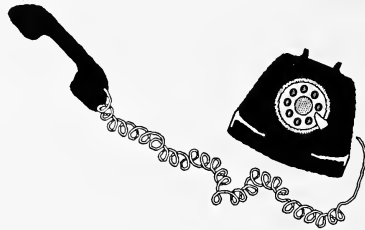
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## Opportunity Knocks, *Continued*

In addition to working with professional educators and interpreters, students will have the opportunity to meet professionals in the Aquarium, Aviculture, Animal Care and Animal Training departments. Requirements: Candidates must be enrolled in a college program and be willing to teach in front of large groups of people. Basic knowledge of local marine life, teaching, and acting experience helpful. Students can arrange to receive academic credit and are responsible for transportation and housing. For further information or to obtain application forms contact: Judy Jenkins, Education Department, Sea World of Florida, 7007 Sea World Drive, Orlando, FL 32821-8097 or call (407) 363-2393.

**ZOOKEEPER**...requires one year of experience caring for a variety of animals; experience with birds preferred. The Chaffee Zoo is located in the heart of California's San Joaquin Valley, only one hour from Yosemite, Kings Canyon and Sequoia National Parks, and only three hours drive to the ocean. Fresno is the most affordable place to live and work in California. Salary and benefits excellent. \$20,160.00 - \$24,528.00 per year. Applications may be obtained from: Fresno City Human Resources, 2600 Fresno St., Fresno, CA 93721 (209) 498-1575. Filing deadline is **31 March 1994**. Postmarks are not accepted. AA/EOE.



## **CALL TOLL FREE TO SAVE THE PLANET**

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--GreenDisk Oct/Nov 1993, Vol. 2, No. 3



# AAZK Membership Application

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

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## 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  
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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  
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## International Members

- \$40.00 International  
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Canada regardless of category*

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- \$20.00 Library  
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Title \_\_\_\_\_

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- My check is enclosed (AAZK, Inc.)  Please charge to my credit card

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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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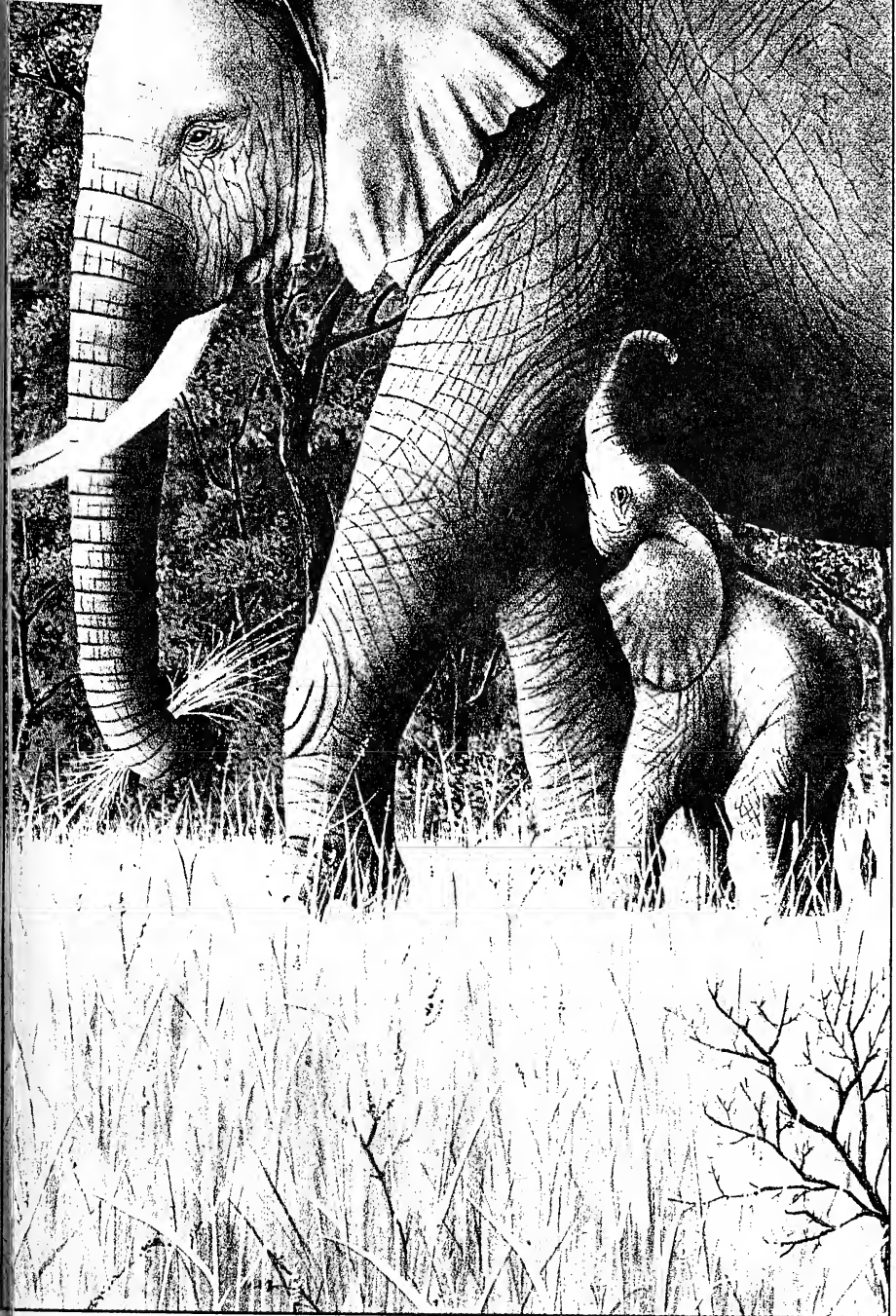


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Animal Keepers' Forum

Special Elephant Management Issue

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Phone: 1-800-242-4519 (U.S.) 1-800-468-1966 (Canada) FAX 913-273-1980

**Editor-In-Chief:** Susan Chan **March 1994**  
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Animal Keepers' Forum (ISSN 0164-9531) is a monthly journal of the American Association of Zoo Keepers, Inc. 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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Zoo Infant Development Project - Harmony Frazier, Woodland Park Zoo (Mammals)

Teri Maas/Maggie Liguori, Philadelphia Zoo (Birds/Nonpasserines); Kim Livingstone, L.A. Zoo (Passerines)

Jeanne Bocconcelli, Newark Museum Mini-Zoo (Reptiles); Linelle Lone, Denver Zoo (Amphibians)

Diet Notebook, Mammals, Vol. II - Susan Bunn Spencer, Grand Rapids, MI



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# To the Membership. . .

The editorial staff of *Animal Keepers's Forum* is pleased to bring you this special, expanded issue devoted to the topic of Elephant Management. An open solicitation for materials to include in this issue was made in November of 1993 and the manuscripts submitted make up this special issue. AAZK, Inc. and *AKF* take no position on the advisability of one form of management over another, but are simply making an effort to present various opinions, case studies and ideas on this important topic. Articles appear in no particular order as defined by topic/opinion.

Due to the size of this issue and our desire to present as much information as we had available on Elephant Management, some of the regular features of *AKF* do not appear this month. Regulars such as Chapter News, Births and Hatchings and Legislative Outlook will return next month. We would like to consider doing another dedicated issue during 1994 and welcome suggestions on possible topics from the membership. Please write or call with your ideas and suggestions.

*Susan D. Chan, Editor*

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*About the Cover. . .the remarkable and endearing illustration on the cover of this special issue on elephant management is from Elephants, Big, Strong and Wise, published by Young Discovery Library. Michael Dillon, owner of this company and an Associate member of AAZK, has generously offered AAZK and *AKF* the gratis use of illustrations from the books in this series. The Young Discovery Library, which was honored with a Special Award from the New York Academy of Sciences for "achieving a standard that will enrich all children's books" offers titles on such topic areas as Animals, Nature, The Human Body, Arts and Technology, Other Lands, Food and Materials and People in History. Each book contains beautiful color illustrations which enhance the brightly written text. Each volume includes a wealth of information on its topic that will stimulate a child's interest in learning and broaden their horizons. The Young Discovery Library is an international undertaking - the series is now published in eleven countries. It is the world's first pocket encyclopedia for children, 120 titles will be published. All inquiries on the Young Discovery Library should be sent to: P.O. Box 229 - Ossining, NY 10562. Our sincere thanks to Michael for sharing this art resource with *AKF*.*

## **AAZK Award Nominations Are Now Being Accepted for 1994!**

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 1994 AAZK Conference in Omaha. The deadline for all award nominations is **1 June 1994**. All award nominations received after 1 June will be reviewed for 1995, 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 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 Zoo and Aquarium Association (AZA) and the Canadian Association of Zoological Parks and Aquarium (CAZPA) Newsletters, Animal Keepers' Forum (AAZK), Awards, Honors and Prizes: Volume 1; United States and Canada. The latter is published by Gale Research Company based in Wheaton, MD and found in medium to large sized libraries across the U.S. and Canada.

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.



# Coming Events

## Herpetology Weekend

April 8-10, 1994

Slade, KY

Co-sponsored by the U.S. Forest Service, Kentucky State Parks, and the Kentucky Dept. of Fish and Wildlife Resources. Activities will include field trips, night hikes, photo opportunities and a tour of the Miami Valley Serpentarium. Presentations include those by Jim Harrison of the Serpentarium; Dave Dennis of Ohio State University and Sherman Mintor, author of Amphibians and Reptiles of Indiana. Programs start at 8:00 a.m. on Friday, 8 April at the Activities Center, Natural Bridge State Resort Park. Collecting is Prohibited. For additional information contact: Natural Bridge State Park, Slade, KY 40376 (606) 663-2214 or 1-800-325-1710 or Stanton Ranger District, Stanton, KY 40380 (606) 663-2852.

## Callitrichid Symposium

May 1, 1994

Hershey, PA

A symposium on the primate family Callitrichid will be held by the New World Primate Taxon Advisory Group preceding the 1994 Northeastern Regional AZA meetings. The symposium will focus on topics of husbandry, nutrition, behavior, reproduction, and field research. Registration fee will be \$25.00. For more information, contact Andy Baker or Beth Bahner, Philadelphia Zoo, 3400 W. Girard Ave., Philadelphia, PA 19104, (215) 243-1100, FAX: (215) 243-0219.

## 1994 Western Association of Fish and Wildlife Agencies Annual Meeting

May 14-19, 1994

Anchorage, AK

Theme for the meeting is "Partnerships in Conservation, a Vision for the Next Century". Issue sessions and speakers are planned on conservation partnerships, the Endangered Species Act, the economics of fish and wildlife, the politics of managing predators, etc. Hotel rooms at the Anchorage Hilton are \$78 per night and reservations must be made by 14 March. For registration information call 1-800-WAFWA94.

## 14th Annual Conference of the Association of Zoo Veterinary Technicians

September 25-29, 1994

Cleveland, OH

Held at the Cleveland Metro Parks Zoo. If you would like more information, please contact Rhonda Kesak, Cleveland Metro Parks Zoo, 3900 Brookside Park Drive, Cleveland, OH 44109; (216) 661-6500, ext. 259.

## Association of Avian Veterinarians

Sept. 27 - Oct. 1, 1994

Reno, NV

Conference site is the Nugget Hotel. The program will offer a wide variety of continuing education opportunities with concurrent programming to satisfy a broad range of interests. A Core Seminar, Basic Avian Medicine Symposium, Main Conference, and Practical Labs will be included. For further information or to request a Call for Papers application, contact the AAV Conference Office, 2121 So. Oneida St., Ste. 325, Denver, CO 80224-2552, (303) 756-8380, FAX (303) 759-8861.



## AAZK Announces New Professional/Contributing Members

- John R. Lewis, Jr., Forest Prk. Zool. Soc. (MA)  
Nancy J. Lewis, Forest Prk. Zool. Soc. (MA)  
Lee Rosalinsky, The Bronx Zoo (NY)  
Brian Altadonna, Baltimore Zoo (MD)  
J. Geoffrey Gowan, SFCC Teaching Zoo (FL)  
N. Phillip Workman Jr., Jackson Zool Prk. (MS)  
Holly Koppelberger, Akron Zool. Prk. (OH)  
Anne Kneibel, John Ball Zoo (MI)  
Peter B. Lee, Como Zoo (MN)  
Diana Villafuerte, Lincoln Park Zoo (IL)  
Stan Dibble, Topeka Zoo (KS)  
Kirk Nemechek, Rollings Hills Ranch (KS)  
Tyrene Fayard, Audubon Institute (LA)  
Kerrie Hess, Caldwell Zoo (TX)  
Rhonda Quisenberry, Houston Zoo (TX)  
Deborah Corbett, Forest Prk. Zool. Soc. (MA)  
Lori Neiverth, The Bronx Zoo (NY)  
Kris Hopkins, Erie Zoo (PA)  
Martin Walsh, Plumpton Prk. Zoo (MD)  
Ann Southcombe, Lowry Park Zoo (FL)  
Beth Armstrong, Columbus Zoo (OH)  
Jesus Barraza, Indianapolis Zoo (IN)  
Tracy Wooters, Clinch Prk. Zoo (MI)  
Janet Reiter, Brookfield Zoo (IL)  
Chad Wittenberg, Sunset Zoo (KS)  
Bob Brown, Rollings Hills Ranch (KS)  
Rene Gloschen, Riverside Zoo (NE)  
Randal Berry, Little Rock Zoo (AR)  
Kathleen Jarward, Houston Zoo (TX)  
Christine M. Bobko, Denver Zoo (CO)  
Elizabeth Gain, Rocky Mt. Wolf Sanctuary (CO)  
Cassandra Roberts, Gatlinburg Municipal Black Bear Habitat (TN)  
Taylor Edwards, Arizona-Sonora Desert Museum (AZ)  
Rebecca Choquette, no zoo listed, Honolulu, HI  
Scott Seto, no zoo listed Honolulu, HI

### New Contributing Members

Coreen Eaton, WXICOF, New Melly, MO

### Renewing Contributing Members

National Zoological Park Library, Washington, DC  
Mr. and Mrs. Justin Finser, Finser Exotics, Umatilla, FL

## Greater Houston Chapter to Host Symposium

The Greater Houston AAZK Chapter will host the LONE STAR KEEPER SYMPOSIUM from 15-17 April 1994 at the Houston Zoo. They invite all Texas zoo keepers, other keepers, zoo educators, docents and volunteers to a weekend of informative sessions and professional networking. The symposium will feature presentations on animal husbandry and management, field research, landscaping and educational programs. A full day of sessions is scheduled for Saturday and will conclude with a dinner and dance. Sunday at the Houston Zoo is celebrating Earth Day. Breakfast will be followed by behind the scenes tours. A limited number of attendees will visit the Attwater Prairie Chicken Refuge for some birding. Registration fee is \$25.00. Free housing will be available. For more information, contact Christina Smith or Sheila Phillips. GHCAAZK, 1513 MacGregor Way, Houston, TX 77030. (713) 520-3273, FAX: 713-525-3330. --submitted by Felicia Hill, GHCAAZK Liaison.

## Undergraduate and Graduate Training in Zoo Studies Offered in Kansas

Friends University, in association with the Sedgwick County Zoo, Wichita, KS, is offering undergraduate and graduate training in zoo studies. 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 Master of Science in Environmental Studies is a fully accredited 21-month program which offers graduate training in zoo education, management, and administration. For further information contact: Dr. Alan Maccarone, Biology Dept., Friends University, 2100 University, Wichita, KS 67213 (316) 261-5890.



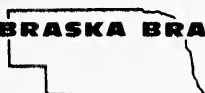


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## Elephant Manager's Association Elephant Management Position Statement

The Board of Directors of the Elephant Manager's Association (EMA) believes the future management of captive elephants is best accomplished through free contact supplemented by a combination of protected and confined contact for mature bulls and untractable females. Protected contact is still in an experimental stage for elephants in a herd situation. Even in a solitary situation protected contact needs to be backed up with confined contact (Elephant Restraint Chute) in case an animal refuses medical treatment for any reason. The EMA also believes the no contact system is not a viable management technique for captive elephants.

It is also the EMA's belief that there is an immediate need for an Elephant Managers Training School (EMTS). Such a school would give institutions the resources to set up a comprehensive elephant management program. The EMTS should give extensive instruction in the captive management needs for elephants and the best way to attain them under the free, protected and the confined contact systems. The EMTS would then help make participating institutions safe for both keepers and animals.

The Elephant Manager's Association Board of Directors is preparing a position paper which will clearly identify each of the four recognized management systems.

THE  
ELEPHANT  
MANAGERS  
ASSOCIATION

---



For further information on EMA and  
their Position Statement contact:

Ron Ringer  
EMA Liaison to AAZK  
c/o Elephant Dept.  
San Diego Zoo  
P.O. Box 551  
San Diego, CA 92112

## AZA Elephant Management Position Statement

The Board of Directors of the American Zoo and Aquarium Association (AZA) philosophically believes the future management of captive elephants should be based on methods associated with protected contact. However, the Board urges that all institutions maintaining elephants assign appropriate personnel the task of familiarizing themselves regarding the various techniques and philosophies associated with managing captive elephants. This should include, but not be limited to, the topics of free contact, confined contact, protected contact, and no contact. Additionally, with the health and welfare of captive elephants and their keepers in mind, institutions should establish written protocols and guidelines supporting the use of consistent management techniques.

An elephant restraining device reinforces, as well as augments, animal and human safety. In an advisory, rather than a regulatory capacity, the AZA Board of Directors strongly recommends the inclusion of an elephant restraint device in all facilities that either currently maintain elephants, or anticipate doing so in the future. The Board also reiterates its earlier recommendations that two trained keepers be physically present when elephants are being handled regardless of the management technique being used.

The AZA Board of Directors is currently preparing a position paper which will clearly identify the dangers associated with maintaining and managing captive elephants, as well as the various management options currently available and the role of elephant SSP's. Portions of this paper will also be incorporated in future AZA Management School curricula, where appropriate.



AMERICAN ZOO AND AQUARIUM ASSOCIATION

For further information on AZA and their Position Statement contact:

Sydney Butler  
Executive Director  
American Zoo and Aquarium Association  
7970-D Old Georgetown Road  
Bethesda, MD 20814-2493

# Answers to Questions About Protected Contact Elephant Management

By  
Gary Priest, Animal Behavior Specialist  
Zoological Society of San Diego, San Diego, CA

## Abstract

The Zoological Society of San Diego at their two facilities, the San Diego Zoo and the San Diego Wild Animal Park, manage one of the largest collections of elephants in North America. Experiments with alternatives to the traditional free contact management of elephants began at the San Diego Wild Animal Park in 1989 (Desmond, 1991). This experimental program was driven by the need to gain safe access to our (2) bull elephants and our desire to determine if there was a safer method for managing the husbandry needs of captive elephants. Encouraged by the findings, in 1991 we began to make plans to manage an entire herd of Asian elephants using a method that has now become popularly known as protected contact. There currently exists a great deal of confusion regarding what protected contact is and how it is used. Drawing from our experience in San Diego, this paper will offer several working definitions for elephant management and will attempt to answer basic questions about what protected contact is and isn't.

**Key Words:** elephant management, protected contact, free contact, confined contact, no contact.

## Introduction

The Zoological Society of San Diego maintains one of the largest groups of elephants in North America. We are presently engaged in a transition program with our elephants from the traditional free contact method of management to protected contact (Priest, 1992). At the Wild Animal Park, we have been managing our Asian elephants exclusively with protected contact since October of 1992. Construction at our African elephant facility is currently underway. Once both herds at the Wild Animal Park are being managed by protected contact, the third and final group of animals at the San Diego Zoo will also be transitioned to protected contact.

During the last decade, both Asian (*Elephas maximus*) and African (*Loxodonta africana*) elephants have been added to the ever-growing endangered species list. It is becoming increasingly apparent that human intervention, on behalf of the elephant, is necessary if this species is to survive beyond the 21st century. As a leader in wildlife conservation, the Zoological Society of San Diego recognizes its responsibility to meet wildlife conservation challenges of the future. Conservation, education, and recreation comprise our institution's triad mission statement. Our primary purpose for managing elephants in San Diego is for exhibition and reproduction. As an employer, we must also create the safest possible working environment for our employees.

Captive elephants require daily care if they are to remain healthy. Yet, because of their sheer size and power, elephants can be lethal (Benirschke, Roocroft, 1992). In fact, elephants are responsible for injuring more zoo keepers in the United States than any other zoo animal (Lehnhardt, 1991).

In seeking a safer method for elephant management, we questioned virtually every aspect of previously accepted standards for the management of this species and simultaneously challenged thousands of years of traditional practice. Change to any commonly accepted practice is seldom easy. Many professional elephant keepers' convictions are strongly held and are not easily relinquished. In fact, these strongly held views may be a kind of



## Answers to Questions On Protected Contact Elephant Management, *Cont'd*

psychological job requirement for elephant keepers operating successfully in free contact. The development of protected contact has been met with opposition from many traditionalists (Zoll, 1992). However, concern for keeper safety and the need to maintain healthy elephants is now overriding opposition to change on a national scale (Wylie, 1993). It is these dual concerns that have driven our pursuit of alternate methods for elephant management.

With the recent development of protected contact programs at several facilities around the country, many misconceptions about what protected contact is and what may be accomplished through it have sprung up. Zoological institutions around the world are now expressing interest in alternatives to traditional methods for elephant management. This paper is presented with the intent of answering some of the more frequently asked questions about protected contact.

Without compromising elephant husbandry, protected contact is proving to be a logical, well-planned, response to an on-going animal management problem. However, managers' expectations for what protected contact can accomplish may be inflated. Protected contact is not a panacea for all elephant management problems. In fact, establishing a protected contact program may require a commitment to significant additional resources far beyond those normally required by free contact. A protected contact program may require additions to existing facilities, staff training, and for a time, additional labor. **However, for those concerned with elephant management it is important to understand that while protected contact may not be any cheaper, it could prove to be far less costly than free contact.**

### **DEFINITIONS AND TERMS**

**What is meant by "hands-on" elephant management?** There is currently a great deal of confusion about the phrase "hands-on" as it relates to elephant management. The term has been incorrectly used as a narrow definition of free contact. In fact, the term "hands-on" also describes any program that uses some kind of conditioning for the purpose of routinely gaining access to various body parts of an elephant for husbandry or other purposes. The phrase "hands-on" elephant management is correctly used in reference to FREE CONTACT, to PROTECTED CONTACT, and in cases where conditioning is used, to CONFINED CONTACT. To varying degrees, all three methods are "hands-on".

**So, what is "hands-off" elephant management?** NO CONTACT is the only true "hands-off" management system. Access to the elephant is severely limited and the husbandry needs of these usually free ranging animals are managed exclusively by veterinarians or park rangers through chemical restraint.

In CONFINED CONTACT, captive elephants are physically restrained by a mechanical restraint device in order to provide safe access to the animal for their husbandry requirements. Some training may be used in confined contact but the system does not rely on it.

**What is protected contact?** Protected contact is a "hands-on" system designed to maintain physical contact with captive elephants while maximizing keeper safety. In protected contact the needs of elephants are subordinate only to the safety of the elephant keepers. The elements of protected contact management include a combination of the following: facility design, animal and keeper position relative to protective barriers, and operant conditioning techniques designed to encourage the animal to voluntarily comply with the keeper's objectives. In the protected contact system with elephants, behavior modification is accomplished exclusively through the use of positive rewards including a wide variety of food treats, tactile and social reinforcers.

With the expected completion of our first (of three) elephant restraint chutes in June of 1994, San Diego's animal management plan will employ a three branched strategy to provide health care to our elephants. The three methods in order of priority are: 1) routine access through protected contact; 2) occasional access by means of the restraint chute; and 3) in rare cases, veterinary intervention through chemical restraint.

## CONTRASTING PROTECTED AND FREE CONTACT

**How do free and protected contact differ?** In the traditional free contact method the keeper enters the animal's exhibit and social structure and moves freely among the elephants, to accomplish his/her objectives. Through the delivery of positive (social, tactile, and food rewards) and sometimes negative reinforcement (through the bull hook or ankus), the keeper uses his/her skill to become accepted by the elephant as the dominant member of the elephant's social hierarchy.

In protected contact, the keeper remains outside both the enclosure and the elephant's social structure. The keeper works to form a cooperative relationship with the elephant, exclusively through the delivery of positive reinforcements. This provides access to the animal from protected positions.

**What are the main reasons driving the change toward protected contact?** There are at least three primary reasons for the change:

1. The need to provide a greater level of keeper safety than in the past.
2. Provide this safety while maintaining the accepted husbandry requirements for captive elephants.
3. The need to create a system that can be applied consistently to the elephants as well as one that can be readily taught to new keepers.

**Is protected contact safer than free contact?** As of this writing (Jan. 1994), there is insufficient data to accurately compare the relative safety of keepers operating in the two systems, but there are two primary reasons why I believe protected contact provides a safer working environment for the keeper.

(1) In protected contact, elephants are not constrained to perform behaviors. Therefore, the elephant's motivation in protected contact is very different than that in free contact. In protected contact, the elephant is voluntarily working to earn something it desires. In free contact, the elephant may be working to earn a positive reward, to avoid or terminate a negative consequence or a combination of both. In protected contact should the elephant feel threatened, nervous, or frustrated, it learns that it is free to choose to terminate the session and suffer no negative consequences. In free contact, because the keeper's life depends on the animal's compliance to his/her wishes, the elephant cannot be allowed this choice and this difference can place a keeper, especially a new or unskilled keeper, at risk of injury. Once a command has been given, the free contact keeper must always insist on 100% compliance from the elephant.

(2) In protected contact, the keeper positions the animal or himself so that he is shielded by a barrier. While still maintaining close physical contact with the elephant, the keeper uses the barrier to reduce the exposure to the animal.

**Is a keeper safe from injury in protected contact?** No, in fact, there is a real danger of elephant keepers, familiar with free contact, becoming complacent when working with elephants that are behind barriers. Elephants are 50 times the size of an adult human. They are intelligent, immensely strong, and potentially lethal. Regardless of animal management style, good animal sense is a job requirement for any keeper working with such an animal. In protected contact, keepers work in very close quarters with the elephant. When the protected contact keeper is working within reach of the trunk, he or she can be just as vulnerable to being grabbed or hit with a trunk as is the free contact keeper. Because protected contact keepers operate in conjunction with protective barriers, they often work between steel poles. Keeper must exercise caution to prevent arms or hands from becoming pinched between an elephant extending a rear leg for a foot trim, and the steel port where the foot rest is located. In San Diego, to help prevent injury, our protocols require trainers not to reach beyond their mid-forearms into the enclosure; instead we use targets wherever possible. Keepers never turn their backs on elephants when standing within trunk reach. Keepers always position themselves so as to use the protective barriers to their best advantage in providing the safest working environments.

## Answers to Questions On Protected Contact Elephant Management, Cont'd

**What are the alternatives to free contact?** Protected contact and confined contact both are capable of providing the necessary access to care for the husbandry needs of captive elephants. Because the health needs of captive elephants require routine keeper and veterinary access, no contact is not an appropriate management method for zoological parks that maintain elephants.

**What is operant conditioning and how does it work?** Operant conditioning refers to a systematic conditioning process used to modify or shape an animal's behavior toward a desired goal. In essence, operant conditioning is a universal language that an animal can understand and use to its benefit. The consistent and skillful use of this language provides information to the animal about its environment and how to go about gaining something it desires (Priest, 1991). These behavior modification techniques fall under the well established principles of behavioral theory (Holland, Skinner, 1963; Mazur, 1990).

### **BASIC CONSIDERATIONS**

**Why do we manage captive elephants in zoological collections?** This is a very basic and somewhat soul-searching question that, considering the risks to keeper staff, declining wild populations, and costs associated with managing elephants, should be asked by every zoo director and collection manager in the country. In San Diego, we are committed to dedicating the resources necessary to safely manage our elephants for the purposes of exhibition and reproduction. Or in other words, we manage our elephants for the purposes of education and conservation.

**Which zoological parks should have elephants?** Currently, the captive elephant death rates exceed the rate of live births. Clearly this trend must be reversed if we are to be true to our conservation goals regarding elephants. In my opinion, only those institutions with the resources and commitment to pursue the following three criteria should consider elephants as an appropriate species for their collection. These criteria are: (1) to create the safest possible working environment for their keeper staff; (2) to maintain necessary husbandry requirements of the elephants; and (3) to fully participate in the Species Survival Plan for elephants.

At one point in the recent past, we in San Diego, seriously questioned our own commitment to these criteria for elephant management. It was both a difficult and painful process because the resources required for elephant management could always be used somewhere else. But, the result of asking these searching questions of ourselves was a deepened corporate commitment to elephants and a galvanizing of our resolve to pursue excellence in managing them.

**What if keepers at an institution are willing to assume the risk associated with managing elephants in free contact?**

Elephants are exceptionally intelligent, social, and capable of learning any number of complex tasks. The husbandry behaviors normally required of elephants in free contact are now being matched in protected contact at a number of zoological institutions (Desmond & Laule, 1991; Green, et al, 1992; Maddox, 1992; O'Sullivan, 1993). With the development of alternatives to free contact (protected contact and elephant restraint chutes), keepers wanting to enter the elephant's enclosure and keepers needing to enter must now be viewed as two separate issues.

Since 1976, 17 keepers in the United States have been killed by elephants (Lehnhardt, pers. comm.) using a method that many keepers still insist is working successfully. Each year, with shocking regularity, reports of keeper fatalities continue to occur. No statistics are available regarding the number of injuries suffered or near misses. The record of fatalities associated with traditional elephant management, by any reasonable definition, does not indicate a system that is working. A review of this trend and our own experience in managing one of North America's largest captive herd of elephants indicated to us that traditional management has some serious shortcomings at our own facility and elsewhere. In a meeting held in 1992 with all Wild Animal Park elephant keepers in

## **Answers to Questions On Protected Contact Elephant Management, Cont'd**

attendance, our Executive Director, Douglas Myers stated categorically, "While elephant keepers may be willing to accept the risks of working with elephants as in the past, the Society is not." Many of our elephant keepers still struggle with the organization's position but this single statement served to punctuate the issue at our institution.

We routinely manage the husbandry of large, potentially lethal carnivores without feeling the least bit inclined to enter their enclosures. We believe that the life of a keeper must always be valued over that of an animal in the collection. We all share a sense of urgency in the fight to help preserve this species, but our management strategies must first embrace an ethic that reflects the preeminence of human life.

**What special skills are required to manage elephants using protected contact and how do keepers learn these skills?** A somewhat frustrated general curator recently commented on the difficulty of getting agreement between two "elephant people" on anything. He noted the adage that goes, "The only thing you can get two elephant people to agree upon is what the third is doing wrong!" (Flint, 1993). It is true that much of the traditional information about elephant management is subjective and has been handed down orally from one generation of keepers to the next. Though it has long been recognized as being needed, free contact still lacks a coherent system that can be accurately and objectively transferred from one keeper to the next in a reasonable amount of time. At the Wild Animal Park in San Diego, the parameters for the free contact training program seemed nebulous or subjective; there seemed to be a general absence of accepted reference points from which to work. In 1991, our elephant keeper's average level of experience was less than 1.5 years on the job. The trend toward greater mobility of keepers is true of other institutions as well.

In light of these observations, early in the development of our protected contact program, we recognized the need to create a solid foundation on which to build the program. We developed the Elephant Keepers Manual for the purpose of standardizing our keepers' knowledge base and for creating both accountability and consistency. In the manual are the organization's mission statements, glossary of terms, elephant facts at a glance, elephant ethology, samples of record keeping, descriptions of both free and protected contact management, and area operations protocols.

In addition to being tested on the contents of the manual, keepers also underwent staff development training to familiarize them with behavioral theory and operant conditioning techniques (Stephens, 1992). The course consisted of lectures, review of videotaped training sessions, and our text, Don't Shoot the Dog! by Karen Pryor. Keepers were given a series of (12) short practice tests on the topics that were covered. Using questions from these practice tests, we required that keepers take and pass the 200-question final exam with a score of 85% or better or repeat the entire training course.

When considering a program of protected contact management, directors and curators must also make provisions to give their keeper staff the training, time, and tools required to perform the job.

**What is it about protected contact that makes it attractive to collection managers and zoo directors?** The following is a list of some of the more important benefits associated with protected contact elephant management:

- Through voluntary cooperation on the part of the elephant as well as trainer and animal position relative to protective barriers, protected contact reduces the potential of animal-related keeper injuries.
- Protected contact can establish a safer training environment for new or inexperienced keepers, when operating under experienced supervision.
- The American Zoo and Aquarium Association's Elephant Species Survival Plan group states, "Most cases of elephants becoming unmanageable can be traced back to inconsistencies in handling." Operant conditioning establishes a clear formula and a common basis for consistency and uniformity within the elephant keeper staff.

## Answers to Questions On Protected Contact Elephant Management, *Cont'd*

- Operant conditioning establishes a common language, understood by both animal and keeper, and provides a medium of exchange or currency. The system will, in short order, allow a new keeper to become as reinforcing as one the animals are familiar with.
- The system provides elephants with positive rewards for voluntary cooperation.
- Protected contact eliminates the physical or psychological trauma incidental to the physical discipline necessary to establish and maintain the social dominance sometimes required to control the behavior of elephants in the free contact system.
- Operant conditioning is animal rights and public awareness sensitive. It projects a much more consistently positive image to the public.
- As has been demonstrated with at least one other highly sentient species, training may also provide mental stimulation through problem solving serving to enrich the animal's environment (Bloomsmith et al, 1992).

### **SOME LIMITATIONS REGARDING PROTECTED CONTACT**

**Does protected contact allow for elephant rides or other public contact?** No. Protected contact was developed in an effort to safely manage the husbandry needs of captive elephants. AAZPA (now AZA) now recognizes protected contact as a viable alternative to free contact management. However, in situations where elephant rides, filmwork, or field labor are being required of an animal, protected contact will be of little use. Institutions maintaining elephants should first identify their primary purpose(s) for managing the species. If the need is for elephant rides, and television studio appearances, protected contact is not the vehicle to choose. Once the reasons for maintaining elephants has been determined by an institution, the management method must then be tailored to suit the needs of the organization while meeting the husbandry needs of the animal. Although a great disappointment to our guests, we no longer allow public feeding of the elephants. Because we made the decision not to go into the enclosure with the elephants, how could we respond if a person fell or was dragged into the elephant enclosure? The situation is avoided by not allowing the possibility of its occurrence.

**Are there any routine husbandry behaviors that have not been able to be duplicated in protected contact?** Only one that I am aware of. Access to the toenails on the rear feet has been problematic. When the elephant presents its rear foot to us for foot trims, the toenails are pointing down and are difficult to access. We are currently training a test animal, on a new facility design, that we feel confident will solve the problem. With the exception of this one item, I am not aware of any other husbandry behavior that is required for the regular daily care of an elephant that we have not been able to demonstrate in the protected contact system.

**Can elephants be safely managed using a combination of free and protected contact methods at the same time?** Probably not. We know that elephants are capable of making the discriminations we created to help them differentiate between the two systems (Priest, 1992). However, in other instances where we tried this approach, within a few months, keepers began to feel that their free contact control was eroding, requiring them to use physical discipline more frequently. Again, because of the free contact keeper's physical exposure to the animal and the fact that in free contact, compliance is mandatory where in protected contact the elephant is a voluntary participant, we discontinued the attempt to work with two systems.

**Because protected contact is voluntary, what will happen if the poor health of an animal limits the effectiveness of protected contact management?** No system of animal management that relies on any form of behavioral control is fail-safe. Keeper fatalities while managing elephants in the free contact system should serve as a sobering reminder of this fact. When any large, potentially dangerous animal falls into poor health or is

## Answers to Questions On Protected Contact Elephant Management, Cont'd

injured, keepers must do the best they can with the resources that are available. With any management system, this situation will likely require special equipment and/or the specialized skills of a veterinarian. In San Diego, it is our plan to rely on a combination of (in order of importance) protected contact, the elephant restraint device, and in special cases that require it, veterinary intervention using chemical immobilization.

### **METHODS**

**Is physical discipline or food deprivation ever used with elephants in protected contact?** No. Our results have been accomplished without food deprivation or physical discipline. The elephants receive their normal diet of sudan or oat hay and alfalfa. For training reinforcements, we use food treats consisting of monkey chow, cut carrots, apples, sweet potatoes, corn on the cob, and other seasonal fruits.

**How do the elephants understand what the keeper wants them to do?** Through conditioning, elephants quickly learn to pair the sound of a dog whistle with the delivery of a food reward. The whistle in effect serves as an I.O.U. to the elephant. The whistle provides information that helps the animal pair its actions with a positive consequence. It also bridges the gap in time between when the animal performs a behavior and the delivery of a reward. Rewards can take a variety of forms as long as it is something that the animal desires. Operant conditioning in the non-technical sense, is a controlled process that enables animals to naturally acquire, process, and use the information discovered about their environment. It is an adaptive learning strategy, and within the animal's genetic and physical capabilities, will work with any species.

**What kinds of behavioral changes should be expected when transitioning elephants from free to protected contact management?** As the elephant is making the transition in its understanding of the new methods, keepers should expect to see some deterioration to what was considered an acceptable performance level in free contact. This is a normal and necessary test for the animal to make as it discovers the boundaries of what will be reinforced and what will not. Animals conserve their energy, they will use only the energy required to gain something they desire.

In this new system it is also important for the elephant to learn that it is a voluntary participant. Once the elephant understands that it can walk away without being disciplined, the animal will likely go through a period where it may play a cat and mouse game with the keeper. Many animals will actually "wallow" for a time in this new found freedom. This loss of control is especially frustrating for free contact keepers to witness. Effective use of the "time out" (a momentary loss of opportunity to earn a reward or interact with the keeper) is important at this stage. Soon the elephant learns that there is a limited window of opportunity available to receive reinforcement. This "wallowing" phase eventually passes, but it is important to remember that because keepers are no longer entering the elephant's enclosure, 100% compliance 100% of the time is no longer necessary. 100% compliance 95% of the time, in a system that enhances keeper safety, is acceptable.

**Since we do not go in with the elephants in protected contact, how do we move elephants from one place to another?** The solution to this problem was borrowed from marine mammal trainers. After whistle conditioning, the first behavior the elephant is trained to perform in protected contact is to touch the bridge of the trunk to a foam target. Once the elephant has learned this behavior, we use the targets to move elephants into a desired position and from one place to another.

Another important lesson is the control transfer or "A to B". This is where the elephant is sent from one trainer to another. After the signal for the elephant to go has been given, the sending trainer becomes still, while the other trainer calls the animal. The elephant soon learns that its only opportunity for further reinforcement lies with the trainer who is calling it.

## **Answers to Questions On Protected Contact Elephant Management, *Cont'd***

**Hasn't protected contact training relied on conditioning already done in free contact?** With our cows, absolutely. In San Diego, we have been fortunate to have many well trained and tractable cows with which to work. As we introduced protected contact to them, in many cases it was simply a matter of changing the context and orientation of the cow for the animal to understand, generalize, and comply with our wishes. The cows did take awhile to learn that the target and bull hook were different. With the bull hook, the cows had been conditioned to move away from the stimulus, conversely, when the target was presented, the cows had to learn to approach and touch it in exchange for a reward. Naturally, the cows were suspicious at first but in all cases this was accomplished in about three weeks. Extensive free contact conditioning was not present in either of our bulls. Neither animal had been worked in free contact for several years, yet they have been able to learn and perform the same husbandry behaviors as the cows.

**Are your protected contact elephants still chained over night?** No, however we are maintaining the chaining behavior from behind barriers, in the event some unforeseen need may require this form of restraint.

**What kinds of husbandry behaviors do the elephants perform in protected contact?** The same husbandry behaviors elephants perform in free contact. (See Plate #1).

**Is training still necessary if we plan to use a restraint chute to gain access to our elephants?** Yes. Similar to the process required to train an elephant for voluntary blood collection, every elephant exposed to the stress of a restraint chute should first be systematically desensitized to it. Stress reduction is an important part in good animal husbandry. Elephants should also be conditioned to perform all normal husbandry behaviors within the confines of the restraint chute. In this way, the restraint chute can become a positive place rather than aversive to the elephant.

**Can elephant shows be performed using protected contact?** Yes, we have performed two, 20-minute elephant shows, seven days a week, since April of 1993. Currently we rely on three Asian elephants to perform this show, and expect to add the remaining two to the list of performers by summer of 1994. We have yet to cancel a single show due to an elephant's refusal to stage in the pre-show holding area prior to the show.

### **SOCIAL CONCERNS REGARDING PROTECTED CONTACT ELEPHANT MANAGEMENT**

**How will you introduce new herd members or babies to each other?** Just like introductions with other remotely managed species, we will accomplish introductions by using small holding pens, proximity to other animals in the herd, and the behavior modification technique known as systematic desensitization. Systematic desensitization is a procedure by which an animal is allowed to gradually become comfortable with an unusual or frightening stimulus.

**What happens if two elephants begin to fight?** To prevent animals from fighting, keepers managing elephants in free contact rely on their relationship with and understanding of the animals, their dominance position within the group, and conditioning associated with their voices. Should a fight between two animals actually begin, it would be foolish for a keeper, armed with an ankus, to inject himself/herself between the animals. Once an elephant fight begins, the playing field is exactly the same for either free or protected contact. Proactively dealing with aggression before it happens is the best strategy.

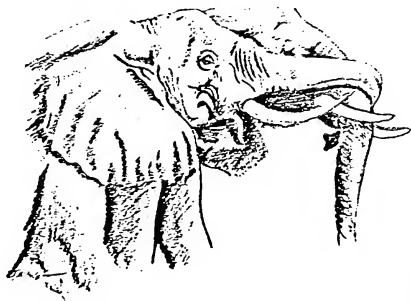
Occasional displays of aggression are a by-product of the elephant's social behavior and depends on the establishment and maintenance of a dominance hierarchy for herd stability and security. Aggressive interactions are always a possibility regardless of the training system being used.

Although aggressive behavior appears to be pre-programmed in animals' genetic make-up, its expression in adult animals varies considerably in both quality and quantity (McFarland, 1981). The effective use of aggression is a learned behavior. Therefore,

**Plate # 1**

**HUSBANDRY BEHAVIORS REQUIRED FOR  
PROTECTED CONTACT ELEPHANT MANAGEMENT**

1. Whistle conditioned
2. Target conditioned (animal's head)
3. Target conditioned (second target)
4. Left front foot up on command
5. Right front foot up on command
6. Left rear foot up on command
7. Right rear foot up on command
8. Left front foot trim (animal holds position for minimum of 3 minutes)
9. Right front foot trim (animal holds position for a minimum of 3 minutes)
10. Left rear foot trim (animal holds position for a minimum of 3 minutes)
11. Right rear foot trim (animal holds position for a minimum of 3 minutes)
12. Lean-in right side on command
13. Lean-in left side on command
14. Trunk up on command
15. Trunk down on command
16. Retrieve object when presented the opportunity
17. Trunk up mouth open for oral exam
18. Present right ear for inspection or blood collection
19. Present left ear for inspection or blood collection
20. Allow blood collection
21. Present and allow anal palpation
22. Back-up on command
23. Steady (remain stationary) on command
24. Come toward the trainer on command
25. Enter and leave the introduction chute on command
26. Place feet in a tub of water (animal holds station for a minimum of 3 minutes)
27. Moving from position A to B through gates on command
28. Right eye exam on command
29. Left eye exam on command
30. Allow entire body scrubbing
31. Stationing while another animal moves through a gate on command
32. Allow vaginal manipulation





## **Answers to Questions On Protected Contact Elephant Management, Cont'd**

mitigating aggression before it occurs should be a top management priority. There are two primary strategies for preventing aggressive behavior between animals. They are: differential reinforcement of behaviors incompatible with aggression and differential reinforcement of other behaviors. Keepers using food rewards are also able to reinforce cooperative or affiliative interactions between members of the herd. Elephants quickly learn that only cooperative interactions are reinforced, and the probability of aggression will be reduced. (NOTE: At least one dominant elephant at our facility has demonstrated an intellect capable of using aggression directed at another animal in order to gain the reinforcement of the keeper's attention. Paying careful attention and learning to identify the controlling reinforcers that shape behavior is a critically important skill for keepers to develop in protected contact).

At the core, no system for managing aggression can be fail-safe. Sometimes other drives (i.e. sex or dominance) overpower the immediate value of any reinforcement strategy. Because of this, it is important to simultaneously employ several other strategies to deal with aggression. Other strategies to defuse aggressive behavior include: increased behavioral opportunities (training time), increasing the complexity in the elephant's environment, mixed species exhibits, and developing random scatter/feed devices which will encourage animal movement and utilization of the entire exhibit. The idea is to reduce the elephant's focus on each other and therefore the likelihood of aggressive interactions between them.

NOTE: For more detailed information on managing aggression in captive animals refer to (Turner, 1989; Antrim, 1992; Bloomsmith et al, 1992).

**What kind of relationship does the keeper have with the elephant in protected contact?** Although no longer a part of the social structure of the herd, the protected contact keeper still maintains close ties with the elephants. The elephants are now free to choose whether or not to cooperate with the keeper. A partnership must be formed between the two with both working together to meet the other's needs. Two-way communication is the result of this relationship. The keeper develops a deep sense of satisfaction in knowing that an animal could choose to be anywhere else in the exhibit and yet chooses to work with him or her. This is especially true in situations where the elephant remains on station while the keeper inflicts a certain amount of discomfort during foot trims or blood draws.

**Many keepers have expressed concern for what they perceive as the elephant's diminished quality of life when keepers are no longer permitted to go in with the elephants. When managing elephants using protected contact, what happens to the elephant's quality of life?**

We shared this concern in San Diego, so we developed a system that features:

- Increased environmental complexity in the exhibit.
- Expanded behavioral opportunities for the elephants.
- A more natural exhibit environment.
- Facilities designed to allow the animals to remain unrestrained in either the yard or the barn overnight.
- Using a training system that makes exclusive use of incentives to reward behavior. In this system, the elephant is a voluntary participant. We use no physical discipline or negative reinforcement with our elephants.

**Will we let a calf that is in trouble die because we cannot go in with the cow?** If there are no other alternatives available to gain access to the distressed animal. The safety of a keeper will always be our primary consideration in such cases.

## Answers to Questions On Protected Contact Elephant Management, *Cont'd*

**What is the future of free contact?** Change is never easy. Elephants and humans have a shared history of several thousand years. Elephants are revered as gods in parts of the world. They are a mega-charismatic vertebrate that humans readily relate to. As global biodiversity continues to decline and the elephant's position becomes more tenuous, I believe that performing circus elephants and elephants trained for rides may eventually be viewed by the public as inappropriate. However, it seems likely that for the foreseeable future there will continue to be a demand for skilled specialists capable of working in free contact with elephants. In the future, fewer people will have these specialized skills. Those who do will be a part of a rare trade with few practitioners.

### **What facility changes are required for protected contact elephant management?**

Requirements at each institution will vary depending on the existing facility, the animals housed there, and the organization's objectives. In San Diego, for our Asian elephants, we have constructed individual barn stalls with access down a central corridor or along a back wall, designed hydraulic gates with remote capability, and installed latches that operate from outside the elephant's enclosure. We also use panels of 2 x 2 x 1/4 inch welded rod placed between steel uprights to protect keepers in most keeper access areas. We feel that this facility provides a safer work place, is functional and provides us with a variety of management options. At the Asian area we also are in the process of installing an elephant restraint chute. Because our Asian area is proving successful for protected contact management, our African elephant facility will be designed using the same general pattern.

## **CONCLUSION**

Our world is constantly changing. But our commitment to animals under our care should never change. Whether your institution chooses to manage its elephants using free or protected contact, these captive animals deserve the very best efforts of the keepers and institutions that maintain them. By remaining open to new ideas that offer the promise of improving techniques for the care of our animals, we simultaneously work to provide a more secure future for them in a rapidly changing world.

## **ACKNOWLEDGEMENTS**

I would like to offer my special thanks to the following individuals for their time, expertise, and thoughtful review of this paper: Jane Gilbert, Jennine Antrim, and Randy Rieches of the Zoological Society of San Diego; Val Hare, The Shape of Enrichment; Sheila Green, Lead Elephant Keeper, the Phoenix Zoo; Bruce Stephens, Sea-Ways-Animal Behavior Enterprises; Tim O'Sullivan, Elephant Manager, the St. Louis Zoo.

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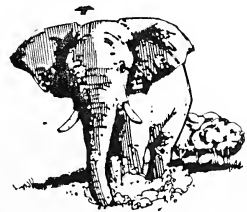
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### **Imitation Ivory Piano Keys Receive U.S. Government Patent**



The U.S. Government has issued a patent for a synthetic piano key cover that replicates the porous surface of ivory. The patent was granted jointly to Steinway and Sons, the piano maker, and a group of engineers from Rensselaer Polytechnic Institute (RPI) of Troy, NY. The new key covers, which are currently undergoing "blind preference" testing by Steinway pianists, are pigmented to resemble natural ivory and are composed of polyester mixed with water-soluble wax beads. The wax beads are washed out, leaving moisture-absorbing pores on the surface.

Steinway has used a different synthetic material in place of ivory in the majority of its pianos since the 1950s. They halted the use of all ivory in key cover production in 1989. *excerpted from African Wildlife Update, Jan/Feb. 1994, Vol. 3, No. 1.*



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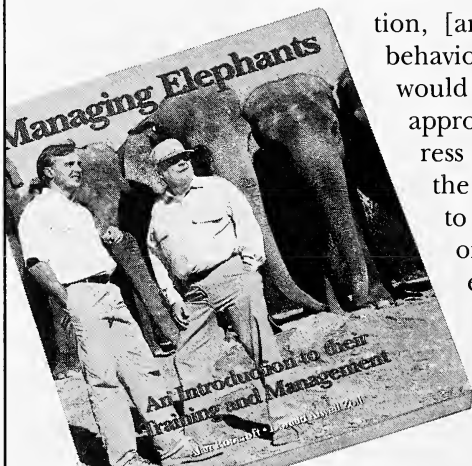
# MANAGING ELEPHANTS

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Anyone reading *Managing Elephants*...cannot help but be impressed with the voluminous knowledge of elephants and the deep-seated admiration [the authors have] for them. Roccroft is a person who "knows" elephants. Based on this knowledge, it is not surprising that [the book] has strong convictions about how elephants living in captive environments should be managed, and this book is above all a statement of personal philosophy. *Managing Elephants* lays out the arguments for the more intimate human-animal style of management that has prevailed in zoos and circuses until recent times. This issue is sure to be debated for years to come, and those predisposed to preserving an older system will find solace in the arguments advanced, often with emotional underscoring.

My particular focus in reading *Managing Elephants* was on the history of captive keeping, and on his portrayal of elephant behavior. The historical account is a fascinating description, [and] the treatment of elephant behavior is broad and informative. It would seem that they deemed this approach necessary in order to buttress respect for elephants, whereas the windows of information opened to the uninformed by the accounts of his extensive management experience does the job quite well.



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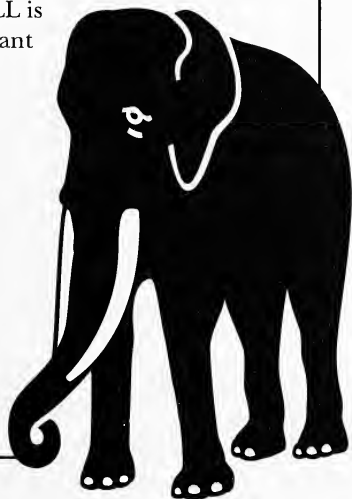
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# Enriching an Elephant's Environment

By  
Corinne Green, *Elephant Keeper*  
Chessington Zoo, Surrey, United Kingdom

*Adapted from "Environmental Enrichment - The Elephant" published in RATEL, Vol. 16, No. 3, 1989. Reprinted from The Shape of Enrichment, Vol. 2, No. 1, Feb. 1993; Editors - Valerie J. Hare and Karen E. Worley.*

Most elephant keepers devote their lives to their animals. Hours of hard work are spent in providing a high quality of life and an environment that we hope will suit our elephants, whether the time is spent on basic husbandry or organizing an active schedule for the day to stimulate the animals mentally and physically. However, keepers are sometimes the victims of the heavy schedules and demands of our institutions, and the elephants may not be getting everything they need.

Our elephants's physical environments have most of the traditional additions, including pool, a sandpit, a wallow, posts, tires, and logs. Yet, does this enclosure design allow our elephants to experience the stimulation of change? Is it enough to move them repeatedly, in and out of the house and paddock, and not introduce new stimuli occasionally? The argument could be made that with more than one elephant, they will occupy each other and prevent boredom. Otherwise, a full schedule of walks and shows could be implemented to ensure activity for mind and body.

Another alternative might be to spend a little more time thinking like an elephant and provide an environment these animals can enjoy in ways that they choose, in between interaction with humans. It would be nice to believe that a well-equipped paddock and a group of animals is a natural solution to a contented captive life, but there is nothing "natural" about the environment of most zoos. We cannot compensate for wilderness and the freedom to roam and explore for new foodstuffs and experiences. But we can try to revitalize and enrich our elephants' enclosures as much as possible and help change the monotony of a rigid environment, at little cost, with some of the following suggestions:

**Logs:** Introducing a fresh log will allow elephants to strip it of its bark and will introduce new scents. The old logs may look good in exhibits, but they lose their appeal and need to be replaced occasionally.

**Foraging:** Chopping tasty pieces of their food items and scattering and hiding them around the paddock or beneath logs incites natural foraging. A few pieces high on their scratching posts encourages upward stretching and produces a keen interest in the search.

**Tires:** The traditional tire is usually a feature of most elephant enclosures. Sadly, in some zoos, this one item is expected to fill the animal's activity and prevent boredom. Even tires can be used in a more inspiring way. Try different sized tires threaded on a strong chain and shackled to two fence posts about shoulder high. This allows the elephant to chew, shake, tusk, or manipulate them safely, plus it provides an item to pull against in an environment where everything is solid and stationary.

**Browse:** Fresh browse is a good source of occupation but several zoos I know don't offer it. My own zoo has no delivery of regular browse, so every deciduous tree within a five-mile radius has no lower branches! If you don't have the facilities to cut branches, then make some connections and get them delivered. It is necessary for good dental care to have hard foodstuffs, and hours of occupation can be enjoyed from toying with the twigs and ripping boughs in pieces.

**Earth:** Most enclosures have a concrete surface and offer no opportunity for elephants to dig, dust themselves, or eat earth. Every couple of weeks, I empty a trailer of topsoil or clay mud in the paddock. Ideally, I would like to bulldoze a wallow, but failing that, the

## Enriching an Elephant's Environment, *Continued*

elephants still experience earth. To see them kneeling in it, digging, and bathing is well worth the mess. (Editor's note: A wallow is difficult to keep clean without a flowing water source to flush it out.)

**Sand:** A sand pit is a bonus in most paddocks, but our elephants only sandbathe when the sand is dry. Especially if the weather is dismal or wet, the elephants enjoy a bag of sawdust to dry off or play with. This also helps to provide an abrasive substance to scratch and cleanse the skin, but test the wind direction first!

**New Toys:** Some may disagree with the use of "man-made" toys. However, I feel we must help compensate for the limitations of confinement. I put aside my human feelings of what looked "right" or natural and improvised to make toys to suit the playfulness and curiosity of the elephant. I noticed that the elephants would try to unscrew nuts and bolts on their fences and fiddle with tiny stones or twigs. They would bang sticks on the manhole cover to make a resounding noise, or rub a stone along the metal girders to make another sound. In their world of sturdiness, I realized their need to "fiddle". I threaded odd bits of iron on a sturdy chain and shackled both ends to the fence about shoulder height. Small shackles or nuts and bolts, welded at the base of the thread so they wouldn't undo them, were on the chain. Metal tubes were also threaded and other shapes and sizes added. The elephants have endless amusement fiddling and making a hell of a din by rattling, rubbing, tapping, or chewing the chains. I also have a few designs for such toys made of wood or rubber for the night quarters that don't make so much noise.

Some people may feel these enhancements are unnecessary and continue to focus on breeding, skin care, or how to combat cracked nails. However, I frankly feel that the mental needs of our elephants are too low on the list, especially during the periods of time when the animals are on their own, undisturbed by our influence. Not all that time is spent resting and eating, especially in intemperate climates where elephants might spend 60 percent of their time indoors with little to do. Perhaps we can all revitalize the lives of our magnificent beasts with a little thought and effort.



## Elephant Communication

The fact that elephants communicate with low-frequency sounds that humans are unable to hear was first discovered in a zoo. Katy Payne, who, with her husband Roger, discovered the songs of male humpback whales, was casting about for a new field of research. In 1984, she spent a week at the Metro Washington Park Zoo in Portland, OR, watching and tape-recording three mother elephants and their calves. She thought she had found little of research interest until her plane ride home--when she realized that she had felt a lot of vibrations similar to the throbbing from the lowest notes on an organ.

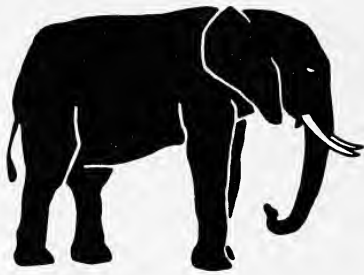
Supported by the World Wildlife Fund and Cornell University Laboratory of Ornithology's Bioacoustics Research Program, where she is now a research assistant, Katy returned to the zoo with two biologist friends and a tape recorder that picked up infrasound. Analysis showed an amazing array of sounds, many more than they were able to hear. Elephants were the first land mammals known to use low-frequency sounds.

For example, females broadcast when they are in heat--an event that occurs only once every four or five years and lasts only two to four days (in nature) - through a series of calls. The scientists also discovered a greeting rumble, a "let's go" rumble, contact call and answer, a rumble uttered by males in musth, and a female chorus in reply. They continue to analyze data suggesting that female elephants in different troops may sometimes coordinate their movements over long distances using infrasound.

Payne recently wrote a children's science book, *Elephants Calling* (Crown Publishers), illustrated with her own photographs.

--original source is *The New York Times*, Nov. 9, 1993/reprinted from *The Ark*, the docent newsletter of the Lincoln Park Zoo, Chicago, IL, January 1994.





# Zimbabwe Attempting Relocation of Surplus Elephants

According to recent press reports Zimbabwe is attempting to alleviate overcrowding in Gonarezhou National Park with the relocation of an estimated 1000 elephants. About 500 elephants have been moved thus far in what is believed to be the largest elephant relocation program ever attempted. This region was devastated by last year's drought and cannot support such a large elephant population. The elephants are being moved to other protected areas in Zimbabwe, South Africa and possibly some areas of Namibia.

Zimbabwe claims to have far more elephants than the land can support and has resorted to culling in recent years to avoid destruction of the habitat. Mark R. Stanley Price, the African Wildlife Federation's director of African operations, said that if the elephants settle into their new environment, relocation could become "a serious alternative to culling, at least on a limited basis." He added that the effort is "one of the most exciting techniques and technological advances in elephant management for a long time."

The operation began in July and is supported by grants from the U.S. Fish and Wildlife Service and the British organization Care for the Wild. A condition laid down by the Zimbabwe Department of National Parks is that the elephants--babies and adults--be moved in family groups.

To avoid stressing the animals, they are sedated and transported by truck. But eight died from asphyxiation when they fell on their trunks after being anesthetized, wildlife veterinarian Ewan Anderson told the German News Agency.

The animals are taken to a central site away from park boundaries in their new location. The families are then released back into the wild. They are believed to be adapting well, but conservationists will continue to monitor their progress.

--excerpted from *Wildlife News*, a publication of the African Wildlife Foundation, 1717 Massachusetts Ave, N. W., Washington, DC 20036 - Vol. 29, No. 1 - Winter 1994.

## IMPORTANT CHAPTER TAX NOTICE

If your Chapter has received a 1993 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 1994**. 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.



# 1994 AAZK National Conference

## Omaha, Nebraska

### October 9 - 13, 1994



At Omaha's Henry Doorly Zoo...

...you'll experience the sights, sounds, and smells of the rainforests of Asia, Africa, and South America as you explore the world's largest indoor rainforest, the Lied Jungle. Over 130 animal species and 3000 plant species are nestled among towering cliffs, dark caves, and thundering waterfalls. Two jungle trails allow different views of the rainforest. The boardwalk provides a canopy view, enabling you to observe larger animals behind moats as you cross a suspension bridge, duck through caves, and make your way to Danger Point. The lower trail immerses you in the jungle experience as you wind your way past pygmy hippo, tapir, and false gavial. This \$15 million, 1 ½ acre exhibit has helped make the Henry Doorly Zoo the largest tourist attraction in Nebraska.

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The Platte River AAZK Chapter at the Folsom Children's Zoo in Lincoln, NE, would like to invite everyone traveling to the Omaha Conference to stop by and visit our zoo. We will be closed for the season to the public, but will be open Sunday, October 9 - Friday, October 14 (8:00 a.m. - 4:30 p.m.), just for all of you! When you arrive, stop by our zoo office for a special welcome and introduction to our zoo.

The zoo is easy to find: just take the 27th Street exit off I-80m south to "B" Street and look for us on the left.

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**1994 AAZK National Conference  
Omaha, Nebraska  
October 9 - 13, 1994**

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**CONFERENCE FEES \***

AAZK Member or Spouse \$100.00 \_\_\_\_\_

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Rooms will be held until 6PM only unless guaranteed with a major credit card.

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Registrations are due by 10 September 1994

1994 AAZK Pre-Conference Trip  
Kansas City Zoological Gardens  
Saturday, October 8, 1994

Behind-the-scenes tours of the newly completed Australian, Domesticated Animal and African Elephant exhibits.

Sneak preview of the African Plains, Forest and Island exhibits scheduled to open in 1995.

Trip includes:

transportation from the KC airport to KC Zoo  
transportation from KC Zoo to Omaha for the Conference  
lunch at the Zoo  
dinner that night

\*\*lodging may also be provided depending on turn-out

Registration Fee: \$20.00

Space is limited. Please register early.

For more information contact:

Jacque Blessington  
Kansas City Zoo (816) 333-7406

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1994 Post-Conference Trip  
The Black Hills and Badlands of South Dakota

Itinerary

Friday, Oct. 14: Ground transportation, fly or self-drive from Omaha to Rapid City, SD.

Saturday, Oct. 15: Tour of Reptile Gardens, Marine Life, Bear Country and Mt. Rushmore. Lunch, transportation, guide, and admissions included. Overnight in Rapid City or Custer State Park, depending on number of participants and availability at time of booking.

Sunday, Oct. 16: Tour of Custer State Park Wildlife Loop and Wind Cave National Park with tour of Cave. Lunch, transportation, guide, and admissions included. Overnight in Rapid City.

Monday, Oct. 17: Return to Omaha via ground transportation, air, or self-drive.

BLACK HILLS ONLY PACKAGE (2 days, 3 nights)

Includes: 2 full days guided touring, transportation and admissions to Badlands, Reptile Gardens, Marine Life, Bear Country, Custer State Park Wildlife Loop and Wind Cave. Badlands portion is on Day 1 or Day 4.

Price per person: \$401.00 (min. 6, max. 20)      Single supplement: \$135.00

GROUND TRANSPORTATION PACKAGE (4 days, 3 nights)

Includes: Same as above, plus all transportation Omaha to Rapid City & return.

Price per person \$580.00 (min. 8, max. 40)      Single supplement: \$135.00

Terms: Deposit of \$75.00 per person confirms reservation based on space availability. Last date for deposit is 15 April 1994. Full payment is due 15 August 1994. Tour may cancel if minimum of 6 is not reached.

For further information, please contact: Carol Cameron, Affordable Adventures, (605) 342-7691.

# Protected Contact Management of African Elephants at the Oakland Zoo

By  
Colleen Kinzley, General Curator  
Oakland Zoo, Oakland, CA

At the Oakland Zoo the term protected contact is used to describe a system of African elephant (*Loxodonta africana*) management in which the risk of keeper injury is greatly reduced relative to free contact management. Protected contact can include confined contact (contact while the elephant is restrained within an Elephant Restraint Chute or by leg chains) and barrier contact (contact with an "unconfined" elephant through a physical barrier). In each of these situations the keeper is afforded increased "protection" from elephant-related injuries. The emphasis is also on physical contact. Protected contact is not a remote "hands off" system of management. The elephants voluntarily participate in behaviors that enable the keepers to perform routine management procedures like foot trimming and bathing. Compliance is always voluntary. Physical punishment is never used.

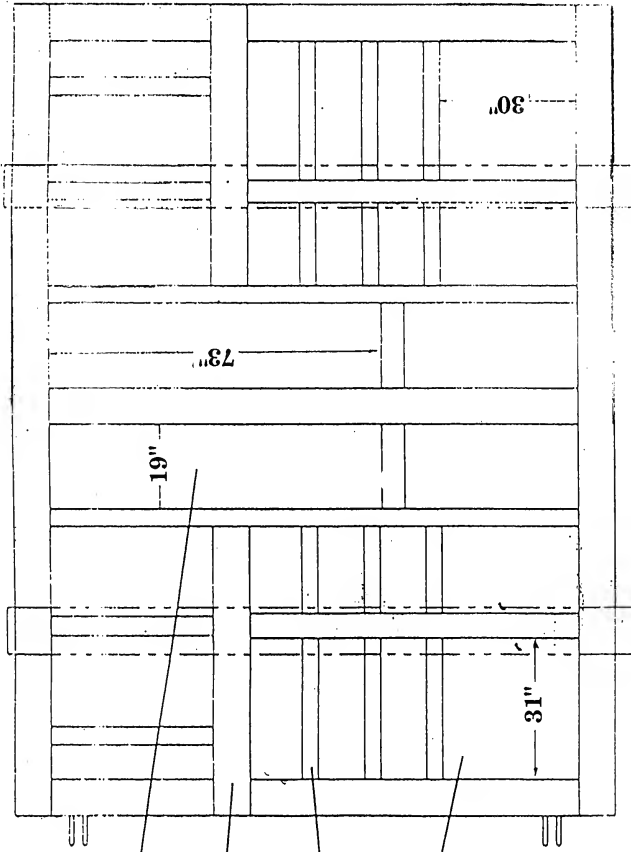
Our management program has developed over the past three years following a tragic accident. In January of 1991 an elephant keeper died at the Oakland Zoo following an attack by the zoo's then 18-year-old African bull. In the previous year, a 13-year-old cow had attacked two different keepers. The second attack resulted in a serious injury. The combination of these events precipitated a major change in our elephant management philosophy. We felt that the risks to the keepers, as well as the aversive methods necessary to handle this aggressive behavior, were unacceptable.

Over the next year our facility was converted from one dependent on the tractability of the elephants to one in which the elephants could be managed remotely. Manually operated gates and doors were either replaced or converted to hydraulic operation. Inadequate fencing was replaced and a quarter of an acre adjacent to the barn was enclosed to serve as an off-exhibit yard. Central to the facility changes was the installation of a hydraulically operated Elephant Restraint Chute between the barn and the yards. We intended to use the Chute for all basic management procedures, as well as necessary medical procedures. Many other species have been managed successfully by conditioning them to shifting and confinement to a squeeze or chute for procedures, so we felt our expectations were realistic. We also hoped to be able to maintain leg chaining as a management tool with the cows. This required that the cows voluntarily lift their front foot through the vertical bars to be chained. By the end of 1991, most routine maintenance procedures could be performed in the Chute and the cows could also be chained for the maintenance procedures. Although facility modifications have been ongoing, by the end of 1991 the most basic facility needs for protected contact had been met.

Fundamentally, a protected contact facility must have a barrier that confines the elephants, gates/doors that can be remotely operated, at least two enclosures so the elephants can be shifted for servicing, and a work station where the keepers can have contact with the elephants through the barrier. In addition to three interconnected stalls, an exhibit and an off-exhibit yard, we have two paths that can serve as holding areas. Fence style barriers enable us to have several work stations in each enclosure.

Our Elephant Restraint Chute serves two purposes: on a daily basis it is our primary work station for routine maintenance and minor medical procedures. It is also designed to restrain and/or support an elephant in need of more serious medical attention. Having the elephant confined in the Chute gives the keeper easy access to all four sides without having to reposition the elephant. Our Chute has been designed to provide as much access to the elephant as possible while still reducing the elephants' access to the keeper. The horizontal and vertical members are positioned to reduce the elephants' trunk reach while allowing space for them to present their ears and feet. The framing is the same on both sides and each end so that an elephant can be facing either direction in the Chute (see diagram).

# ELEPHANT RESTRAINT CHUTE WALLS



EAR OPENING

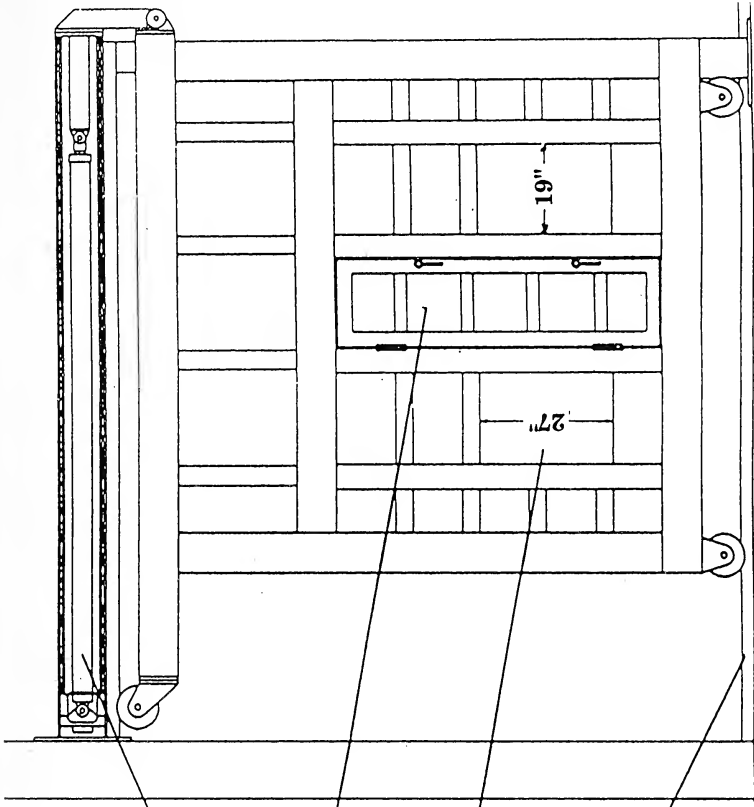
TUBULAR STEEL

PIPE BARRIER

FOOT OPENING

HINGE

SIDE WALL (HINGED)



HYDRAULIC CYLINDER

DOOR ACCESS  
TO HINDQUARTERS

FOOT OPENING

WHEEL TRACK

**FRONT GATE / END GATE**

## Protected Contact Management of African Elephants at Oakland Zoo, Cont'd

For maintenance procedures, we have retained leg chaining with our cows because it is a valuable management tool and can be achieved within the bounds of our original goals of keeper safety without physical punishment. The elephants' participation is voluntary in that they must lift their foot through the vertical bars for the foot chain to be secured. This routine also meets the criteria of providing protection for the keepers in that while the elephant is relatively unrestrained, the keepers are working from behind a barrier. Once the elephant is secured by the front leg chain, the keepers can either direct the elephant to stretch (down on elbows and knees) to safely pass their head or approach the elephant from behind. Since most often an elephant uses its head and/or trunk for aggressive behavior, this reduces the risk of an attack. The keepers' safety depends not only on the confinement of the leg chains, but also on the position of the elephant and the position of the keeper.

Throughout our conversion to protected contact management, we have continued to utilize commands and behaviors that had been trained in free contact. In the beginning, we simply reinforced, with praise and food treats, appropriate behaviors and ignored inappropriate behaviors. Ellen Leach of Behavior Resources N.W. provided us with the information we needed to develop this concept into a more precise training tool. Ellen put together three one-week workshops on behavior modification with emphasis on operant conditioning. We began immediately to whistle train the elephants, which simply involves pairing the sound of the whistle with food treats until the sound of the whistle becomes reinforcing. The whistle becomes the conditioned reinforcer and enables more precise communication with the elephant. Next, we began introducing the elephants to target training which is a way of shaping behaviors by showing the elephant, with the target pole, how you want them to position their body. Target training provided us with a means of training new behaviors and retaining old behaviors so that, if necessary, we could cue the behavior by using the target pole.

Although the elephants are usually eager to participate in training sessions, their participation is always voluntary. The only punishment used is a "time out" which involves the elephant temporarily losing the opportunity to earn praise and food treats. Operant conditioning can also be used for training behaviors that stimulate and provide exercise for the elephants such as kicking or fetching a ball. Since encounters with the keepers have either positive or neutral consequences for the elephants, they have become more trusting. They seem more willing to try new things and less wary. We also have observed a near elimination of aggressive behaviors, for example charging the bars, which had once been common.

The positive changes that we have seen in the elephants' behavior under protected contact management have encouraged us to reexamine our perception of captive elephants. They are often managed like domestic animals under strict behavioral control. We have made an effort to mimic their wild environment and provide them with opportunities to exhibit species typical behavior. They are kept in a social group, provided with important environmental features like mud wallows, and closely confined only for maintenance procedures. Protected contact has allowed us to meet our management goals of providing the elephants with routine care without the use of physical punishment and reduce the risk of keeper injury. This and the many other positive benefits of protected contact have convinced us that it is a viable, if not preferable, alternative to traditional free contact elephant management.

### **Addendum**

We have recently added a third cow to our collection, 21-year-old M'Dunda Mella from the San Diego Wild Animal Park. M'Dunda may prove to be particularly challenging because we may not have the benefit of being able to use commands that she learned in free contact. In six weeks she has refused to respond to traditional commands like "foot" and becomes agitated when they are used. We expect to learn a lot as we introduce M'Dunda to our protected contact program. We are currently working on conditioning her to the Elephant Restraint Chute and introducing her to the other elephants.







# Book Review

## *The African Elephant: Twilight in Eden*

by Roger L. DiSilvestro, 1991

A National Audubon Society Book/John Wiley & Son

605 Third Ave., New York, NY 10158-0012

Hardback \$34.95

*Review by Missy Betcher Lodge*

*Editor H.O.R.N.*

*Ngare Sergoi Support Group*

*Columbus, OH*

Most people are aware that during the past ten years the international ivory trade was primarily responsible for the sharp decline of the African elephant population. However, the interaction of humans and African elephants is not a recent phenomenon, and this interaction has usually been to the detriment of the elephant. DiSilvestro traces the history of the human/elephant relationship in his fascinating book.

After briefly exploring the Greek, Roman, and early European perceptions of African elephants, DiSilvestro turns his attention to "Safaris". From the 1840s on, elephant hunting safaris were extremely popular. By the century's end, however, one elephant hunter noted that, "Africa is nearly used up; she belongs no longer to the Africans and the beasts...".

The mid-twentieth century witnessed two "new" types of safari to Africa: the first being tourism. Although stating that tourism is the future of Africa, DiSilvestro embraces it with caution. Two hours were spent watching tour buses surrounding a lone lioness at Kenya's Amboseli Park. He notes that this is not true Africa. The second type of new safari discussed is that of the field biologist, devoted to studying the lives of elephants and other animals.

In the section "Hidden World of the African Elephant" the role of the field biologist in our understanding of elephants is explored. The research of Iain Douglas-Hamilton and Joyce Poole is discussed in-depth. Emphasis is placed on the areas of family structure, communication, and death. A large section is devoted to elephant culling and the controversy surrounding this operation. DiSilvestro adamantly opposes culling. He argues that researchers do not yet know the long-term genetic effects culling will have. Yet, he does not present the concerns of the southern African nations which do cull elephants. Nor does DiSilvestro ever mention the increasing human population or habitat destruction and the impact these issues will have on elephant conservation.

The final section of the book discusses elephant conservation. The ivory trade and the resulting politics are traced from 1450 B.C. to the present. It is a sad but factual portrayal of humans, from the indiscriminate slaughter of the elephants to the brutal treatment of African slaves. The discussion of the recent ivory trade is equally frank. The largest dealer in illegal ivory in Kenya was the United African Corporation, chaired by Margaret Kenyatta. She was mayor of Nairobi and daughter of Kenya president Jomo Kenyatta. The U.S. does not escape without criticism either. According to DiSilvestro's figures, in the 1980s, 42,000 elephants perished annually to provide the U.S. with elephant products.

But there is hope for the future of the African elephant. DiSilvestro credits the 1989 CITES ban and the Kenyan Anti-Poaching Team for the survival of the elephant to date. Unfortunately, the impact habitat destruction will have on the elephants' continued survival is not analyzed.

Aside from lacking a map, which would help immensely when reading about early exploration safaris and ivory trade routes, this is an excellent book. Accentuated with 130 photos and early lithographs, DiSilvestro's facts are clearly and effectively presented. He details the long and bloody history of man and elephant, and it is not a history to be proud of. After 3000 years of massacre, we owe the African elephant survival.



# Protected Contact Management for Elephants at the Houston Zoological Gardens

By  
Anita Schanbeger, Large Mammal Keeper  
Houston Zoological Gardens, Houston, TX

## Introduction

Many zoological institutions are re-evaluating their present elephant management programs in an effort to maximize keeper safety while necessary husbandry and veterinary procedures are being conducted. In the summer of 1992 the Houston Zoological Gardens embarked on a protected contact management program for their elephants. This program involves the voluntary participation of animals in training sessions using positive reinforcement operant conditioning. Training is conducted in a manner that allows access to the elephant while trainers remain behind a protective barrier. This program was originally implemented to facilitate the management needs for a dangerous adult bull and an aggressive female, however the entire elephant collection eventually became involved in this system of management. This paper discusses the implementation of this program, preliminary results, and the continuing progress and forthcoming changes that continue to shape the future of the program.

## History

The Houston Zoological Gardens currently manages 2.4 Asian elephants (*Elephas maximus*). The collection consists of a 28-year-old bull elephant, Thailand, and two adult cows, 24-year-old Methai, and 28-year-old Indu. Thailand and Methai were acquired from Ken Berry of Woodland, WA. Thailand arrived in June of 1980 and Methai arrived at the zoo in May of 1981. Indu is on breeding loan from the Lincoln Park Zoo and has been at Houston since October of 1979. Methai currently has three offspring that were all sired by Thailand. The offspring include Kiba, a six-year-old male; Kimba, a two-and-one-half year old female; and Singgah, a female calf born on 29 December 1993.

Thailand was involved in some limited free contact training when he first arrived at the zoo, however he had been primarily maintained in a no contact situation due to his aggressive nature. Thailand had been implicated in the death of a former trainer prior to his arrival at Houston. During this period of no contact Thailand received minimal keeper interaction or husbandry care. Methai and Indu had been maintained in a free contact management system through the fall of 1991 although both elephants had demonstrated unpredictable and temperamental behaviors. Kiba had some free contact training while Kimba had very minimal free contact experience.

In October of 1991 Indu gave birth to a calf that immediately had to be euthanized due to a ruptured umbilicus. During the weeks following the death of her calf, Indu began demonstrating aggressive behavior towards Methai and her trainers. This aggression ultimately resulted in the serious injury of a trainer. In the winter of 1991 Indu and Kiba were placed with the bull in the main exhibit yard in a no contact situation. Methai and Kimba were housed in the small holding yard and received keeper interaction but very minimal training. This situation existed for several months until other management alternatives could be evaluated.

## Training Transition

In the summer of 1992 a behavioral training consultant firm, Active Environments, was hired to help implement a protected-contact management system for the elephants. Active Environments was involved in the development of the protected contact elephant training system at the San Diego Wild Animal Park. This system involves the voluntary participation of an elephant in training sessions by using positive reinforcement operant

## Protected Contact Management for Elephants at the Houston Zoo, *Cont'd*

conditioning. Trainers interact with the elephants while remaining behind a protective barrier. The barrier is designed to allow for physical access to the elephant for husbandry procedures without the use of a restraint device or anesthesia.

The elephants are trained to respond to targets which are used to shape the movement and position of the elephant as well as the orientation of specific body parts for husbandry purposes. The targets that are used consist of waded up gauze cloth that is shaped into a ball and wrapped in tape. The taped ball is then attached with additional tape to various lengths of bamboo. Trainers use silent dog whistles to reinforce desired behaviors and reward items include a variety of fruits and vegetables. The only discipline used during training is the withdrawal of the trainer's attention. All interaction with the elephant is suspended for short durations and then resumed once it appears that the elephant is willing to cooperate. The continued display of aggressive behavior results in the termination of the session. This program was initially implemented to allow for husbandry and veterinary care for Thailand and Indu, the most aggressive elephants of the group, however by January of 1993 the entire collection was involved in this system of management.

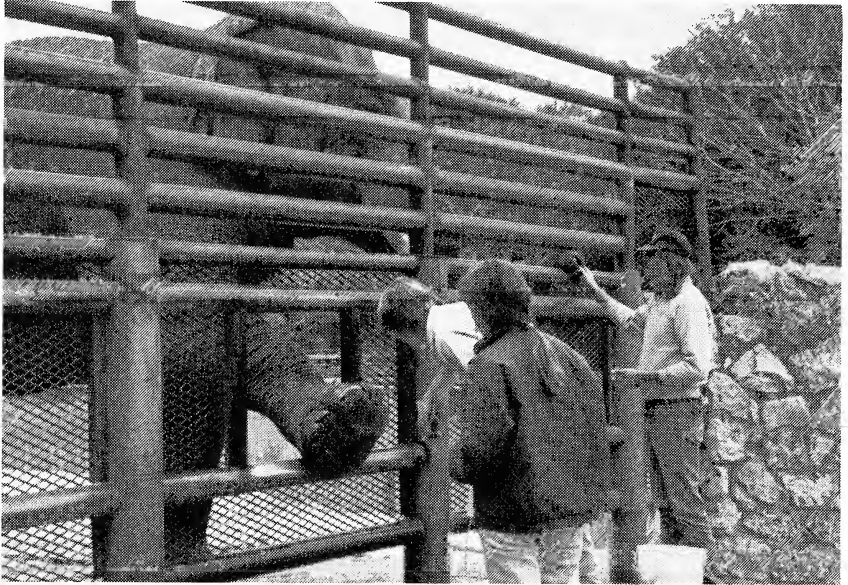
### **Preliminary Results**

All of the elephants (with the exception of the newborn) have been trained to respond to targets and to direct specific body movements toward the target. They have been trained to position various body parts including the head, hips, legs and feet in response to a target and they have been trained to present each of their feet for foot trims. The elephants have also been trained to lean their bodies against a barrier allowing keepers to touch various parts of the body in a protective manner. Thailand, Indu, Kiba, and Kimba have been trained to move from one designated position in the exhibit to another and to remain at designated positions throughout the exhibit. This training is used to help control animal movement within the exhibit for shifting purposes and to help control the location of animals during training sessions. Methai and Kimba are trained at remaining at specific stations and they are close to completing the behavior of designated station movement throughout the exhibit.

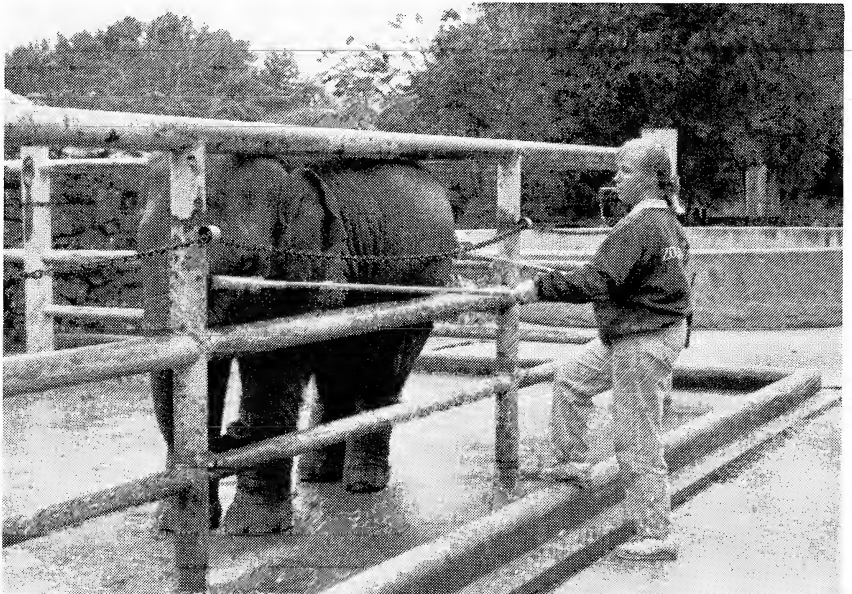
Thailand, Methai, Indu, and Kiba have each had varying free-contact training and those behaviors that are known by each elephant such as "salute" or "trunk up" have been incorporated into their training program by using the verbal command followed by a positive reinforcement. Kimba presented a special challenge since she had minimal previous training experience. All of her training has involved positive operant conditioning with targets and she has completed several training behaviors including, come here, station, trunk up, trunk down, head position, ear presentation, hip position, lean in, and presentation for all four feet for foot trims. Kimba has the least level of patience with regard to training duration, however she is very quick to learn and is eager to participate. Her present foot trimming sessions usually last about 30 minutes although she has worked for periods up to an hour.

The elephants responsiveness during the training sessions has been very favorable with the most noticeable behavioral changes in Thailand and Indu. Prior to the training both animal demonstrated high levels of aggression. Elevated levels of aggression were evident during the initial phases of the training but as the training progressed the aggression levels seemed to diminish. Indu still occasionally demonstrates some aggression, however most of her aggressive responses seem to be a reflection of her confusion or frustration during training sessions. There have been instances in which these situations were quickly followed by trainers giving Indu an opportunity to respond to behaviors that were too confusing to her. This opportunity had an effect on her behavior and she once again became very responsive and was able to complete the training sessions with no further problems.

The elephants seem to enjoy training opportunities and Thailand has especially demonstrated high levels of patience and endurance. He developed a nail abscess on his left front foot last year and has tolerated extensive painful foot trimming for this problem. He has also been trained to present and position his leg and foot through a protective barrier

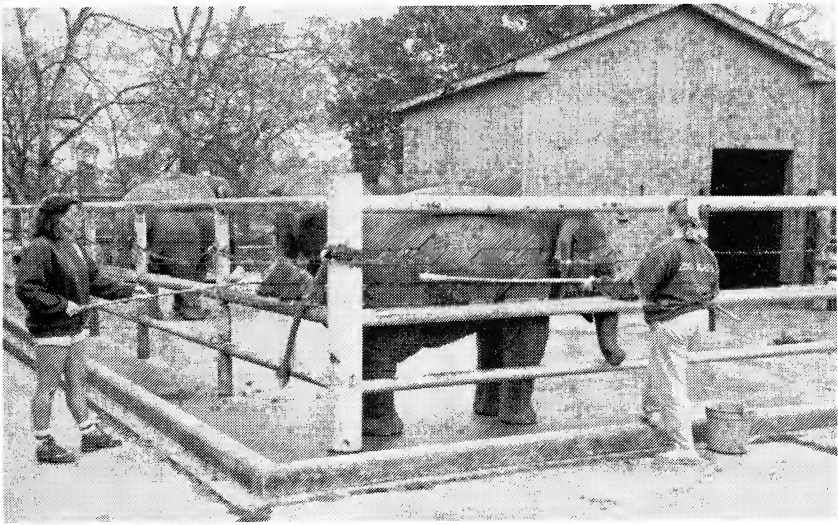


Adult bull Thailand is presenting his foot through a training wall while foot husbandry is being conducted. Trainers always work in teams. Trainer Ilaf Krause is giving direction to Thailand and handing him food rewards. Technician Kermit Seubert is performing the foot care procedures while Karen Gibson is serving as a Safety. The Safety is responsible for alerting fellow trainers of possible danger.



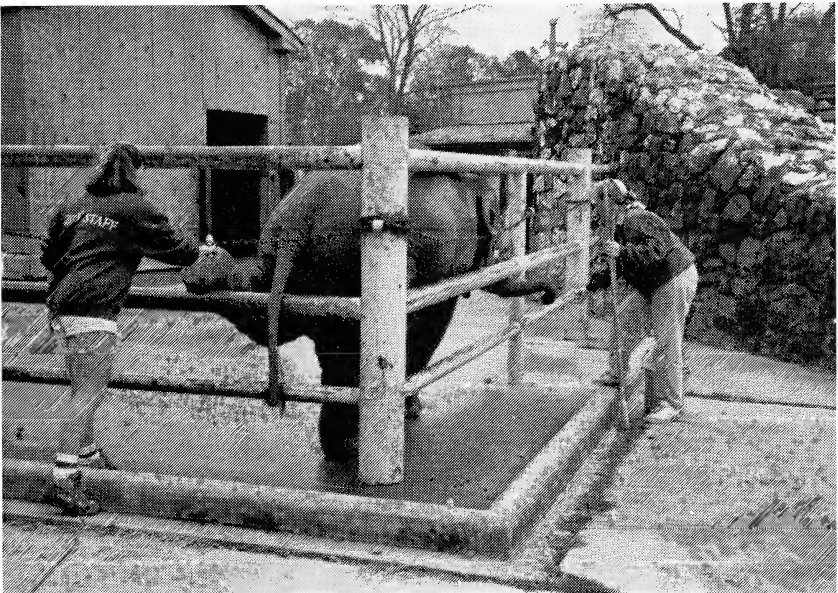
Trainer Lynn Klein is orienting two-and-a-half-year-old Kimba in a "lean in" position by using targets to direct the head and hip position. This position allows access to the body for facial interaction, ear presentation, and bathing purposes.

**Protected Contact Management for Elephants at the Houston Zoo** *Cont'd*



Trainer Lynn Klein directs Kimba in a "lean in" position while trainer Margaret Abadie indicates to Kimba the foot that is desired for presentation. The elephants have learned to direct indicated body parts toward the target.

*All photos by Anita Schanberger*



Once Kimba is in the proper position for a rear foot trim, the technician begins foot care procedures while the trainer rewards the elephant for maintaining the desired position. Kimba had no previous foot presentation or foot care training prior to her involvement in protected contact.

## Protected Contact Management for Elephants at the Houston Zoo, Cont'd

allowing staff veterinarians to take several radiographs of his foot to better evaluate this problem. Thailand has not experienced a full blown musth since the program was initiated, however he has had a few moderate musth periods without a drastic change in his responsiveness during training sessions.

There have been some challenges that have been presented since this program was implemented. The diverse social group of these elephants alone is a challenge that can certainly be appreciated especially when the complex social interactions and relationships of these animals are a constant variable in training sessions. Indu and Kiba have demonstrated incompatible and intense antagonistic behavior towards one another and sometimes this can be disruptive during training. Sessions have been conducted to address this problem and training sessions have been accomplished in which these two animals have demonstrated compatible behaviors in a variety of training situations. Although Indu and Methai are generally compatible, Indu has taken the opportunity to assert her dominance over Methai during some sessions. Training sessions have been conducted to address this situation and Indu has demonstrated cooperative behavioral responses that have allowed Methai to be the focus of certain training sessions.

Most challenges have focused on the restraints of the current facility. The facility consists of an exhibit yard and barn, a small holding yard with a barn, and a pool area. The bulls are not allowed access to the small yard for safety reasons. A training wall that separates the pool area from the main exhibit yard was constructed in October of 1992. This wall is the primary protective barrier that allows keepers to interact with the bulls. The wall is also used to conduct foot trims on the front feet of all the adults. Training areas that permit extensive physical interaction with the elephants are limited and the present training wall does not allow for certain behaviors involving the facial region and ears to be safely conducted. The lack of separation yards for this number of animals sometimes makes the process of shifting a specific animal for a training session a bit of a challenge.

Despite the limitations of the exhibit, many goals have been accomplished and training continues on partially completed behaviors including object retrieval, mouth exam, tusk exams, ear presentation, tusk trims and blood collection. As training continues to explore the potential of this program, the greatest influence on its immediate future will probably be the impending construction of a new elephant complex. The complex will include a bull yard with a barn, a cow yard and barn with two separation rooms, two separate training yards that will contain training walls designed to accommodate facial contact, a new pool and bathing area, and a designated chute that will eventually become an elephant restraint device. The new complex is being designed with multiple training opportunities and it is believed that this feature will result in greater behavioral possibilities.

### **Conclusion**

Many zoological institutions are reviewing their present elephant management programs in an effort to reduce keeper risk while husbandry procedures are being conducted. The Houston Zoological Gardens needed to address the management concerns of housing an adult bull and two aggressive adult females. Protected contact management has provided opportunities for trainers to safely interact with these animals while providing husbandry care. Preliminary results have been favorable despite facility limitations. It is realized that many management challenges have yet to be addressed, however it is believed that training strategies will continue to evolve in various management situations. It is also felt that the completion of a new complex will provide trainers an opportunity to explore the potential of this program.



# Free Contact Elephant Management at the Indianapolis Zoo

By  
Jeff S. Peterson, Keeper II  
Indianapolis Zoo, Indianapolis, IN

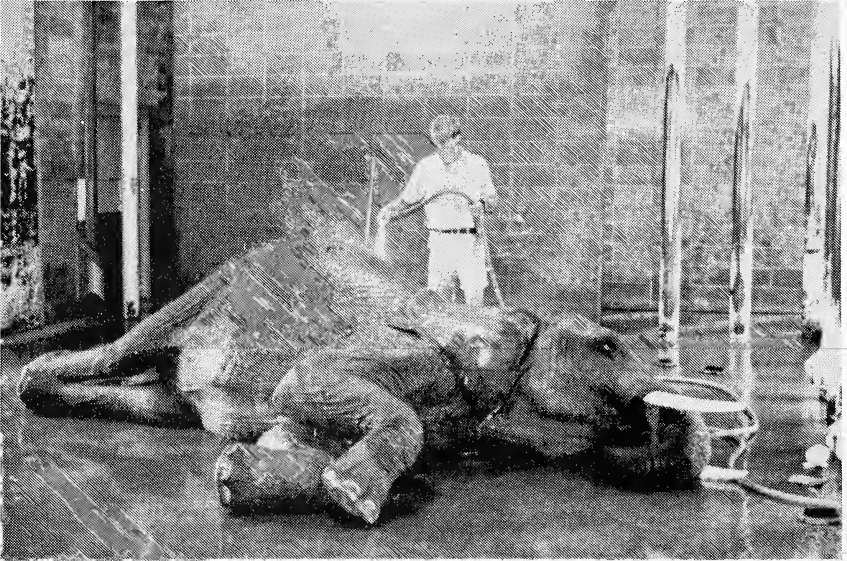
The Indianapolis Zoo has developed a meritorious elephant management program since the first elephant arrived at the facility in 1988. As one would develop a husbandry protocol for any animal, our elephant management philosophy is built upon a sound foundation of an educated understanding of the animal's behavior within its natural environment. With the goal of psychological, physiological, and social fulfillment, the Indianapolis Zoo maintains five female African elephants (*Loxodonta africana*) in a free-contact management style.

Female elephants sustain and thrive in a matriarchal society throughout their life-span. The entire herd is led by an elder, dominant female (matriarch) who maintains order and provides essential guidance. The matriarch and older herd members provide instruction to younger elephants in communication, sources of food and water, migratory paths, and other essential information. The harmony of this type of organization is vital for the species' existence because the chaos of each animal attempting to find food and water in different directions, or members of the herd fighting among one another, would result in a direct loss to starvation, thirst, and predators.

No matter how naturalistic the exhibit and facility, elephants demand instruction and guidance to flourish in a human-engineered environment. Elephant managers are in the position to take advantage of the elephant's innate social structure and actually become a member of the herd hierarchy, assuming the role of the matriarch. Although the elephants do not see humans as other elephants, they can be taught to rely on their handlers for direction. Therefore, by the very nature of their social structure, female and young male elephants can thrive in captivity through a properly orchestrated free-contact system.

To deter stereotypic or lethargic behavior, captive elephants must be kept occupied with physical exercise and mental stimuli. Good physical conditioning is essential to a long, healthy life. With food and water within easy access, the instinct to search over miles to find these resources is eliminated. Thoughtful exhibit and resource manipulation provides some enrichment, but is limited. Exercise routines can help fulfill the animal's natural, nomadic impulse. The elephants at the Indianapolis Zoo are taken for long walks outside of the elephant exhibit. They are allowed to walk freely, grazing on the undeveloped areas within the zoo. The freedom our elephants are given on these walks is likely the most "wild" encounter an elephant in captivity can experience. All of our elephants are allowed this privilege because each will immediately return to the handler when they are called, another benefit of our free-contact program.

The elephants at the Indianapolis Zoo are handled directly on a daily basis. These work routines include (but are not limited to) training sessions, walks on zoo grounds, and psychological studies. Elephants require a high level of care to remain healthy. Our husbandry activities are comprised of skin and foot conditioning, meeting nutritional requirements, maintaining and improving the exhibit, and any other unseen demands. The elephants are bathed and scrubbed daily to remove debris and dead skin. Mineral oil is applied with a Wagner Power Painter® approximately once a month in cool weather to prevent excessive drying. The pads of their feet are inspected and cleaned thoroughly each day, trimmed when necessary, then scrubbed with a Betadine® solution to prevent bacterial and fungal growth. Exhibit maintenance is continuous as substrate erosion is an ongoing problem. Fecal material is never allowed to accumulate over thirty minutes. A large pool and mud hole require weekly cleaning. All of these tasks are accomplished with no interruption in the animals' daily activities as keepers work with and around the elephants.



**Bathing routine with Tombi.** (Photo by D. Hagan)

Prevention is our goal regarding veterinary concerns. A small, treatable problem can become life-threatening if left unnoticed and untreated. During the bathing process and throughout the day, full body inspections enable us to spot any external physical changes. Oral inspections are conducted daily to check the animals' teeth, gums, and the sulcus of the tusk. The animals' behavior and attitude is constantly monitored for signs of illness or discomfort. Wild animals have been selected to mask disease and weakness. Such masking increases the importance for handlers to carefully evaluate the physiological health and psychological wellness before any obvious physical symptoms are apparent.

If any veterinary concern is noted, the Indianapolis Zoo's two practicing veterinarians are contacted. By a handler's command, each elephant is able to be positioned and examined by staff or specialist. This procedure proves to be much less stressful to the animals and staff than the use of chemical immobilization. In most instances the animal's cooperation in the placement of her body is very important in conducting a proper examination. By use of verbal commands and body position, the handler is able to maintain the optimal posture of the elephant. Throughout our history we have successfully performed procedures including stitching open wounds, ultrasounding of unknown lumps, routine eye exams, enemas for intestinal blockage, trans-rectal ultrasound, and urogenital palpation without the use of chemical immobilization or with little to no physical restraint. Administration of treatment is relatively stress-free and immediate, as time and the animal's attitude are often a primary concern.

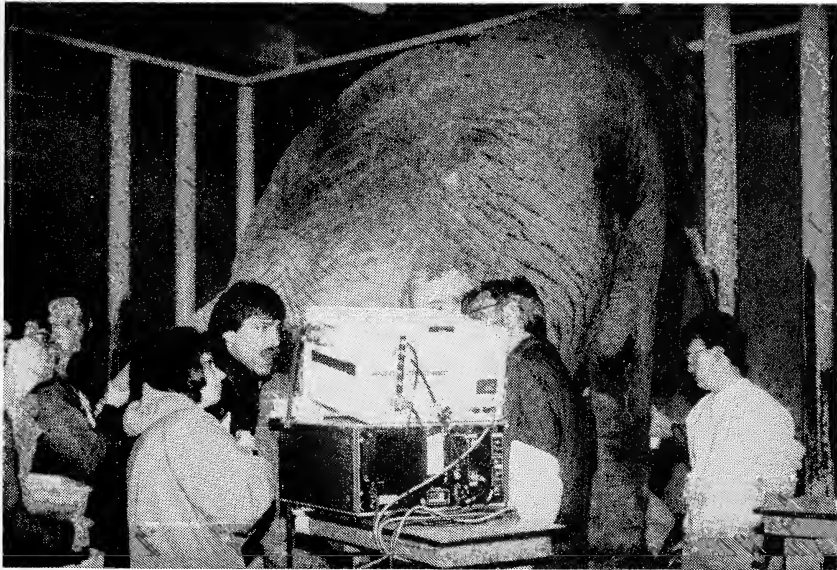
As a zoological institution of scientific investigation, the Indianapolis Zoo has developed a vigorous elephant research program. There exists only a small amount of clinical and behavioral research published with regard to elephants. Our work will contribute to those biologists undertaking field studies in Africa, enabling the five elephants at our facility to act as more than just ambassadors for their species. Our current research, as listed below, has been directed toward understanding both physiological and psychological factors that relate to wild and captive elephants:

- Ongoing behavior study of the introduction of a 13-year-old African elephant kept isolated for 11 years to an established herd.



## Free Contact Elephant Management at the Indianapolis Zoo, Cont'd

- Recording infra sound vocalizations and elephant behavior to document estrous song and estrous behavior in captive African elephants.
- Videotaping and observing behavior of captive African elephants at night.
- Documenting spatial memory capabilities of five African elephants.
- Observation of herd dynamics of African elephants over an extended period of time through daily observations.
- Confirming the estrous cycle of female African elephants by measuring the circulating levels of progesterone, estradiol and LH through blood serum; detecting ovaries and following follicular development through trans-rectal ultrasonography; collection and cryopreservation of semen from wild African elephants.
- Determination of perceptual capabilities of five African elephants.



**Trans-rectal ultrasound of African elephant.** (Photo © 1991 Jeff Wines)

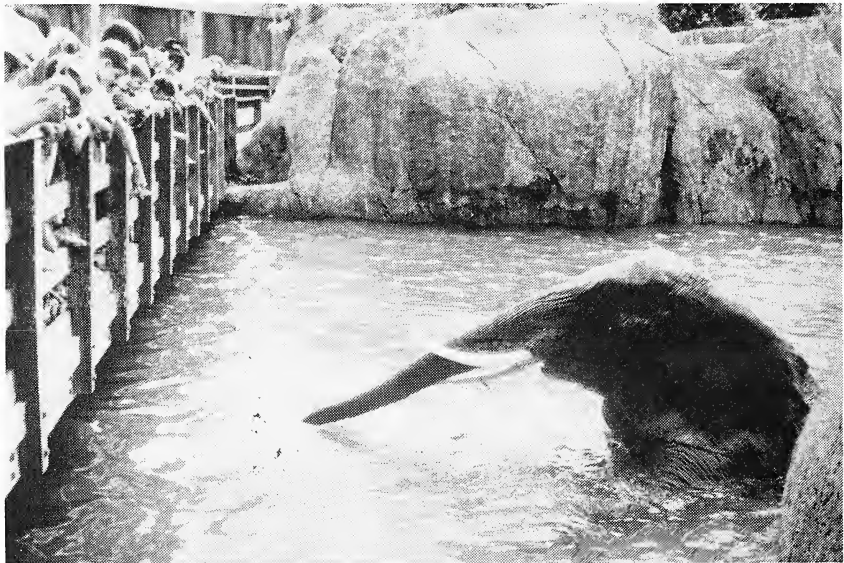
This research is an invaluable resource to better our understanding of elephants and has been proven to be stimulating and engaging to the animals.

Elephant introduction has provided the Indianapolis Zoo with many challenges and successes. Through our efforts, Tombi, a 16-year-old, is able to flourish in a herd atmosphere. Tombi spent from the ages of two to 13 in an exhibit without any other elephants. She did not have the opportunity to learn important elephant social skills during her early development. When Tombi arrived in Indianapolis in 1989, she was more comfortable with people than with elephants. Tombi was terrified of other elephants. Through the free-contact method, the assimilation of Tombi was possible. Any aggression by the other elephants towards Tombi was prevented. Slowly, Tombi was included in training sessions, walks, and rides to promote positive interaction with the other elephants. Ivory, the youngest of the herd, was the first to befriend the new guest. Ivory was still young

## Free Contact Elephant Management at the Indianapolis Zoo, Cont'd

enough to require some herd social development herself. Ivory and Tombi learn from each other through play and mock fighting under the watchful eye of the herd and staff. Tombi's social development will continue to advance in a herd atmosphere.

The style of elephant management embraced by the Indianapolis Zoo requires strong leadership, administrative support, and a motivated staff. Communication with other elephant managers and staff is essential to provide a knowledgeable resource. The Indianapolis Zoo maintains active involvement in the Association of Zoos & Aquariums (AZA), Elephant Managers Association (EMA), Elephant Species Survival Plan (SSP), and the local Chapter of the American Association of Zoo Keepers, Inc. (AAZK). The elephant management staff is dedicated, experienced, extremely eager and goal-oriented. Close handler communication with each other and administration is necessary to maintain a consistent, safe environment. Our goal of mental and physical well-being, research and herd management are best and safely served through our free-contact elephant management program.



**Cita interacting with zoo visitors. (Photo © 1991 Jeff Wines)**



## **An Elephant's Annual Edibles**

Talk about a big appetite! Pass the peanuts and bring on a few tons of food for the average elephant. On a typical day, almost an entire supermarket produce section is needed to satisfy a four-ton pachyderm's appetite including an occasional whole watermelon. This huge animal also has an enormous thirst, guzzling approximately 25 gallons of water on a typical day and as much as 40 gallons on a hot one. Surprisingly, the daily diet of an adult African elephant in a zoo costs only about \$16.30 *ZooLife*)

HAY.....	18 Tons	BANANAS.....	1 1/2 Tons
CARROTS.....	9 Tons	ONIONS.....	3/4 Tons
APPLES.....	1 1/2 Tons	VITAMIN PELLETS.....	2 Tons

# A Commitment to Elephant Management at Point Defiance Zoo and Aquarium

By

Gary Miller, *Elephant Manager*; Craig Wilcox, *Senior Staff Biologist*;  
Sally LaTorres, *Staff Biologist*; Bruce Upchurch, *Staff Biologist*  
Point Defiance Zoo and Aquarium, Tacoma, WA

Elephant management at Point Defiance Zoo and Aquarium (PDZA) incorporates free, protected, and confined contact husbandry systems. We believe that elephants' mental and physical well-being are necessary and integral parts of basic elephant husbandry, that handler safety is of paramount importance, and that comprehensive elephant management utilizes all existing tools and develops new tools. It is our opinion that debating which system is right or wrong misses the point. A more appropriate question might be, can a particular facility and staff manage a particular animal given their own restrictions with regard to staff experience and facility design, and which system is appropriate given an animal's personality and history? Each system has its own limitations and possibilities depending on staff resources, facility design, and the animal. Regardless of the system being utilized the most important element is commitment. The success and safety of a particular system is directly related to staff experience and commitment of time and money.

At our facility we use the following definitions: 1) protected contact is a system in which the handler is protected by a physical barrier and is at no time within trunk reach of the elephant; 2) confined contact is handling the animal using the Elephant Restraint Chute (ERC); 3) free contact is a system where, in the traditional sense, handlers become a part of the herd social system and work in a situation of physically unprotected proximity to the elephant as long as two handlers are present. All systems employ operant conditioning techniques. Our protected and confined contact systems use target training to accomplish husbandry and training goals.

Currently at PDZA we house two 12-year-old female African elephants (*Loxodonta africana*), Thandi and Moyo; and a single 31-year-old female Asian elephant (*Elephas maximus*), Cindy. The African elephants have been at PDZA since they were approximately one year old, and have always been managed in a free contact system. Our free contact program includes public rides, handling demonstrations, and walks on the zoo grounds. Each will offer a wide repertoire of trained behaviors. We feel that our commitment to training and handling these animals has resulted in two solid, predictable, well adjusted elephants, and that the risk of handler or public injury is minimal. It is important to note that risk is not eliminated. It is greatly reduced because experienced handlers are given commitment and support from administration in the form of development of facilities, programs, and staff. We feel very strongly that the same commitment to our protected contact system for Cindy, our Asian elephant, has given her high quality care and transformed a management problem into an exciting challenge.

Cindy spent 17 years in a sterile asphalt and concrete exhibit. She did not receive any formal training, although she would offer some behaviors for treats. As she grew older and larger she became progressively more selective about her handlers. A few were accepted, others were not tolerated and sooner or later, attacked. She became a management problem. In 1982 she was transferred to the San Diego Wild Animal Park in Escondido, CA with the hope that she would develop social skills and possibly breed. At the end of the seven year breeding loan she was transferred to the Washington Park Zoo in Portland, OR. While there, she was handled in the same manner as their adult bulls.

This may sound like she had become an annoyance. Actually she had become a very dangerous elephant. She has attacked and injured, to various degrees, at least 12 people. In February 1992, Cindy returned to PDZA. Within the first month she started a familiar pattern, she became demonstrably affectionate toward a single handler and aggressive

## Elephant Management at Point Defiance Zoo & Aquarium, Cont'd

toward others. Another characteristic of her past was that at some time the "chosen" handler vanished. We speculate that this has shaken her trust in people. It was obvious that we, and Cindy, needed a management system where various handlers could administer care -- a system that would remain consistent over time and be as safe as possible for the handlers. It was decided that free contact would incur very high risk, too high for comfort, and that protected contact would be the system used for managing Cindy. The challenge then became, how do we give this animal all of the advantages of free contact without endangering handlers? We were aware that some success had been reported with several elephants in which operant conditioning techniques were applied from behind barriers. Certainly, we had the ERC available to us to handle her in the same way many mature bulls are cared for, but we felt there was great potential to explore and experiment with operant conditioning applied in a protected contact system.

In November, 1992 we began intensive protected contact training with Cindy. The overall goal was to see just what protected contact could do for Cindy and to try and determine what the limits of this system might be. We used behaviors and codes generated by Active Environments in a paper titled, "A Program For Exploring Alternate Methods for Elephant Management" (Table Q). Of the 33 original behaviors we chose not to train 8 behaviors because they did not fit our program needs at the time (Table A, List A). At PDZA we have trained 18 additional behaviors, most of which are task-oriented and designed to stimulate Cindy mentally and physically (Table A, List B).

At this time we can work Cindy through 43 individual behaviors. In 14 hours of work, we have completed over 700 training sessions, with a total refusal to work occurring only once early in the program. Each session lasts, on average, 10 to 15 minutes. Sessions usually occur twice per day. Each behavior worked, along with Cindy's response, is logged. She willingly responds to four different handlers with little variability. It is important to note that she does each of the behaviors for each handler, despite the fact that she still chooses favorite handlers. Most importantly, she has not injured anyone.

Cindy is now managed in a program that we believe can remain consistent despite personnel changes. The training and attention have greatly altered Cindy's attitude. Prior to the program she would throw extreme and very exuberant tantrums, slamming bars, gates, or doors, and rushing handlers she did not like. As the program has progressed, her aggression has decreased in frequency and intensity. Generally we treat the aggression with a "time-out". This has always had the desired effect, she changes her attitude, calms down and cooperates. She still has "good" and "bad" days, days when she is slow to respond or acts as if she has no idea what is going on, but we are able to work her no matter what her mood might be. One goal is to try and determine whether protected contact can produce the same flexibility and repertoire of behaviors characteristic of our free contact program.

So far, we have found that protected contact has met our husbandry needs for Cindy. We are convinced that this system has a place in the future of elephant management. However, the system needs to be more thoroughly tested and further developed. Can this system appropriately deal with a management problem such as an elephant suffering from colic? Can the system induce elephants to move about, thereby meeting the necessary daily exercise requirements that their bodies have evolved to manage? Can it facilitate elephant introductions? How will protected contact address a birthing situation where the elephant is delivering her first calf and has never been around baby elephants? In most circumstances free contact has been able to effectively administer solutions to the above problems. Within free contact a high level of care and attention to various problems can be realized given experienced staff and proper facilities. We are also convinced that protected contact takes as much, if not more, of an investment in personnel and facilities than does free contact.

So, how much experience is enough to be considered "experienced", and what are proper facilities? These variables are totally dependent on the circumstances within each institution. For our facility, we must balance a protected contact system for a very dangerous elephant with a free contact program for more tractable elephants used for rides and demonstrations. In an effort to meet all of the husbandry goals of our program we needed well-trained handlers with a broad base of experience and a facility with a great

**TABLE A: Currently trained behaviors under protected contact**

The 33 behaviors in List A below along with codes used for record keeping were published in a paper by Active Environments titled "A Program for Exploring Alternate Methods for Elephant Management". List B includes those behaviors added by the elephant staff at Point Defiance Zoo & Aquarium.

**LIST A:**

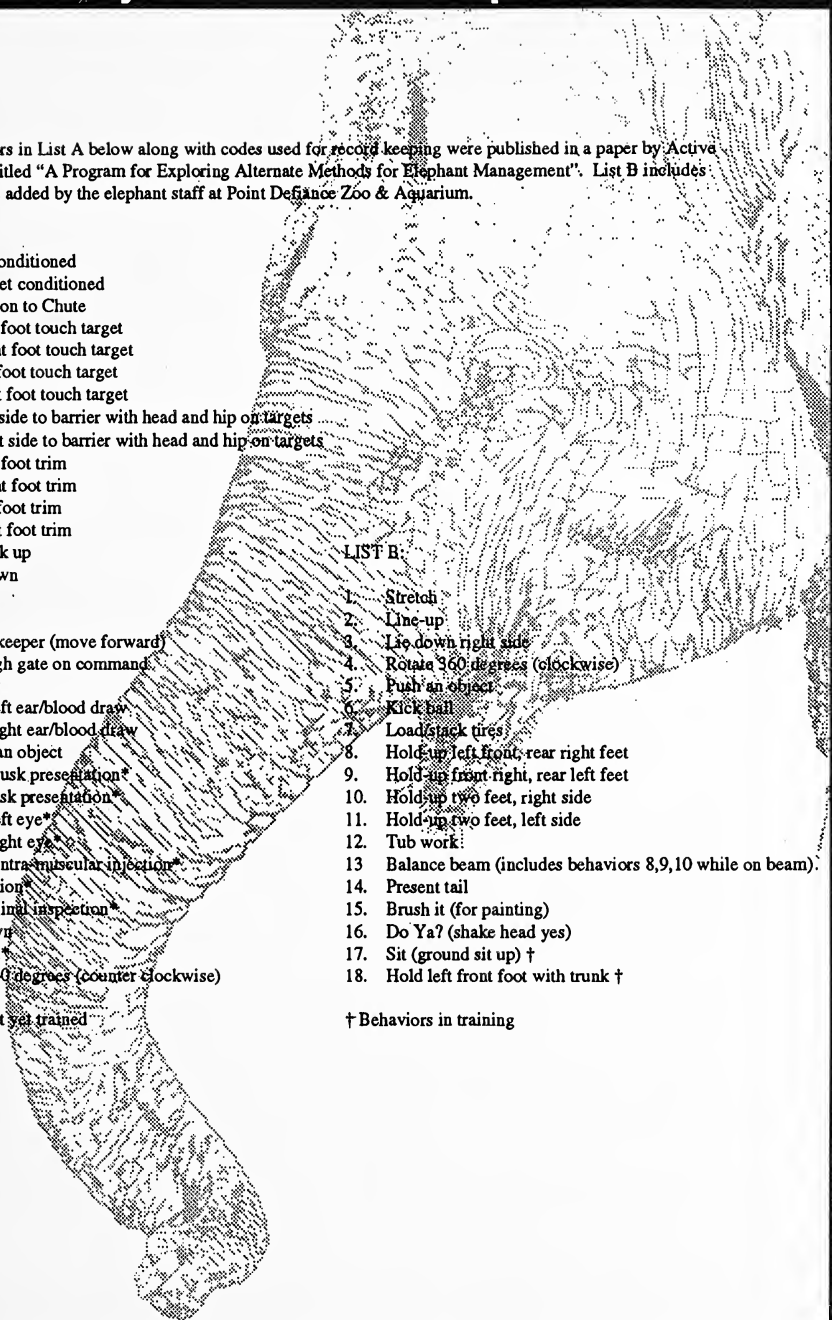
1. Whistle conditioned
2. Head target conditioned
3. Introduction to Chute
4. Front left foot touch target
5. Front right foot touch target
6. Rear left foot touch target
7. Rear right foot touch target
8. Lean left side to barrier with head and hip on targets
9. Lean right side to barrier with head and hip on targets
10. Front left foot trim
11. Front right foot trim
12. Rear left foot trim
13. Rear right foot trim
14. Hold trunk up
15. Trunk down
16. Back up
17. Steady
18. Come to keeper (move forward)
19. Go through gate on command
20. Lie down
21. Present left ear/blood draw
22. Present right ear/blood draw
23. Retrieve an object
24. Head on tusk presentation\*
25. Lateral tusk presentation\*
26. Present left eye\*
27. Present right eye\*
28. Tolerate intramuscular injection\*
29. Vocalization\*
30. Anal/Vaginal inspection\*
31. Hose down
32. Soak foot\*
33. Rotate 360 degrees (counter clockwise)

\* Behaviors not yet trained

**LIST B:**

1. Stretch
2. Line-up
3. Lie down right side
4. Rotate 360 degrees (clockwise)
5. Push an object
6. Kick ball
7. Load/stack tires
8. Hold-up left front, rear right feet
9. Hold-up front right, rear left feet
10. Hold-up two feet, right side
11. Hold-up two feet, left side
12. Tub work
13. Balance beam (includes behaviors 8,9,10 while on beam)
14. Present tail
15. Brush it (for painting)
16. Do Ya? (shake head yes)
17. Sit (ground sit up) †
18. Hold left front foot with trunk †

† Behaviors in training



## Elephant Management at Point Defiance Zoo & Aquarium, Cont'd

deal of built-in flexibility. We have four handlers with a total of 50 years working directly with elephants and over 75 years experience working with captive animals. This experience includes circus programs, rides, breeding programs, training handlers, target training, etc. Our elephant facility has two yards, stalling options and an ERC. To insure that the program has guidance and consistency, a comprehensive Elephant Management Protocol was developed and is administered via the Elephant Management Committee. The point being, there are an incredible variety of problems that will arise, even in the most basic elephant program, and because of our facility and our experience we feel prepared to deal quickly and safely with any situation.

We feel that our program has been very successful and attribute this success to management's commitment of time, personnel and money to make this program capable of delivering the highest quality care in the safest manner possible. Also, because of our experience with Cindy and our young African elephants we have learned a great deal. We have speculated that if Cindy and her handlers had been given comprehensive training, a suitable facility and a proper herd structure had been developed when she first arrived, she would not be the dangerous animal that she has become. We do not mean to blame anyone, it is simply that we can now look back and see where our mistakes were made. She should have had the commitment then that she now enjoys.

Elephant handlers and administrators in every institution in this country share concerns about the future of elephant management. We are facing the challenges of making an SSP program work under ever-increasing scrutiny from federal, state and private agencies. We feel that much can be done to avoid future accidents and make the elephant SSP successful. Protected contact continues to show promise and deserves a commitment towards development and testing. However, we believe that representing any single system of elephant management as the **only** acceptable system is naive and short-sighted. We feel that whichever system, or systems, an institution decides to apply, if the program does not receive a full commitment in the form of time, people, and money, accidents will still occur and elephants will suffer through sub-par care.



## **Experimental Birth Control Vaccine for Elephants**

The latest issue of *African Wildlife Update* (Jan./Feb. 1994), Vol. 3, No. 1) has reported that three female elephants in a small reserve in Kenya have been injected with an experimental birth control vaccine. The vaccinations, which took place in November at the privately-owned Sweetwaters Rhino Sanctuary, were done in an attempt to limit the number of elephants there. The current population of nearly 50 is more than the area can sustain.

According to an article in *The Washington Post*, the vaccine was developed by Dr. Bonnie S. Dunbar of the Baylor College of Medicine, and is designed "to provoke an immune response against developing eggs in an elephant's ovaries". Dr. Dunbar told *African Wildlife Update* that her research into a birth control vaccine for elephants was different from such research for humans in that it is hoped the elephant vaccine will induce permanent sterility. The vaccine is expected to bring on early menopause in the test subjects. A female elephant normally reaches menopause at about 55 years of age.

The elephants chosen for the field tests of the vaccine had each had at least two calves and were nursing at the time of injection. None was pregnant. Researchers hope to expand the study by additional vaccinations, but long-term results may not be known for years.

According to the *Post* article, Kenya Wildlife Service officials recently revised their estimates of the country's elephant population following surveys indicating that there are more elephants than previously thought in some of Kenya's forested areas. The new estimate is 26,000, about 60% higher than the 1989 estimate of 16,000.

*(African Wildlife Update is published bimonthly by the African Wildlife News Service and is available for an annual contribution of \$15 or more. May be ordered from African Wildlife News Service, P.O. Box 546, Olympia, WA 98507-0546 USA. Those living outside the USA should add \$7 for air mail postage. Limited back issues are available for \$2 each.)*



# Reverse Perspective: Basic Elephant Management or Enrichment?

By  
Jay Haight, Keeper  
Metro Washington Park Zoo, Portland, OR

Reprinted from *The Shape of Enrichment*, Vol. 2, No. 4, Nov. 1993; Editors - Valerie J. Hare and Karen E. Worley.

Frankly, I'm confused. I've been working with elephants for some 15 years, and a lot of what I've always considered to be fundamental principles of basic management turns out to be something novel. They call it enrichment nowadays--giving your animals something to do, providing challenges that motivate them to think and act, and, in some cases, providing alternatives to damage. Often, what you do can even provide insight into the capabilities of the animals.

Let me backtrack. The first time I ever worked with elephants was in the mid-1970s. At the time, Dr. Hal Markowitz hired me as the Portland Zoo's research coordinator, and one part of my job involved working with elephants on a light/dark visual discrimination test apparatus (Markowitz & Stevens, 1978 and Markowitz, 1982).

That's what got me hooked. I was providing elephants with an entertaining and rewarding diversion, giving them something they liked to do, and learning about them in the process. To me, it was science at its best. To the animals, it was a pleasant diversion. And to a lot of people, it was probably environmental enrichment. I ended up spending most of my life handling, training, and living among elephants. So if you want somebody to blame for my elephant opinions, blame Hal!

In any event, giving the animals challenges has long been a part of the philosophy of elephant management at Metro Washington Park Zoo. We were doing it back in the 1970s, and it's just carried on over. It's not rocket science; mostly it's just fun and games. And a bit of thought--it's an ongoing exercise in applied psychology.

We have a concrete wall along one part of our secondary exercise yard. There are dozens of sections of 4-inch diameter, one-foot-long PVC pipe running through it, open at both ends. Some of them provide drainage for the landscaping above, others are there for no apparent reason. But they're great places to hide apples. Some elephants stick their trunks against the pipe and vacuum the apples out. Others that we call "blowers" stick their trunks over the wall, root around until they find the pipe, blow the apples out towards themselves, then bring their trunks back over and pick up the apples. Small elephants run their trunks right up the pipe, suction up the apples, and toss them in their mouths. There's sneaky behavior as well. Lately, one elephant has found that if she stands close to an impetuous "blower", she can grab some of the apples without doing the work.

Of course, you don't need to have PVC pipe incorporated into facility walls to set up similar challenges. We took advantage of the fact that our exhibit room floor is sloped for drainage. We can set apples on the floor below the viewing windows in the keeper service area, out of reach of the elephants. By blowing against the wall, the elephants can cause the apples to roll within grabbing distance. Again, some elephants seem to solve the problem quickly, while others may not solve the problem themselves but avail themselves of the fruit of others' efforts.

For a while, we used a baseball-pitching machine to fling apples and oranges half an acre or so. We stopped using it because, while baseballs have a constant diameter and firmness, apples and oranges don't. When it worked, it was interesting--we found that we had a couple of natural fielders among the elephants, who seemed to track the objects on the fly and trundled on out to snag them as they landed. When it didn't work, the fruits would

## **Basic Elephant Management or Enrichment?** *Continued*

disintegrate as they passed through the machine. One elephant opted to stand near the machine with her trunk up and her mouth open, occasionally catching parts of the failures.

During the past few years we've arrived at a series of techniques to redirect the aggressive behavior of bulls in musth, which solves some of our management problems in regard to these outbursts. In one instance, we constructed a 450-pound snowman, decorated with fruits. When the bull was released into the room, he launched the snowman against the wall with one quick swipe of the trunk. He then proceeded to pick through the remains, eating the fruit, while the door closed without incident behind him.

Some of the things we're doing lately include dabbing peanut butter among the roots of tree stumps in various parts of the facility (tree stumps are easy to come by in Oregon and peanut butter is fairly inexpensive). We "plant" carrots in the sand in various locations around the nearby one-acre back lot. Indoors we provide opportunities for the elephants to work for their hay, such as constructing hay feeders that require the elephants to pluck hay from 2-inch gaps in the feeders, and we find that it takes them much longer to consume a set amount of hay than when it is simply plopped in front of them. This may ultimately benefit the overweight members of our herd.

Training is an important part of the mix as well. Our animals are constantly subjected to different approaches to accomplish the same objectives. For example, in the morning our cows may be asked to come alongside a barrier and present each foot in turn to the handler. In the afternoon, the cows may be expected to enter a restraint chute and have their feet looked at there, or the handlers may simply walk in among them and ask to have a foot presented. In each case, the same objective is accomplished--examination of the feet--but the cows have to think about it. This approach not only provides a degree of challenge to the elephants, it provides elephant management staff with a range of options, any of which may be employed to achieve a specific goal.

Is it basic management or enrichment? In my view, it's basic captive animal management. It's an integral part of living and working among these animals--not an apologetic afterthought.

### **References**

Markowitz, H. 1982. *Behavioral Enrichment in the Zoo*.  
Van Nostrand Reinhold, New York, NY.

Markowitz, H., Stevens, V.J., Brett, L.P. 1978. *Behavior of Captive Wild Animals*.  
Nelson-Hall, Chicago, IL.

*The Shape of Enrichment* is published quarterly. Subscriptions are \$12 per calendar year, payable in U.S. Funds only, drawn on a U.S. bank. The \$12 includes postage, both domestic and foreign air mail. Mid-year subscriptions are prorated. Back issues are available for \$3.00 each. Send all subscription requests, article submissions, letters, comments, and questions to the Editors at 1650 Minden Dr., San Diego, CA 92111-7124. FAX (619) 279-4208; Phone (619) 231-1515 Ext. 4272.



### **1994 AZA Regional Conferences**

**10-12 April 1994** - Western Regional Conference. For more information, contact Jean Miller, Micke Grove Zoo, 11793 North Micke Grove Road, Lodi, CA 95240 (209) 953-8840.

**17-19 April 1994** - Great Lakes Regional Conference. For more information, contact Carol Pedersen, Blank Park Zoo, 7401 S.W. 9th St., Des Moines, IA 50315 (515) 285-4722.

**1-3 May 1994** - Northeastern Regional Conference. For more information, contact Troy Stump, ZOOAMERICA, North American Wildlife Park, 100 West Hersheypark Dr., Hershey, PA 17033 (717) 534-3862.



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# Collection of Semen in an Asian Elephant by Artificial Vagina

By  
*Sioux Marion, Elephant Keeper*  
*Metro Washington Park Zoo, Portland, OR*

Washington Park Zoo is in the midst of research to develop a freezing technique for semen to be used in artificial insemination work. This prompted the design and implementation of an artificial vagina (AV) and an alternative method for collecting elephant semen without the use of any drugs.

The youngest bull in Washington Park Zoo's collection, Rama a 10-year-old Asian elephant, was chosen as the first subject. We began with AVs designed for horses but it was soon apparent that modifications (in size and correction of uneven heating) were necessary.

Training started with Rama allowing us to chain his left rear leg while in the Elephant Restraint Chute (ERC). This initial stage served two purposes: it kept him properly positioned in the ERC and added a measure of keeper safety. He was conditioned to allow keepers to touch the inside of his rear leg, stomach, and penis sheath. Rewards were given to Rama every time his penis descended while he was in the ERC. In subsequent sessions rewards were given when he allowed keepers to handle his penis and when he allowed the AV to be slipped on.

The new AV was designed by Dr. M. J. Schmidt and contained the following specialized components:

1. Water-filled rubber rings with plastic liner - allows for even heating throughout length of AV.
2. Foam stabilizer shell - maintains both heat and the AV's structure.
3. Leather or rubber sheet with handle - gives keeper something to hold onto.
4. Semen collection cone - for catching semen.

An important factor in successful semen collection is maintaining proper temperature in the AV. Many months were spent determining what we believe may be the optimal window for repeated collections.

An added consideration for this design was that it be "field ready" for a November 1993 trip to Thailand.

Approximately six months of training with the new AV design resulted in the first successful collection in July of 1993. Unfortunately, the first sample ended up on the floor of the ERC when Rama flipped his penis out of the AV - luckily, I regained my composure, reinserted his penis and recovered the last few drops of ejaculate. Rama's sperm was viable!

By Christmas of 1993 we had our 50th successful collection! Once regular collection began, research started on improving the duration of sperm motility in various semen extenders.

Natural ejaculation is thought to produce better quality semen and since we can now collect on a regular basis, we hope to have successful pregnancies via artificial insemination both at the Washington Park Zoo and participating institutions.

If you would like more information on this procedure, please contact: Sioux Marion, Elephant Keeper, Metro Washington Park Zoo, 4001 S.W. Canyon Rd., Portland, OR 97221 (503) 226-1561 Ext. 276 or FAX (503) 226-0074.



*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.*

**KEEPER INTERNSHIPS**...for summer of 1994 May to August. Starting date flexible for 10 weeks. Closing date for application is **15 April 1994**. \$1000 stipend provided by the 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 21802.

**ZOOKEEPER**...requires one year of experience caring for a variety of animals; experience with birds preferred. The Chaffee Zoo is located in the heart of California's San Joaquin Valley, only one hour from Yosemite, Kings Canyon and Sequoia National Parks, and only three hours drive to the ocean. Fresno is the most affordable place to live and work in California. Salary and benefits excellent - \$20,160.00 - \$24,528.00 per year. Applications may be obtained from: Fresno City Human Resources, 2600 Fresno St., Fresno, CA 93721 (209) 498-1575. Filing deadline is **31 March 1994**. Postmarks are not accepted. AA/EOE.

**KEEPER/ASSISTANT CURATOR/SPECIES CURATOR**...Lion Country Safari is in need of experienced keeper for hoofstock, carnivores, mammals, etc. who is ready to move into an Assistant Curator position. Also seeking Curator for species as noted above. Assistant Wildlife Director position available for our overall Zoological Department requiring thorough experience in all aspects of animal husbandry, management of people, etc. Please send your resume and salary requirements to: Robert A. Holcomb, Vice President/General Manager, Lion Country Safari, Inc. P.O. Box 16066, West Palm Beach, FL 33416.

**INTERNSHIP**...the Miami Valley Serpenterium is seeking a student intern for the 1994 summer season. MVS is an educational exhibit and reptile breeding facility located near Kentucky's Red River Gorge and Natural Bridge State Park. The intern will assist with the captive maintenance of the Serp's collection but will NOT be involved in the handling of venomous reptiles. Salary/benefits include experience with one of the most extensive collections of snakes in the area, housing, and \$75/week in pay. Starting dates are flexible, but a minimum commitment of three months covering the June-August summer season is required. To apply and receive more info, send a cover letter and resume to: Randy Mowrer, Assistant Director, MVS, 1275 Natural Bridge Rd., Slade, KY 40376, (606) 663-9160. Application **deadline is 2 April 1994**.

*The following three (3) positions are available at Caribbean Gardens (formerly Jungle Larry's Zoological Park). To apply for any of these openings send a cover letter and resume to: Caribbean Gardens, c/o General Curator, P.O. Box 7129, Naples, FL 33941. For all three positions, salary is commensurate with experience.*

**CARNIVORE KEEPER**...requires a strong background and a minimum of three years experience in the care of large felines. Applicant must be a motivated, self-starter. Responsibilities include daily care, maintaining exhibits, record keeping, planning of enrichment activities, and assisting veterinarian.

**ZOO KEEPER**...applicant must have a minimum of two (2) years experience in the husbandry of exotics. This position is responsible for the care of primates, hoofstock, and small mammals. Job description would include daily care and diet preparation, enrichment and observation, assisting veterinarian, and record keeping.

**LEAD KEEPER**...requires a minimum of six (6) years experience in the keeping of exotics with an emphasis on primates and felines. This position would act as a swing shift for the above listings as well as a supervisory role of those positions. Ability to be a team player is essential. Hands on elephant experience is also a factor in securing this position as applicant may be called on to assist elephant dept. occasionally.

## **Opportunity Knocks**, *Continued*

**SUMMER INTERNS:** seeking individuals to assume keeper roles at Jungle Larry's Safari at Cedar Point Amusement Park, Sandusky, OH. Openings are for mid-April to mid-September. Three (3) positions are available as listed below. Applicants should submit resume and cover letter to: Caribbean Gardens/Summer Intern, P.O. Box 7129, Naples, FL 33941.

**Keeper I** - daily care and general duties involved in the husbandry of large felines. must also assist in small animal educational shows. The ability to speak to large crowds a plus.

**Keeper II** - responsibilities include the daily care of small mammals and parrots. This applicant must also assist in the presentation of educational shows.

**Keeper III** - this position would act as a swing shift for the above listed openings.

**ZOOKEEPER**...we are seeking an energetic self-starter to work with a wide variety of animals including 90 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: \$5.50/hr; benefits included. Send resume **by 31 March 1994** to: Steven M. Wing, General Curator, Folsom Childrens Zoo & Botanical Gardens, 1222 S. 27 Street, Lincoln, NE 68502.

**ZOOKEEPER - Psittacines**...requires minimum of one year paid, hands-on experience with Macaws and degree or equivalent Zoo related experience. Duties include daily care, feeding and habitat upkeep, breeding programs, record keeping, medical coordination, acquisitions, training, supervising part-time staff and volunteers, presenting educational programs, etc. Must be willing to work weekends/holidays. Starting salary \$16,000-\$21,000 with year-end bonus and benefits. Excellent growth potential. Salary commensurate with experience. Send resume-references to: Washington Zoological Park, 1925 SE 54th, Issaquah, WA 98027. Position open until filled.

**ANIMAL CARETAKER**...requires a minimum of a high school diploma and two full years paid animal care experience at a small to mid-size zoo. Will participate in all aspects of animal husbandry and exhibit maintenance for a varied collection. Salary commensurate with experience. Please send resume and phone numbers of at least four (4) references to: Jeanne Gavin, Catoctin Mountain Zoo Park, 13019-A Catoctin Furnace Road, Thurmont, MD 21788.

**EDUCATION COORDINATOR**...Little Rock Zoo. Responsible for planning, developing and implementing educational programs. Excellent benefit package. Salary \$21,832-\$32,747. **REQUIREMENTS:** Completion of two years of college course work in Zoology, Biology, Education, Veterinary Medicine or Natural History; at least two years of experience in a zoo setting; at least one year of experience as a trainer or teacher OR any equivalent combination. **ADDITIONAL REQUIREMENTS:** Must possess or be able to obtain a valid Arkansas vehicle operator's license. Residency required within a 90-day grace period. **TO APPLY:** Complete and submit an original City of Little Rock employment application form and resume **by Friday, 15 April, 1994**. For an application, contact the Office of Personnel, City of Little Rock, 522 West Markham, Little Rock, AR 72201. (501) 371-4577. AA/EOE.



# AAZK Membership Application

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

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- \$30.00 Professional/U.S.  
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*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. &  
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## Library Only

- \$20.00 Library  
*Available only to  
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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.

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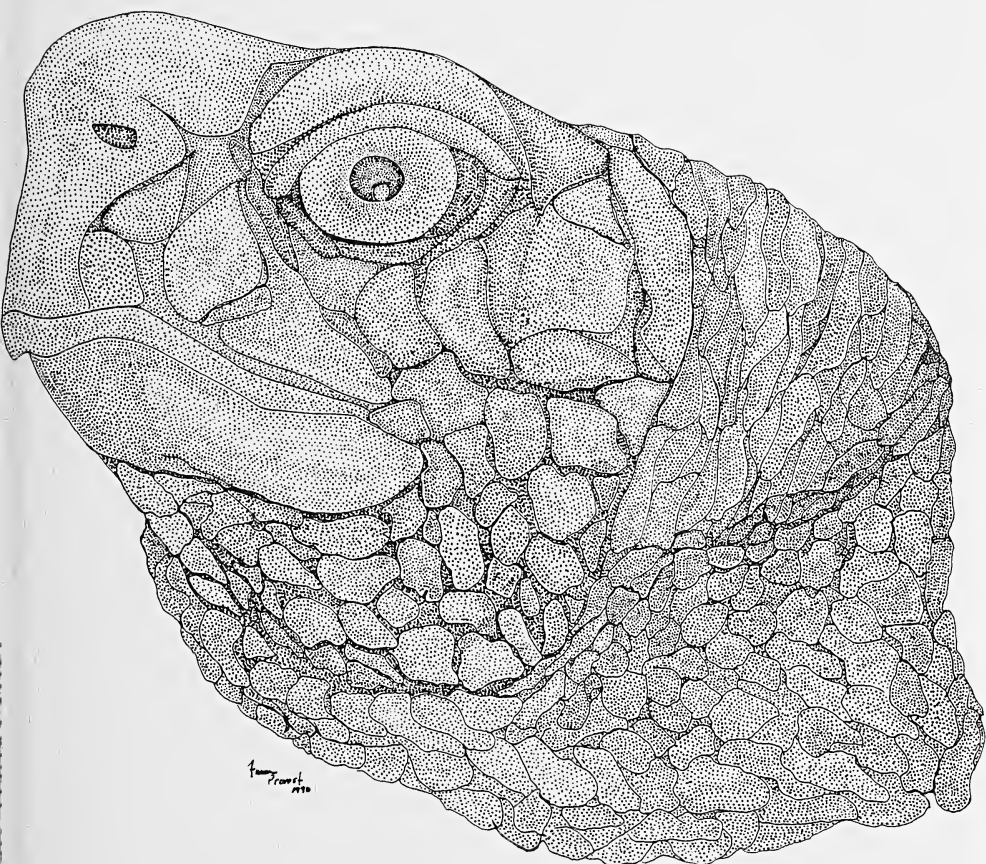
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April 1994

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**April 1994**  
**Volume Twenty-one**  
**Number Four**

**Editor-In-Chief:** Susan Chan  
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**Book Review Coordinators:** Melba T. Brown, National Zoo and Tom Aversa, Franklin Park Zoo  
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Animal Keepers' Forum (ISSN 0164-9531) is a monthly journal of the American Association of Zoo Keepers, Inc. 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, Woodland Park Zoo (Mammals)

Teri Maas/Maggie Liguori, Philadelphia Zoo (Birds/Nonpasserines); Kim Livingstone, L.A. Zoo (Passerines)

Jeanne Boccongelli, Newark Museum Mini-Zoo (Reptiles); Linelle Lone, Denver Zoo (Amphibians)

Diet Notebook, Mammals, Vol. II - Susan Bunn Spencer, Grand Rapids, MI



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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 25½cm (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") 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 as space allows. However, long articles must be sent by U.S. mail. Phone is (913) 272-5821 Ext. 31. FAX (913) 273-1980.

## 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.  
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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 Eastern Box Turtle (Terrapene carolina) a native of North America and Mexico. This species features a highly arched shell and free esanding toes which retain remnants of webbing. The hinge across the middle of the plastron enables the front and back parts to fold up, tightly closing the opening of the shell. Box turtles, which eat a diet ranging from worms and insects to fruits and berries, live entirely on land and do not even enter water during the winter. Instead they spend this time under fallen leaves or other decaying plant material. Our cover artist is Fawn Prevost, Primary Rainforest Keeper at the Topeka Zoo, Topeka, KS. Thanks, Fawn!*

**Scoops**

**and**

**Scuttlebutt**

### **Conference Proceedings In The Mail**

The 1993 Conference Proceedings from the Atlanta meeting have been mailed to those who ordered copies and to speakers/presenters. A limited quantity of copies are available for purchase for those who did not get their orders in on time. Cost is \$20 plus \$3.00 postage for orders outside the U.S. You may order by sending your check for this amount to AAZK, Inc., 635 S.W. Gage Blvd., Topeka, KS 66606-2066 or you may charge by phone using Visa or Mastercard by calling 1-800-242-4519 (U.S.) or 1-800-468-1966 (Canada). Sold on a first come, first served basis. After these copies are sold, individual papers may be purchased for \$3.00 each.

### **CORRECTION !! Please Note**

In the March 1994 issue the phone number for the conference hotel site for Conference '94 in Omaha was listed incorrectly. To make reservation you need to call the Holiday Inn Central at (402) 393-3950 **not** the 800 number listed last month. Sorry for the inconvenience.

### **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, 1 Conservation Place, 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.

### **Update on Chapter Logo Registry**

Because we have heard from very few of our 70+ Chapters concerning an update on their individual logos, it will be a few months before the registry will be ready to send to Chapters. We are having to contact those Chapters we have not heard from to verify their information. We regret the delay, but lack of response has made it necessary.

### **Memphis Chapter Donates Proceeds from Pocket Knife Sale**

The AAZK Board of Directors and the Administrative Office staff would like to thank the Memphis AAZK Chapter for their donation of \$355.00 which represents the proceeds generated from their sale of the 25th Anniversary Pocket Knives. The Chapter donated 100% of the proceeds from this project to AAZK, Inc. and at the close of their promotion, they have donated the remaining inventory to the Omaha Chapter for use at the 1994 National Conference. Many thanks to all the members of the Memphis Chapter for their generosity and support of AAZK.



## Message from the President.....

The Board of Directors will hold their mid-year board meeting on May 15-16, 1994 at the Administrative Offices in Topeka, KS. Please contact any Board member if you have any ideas, suggestions, or items for discussion. We look forward to input from the membership.

Nominees for the Certificates of Appreciation and Recognition will be considered by the Board at the mid-year meeting. The nominating letter must **specifically** mention the deed worth of such an award.

- a) The Certificate of Appreciation is given to an individual outside of the American Association of Zoo Keepers, Inc. for deeds on behalf of AAZK and its members.
- b) The Certificate of Recognition is given to an outstanding AAZK member for deeds on behalf of AAZK and which benefits all its members. A Committee Chair must serve a minimum of three years and return all pertinent AAZK materials to AO.

Please send all nominations to Board awards oversight Ellen Bradfield, Zoo Atlanta, 800 Cherokee Avenue S.E., Atlanta, GA 30315-1440. Successful nominees are chosen by unanimous vote of the BOD.

The Nominating and Election Committee Chair is vacant. The Chair will be responsible for running the 1995 National Board of Director's Election. Beginning with the 1995 election, the Chair will also be responsible for distributing ballots to an Executive Committee for election of our President and Vice-President. For more information on this position, please contact Rachél Rogers, Vice President at the San Diego Zoo, c/o Mammal Dept., P.O. Box 551, San Diego, CA 92112.

*Janet McCoy*

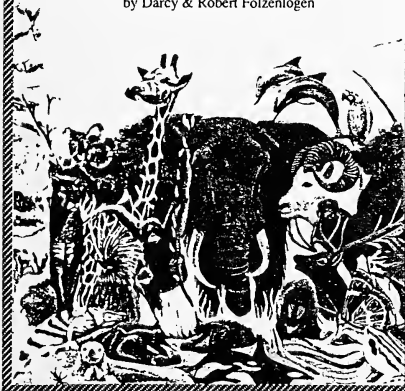
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# Coming Events

## Callitrichid Symposium

May 1, 1994

Hershey, PA

A symposium on the primate family Callitrichid will be held by the New World Primate Taxon Advisory Group preceding the 1994 Northeastern Regional AZA meetings. The symposium will focus on topics of husbandry, nutrition, behavior, reproduction, and field research. Registration fee will be \$25.00. For more information, contact Andy Baker or Beth Bahner, Philadelphia Zoo, 3400 W. Girard Ave., Philadelphia, PA 19104, (215) 243-1100, FAX: (215) 243-0219.

## 1994 Western Association of Fish and Wildlife Agencies Annual Meeting

May 14-19, 1994

Anchorage, AK

Theme for the meeting is "Partnerships in Conservation, a Vision for the Next Century". Issue sessions and speakers are planned on conservation partnerships, the Endangered Species Act, the economics of fish and wildlife, the politics of managing predators, etc. For registration information call 1-800-WAFWA94.

## 14th Annual Conference of the Association of Zoo Veterinary Technicians

September 25-29, 1994

Cleveland, OH

Held at the Cleveland Metro Parks Zoo. If you would like more information, please contact Rhonda Kesak, Cleveland Metro Parks Zoo, 3900 Brookside Park Drive, Cleveland, OH 44109; (216) 661-6500, ext. 259.

## Association of Avian Veterinarians

Sept. 27 - Oct. 1, 1994

Reno, NV

Conference site is the Nugget Hotel. The program will offer a wide variety of continuing education opportunities with concurrent programming to satisfy a broad range of interests. A Core Seminar, Basic Avian Medicine Symposium, Main Conference, and Practical Labs will be included. For further information or to request a Call for Papers application, contact the AAV Conference Office, 2121 So. Oneida St., Ste. 325, Denver, CO 80224-2552, (303) 756-8380, FAX (303) 759-8861.

## American Association of Zoo Veterinarians

October 23-27, 1994

Pittsburgh, PA

To be held at the Hyatt Regency Hotel. Workshops will take place on Sunday, 23 October. Conference will include sessions on reptiles and amphibians, nutrition, immobilization, avian species, primates, clinical and gross pathology, environmental enrichment, aquatic animal medicine, hoofstock and large mammals, carnivores and small mammals and case reports. In addition there will be both a student and graduate student competition and a poster session. For more information contact: Wilbur Amand, VMD, AAZV Executive Director, Philadelphia Zoo, 3400 W. Girard Ave., Philadelphia, PA 19104-1196; phone (215) 387-9094; FAX (215) 387-2165.

## Coming Events, Continued

### Association of Reptilian and Amphibian Veterinarians (ARAV)

October 22-23, 1994

Pittsburgh, PA

To be held in conjunction with the AAZV Conference listed above. This is the first conference for the ARAV and will include a general lecture session, a case report session and workshops on (1) basic reptile and amphibian medicine; (2) advanced reptile and amphibian medicine; and (3) pathology/necropsy techniques. For further information and registration materials contact Wilbur Amand at address given under AZA listing.

### The Exploitation of Mammals

November 25-26, 1994

London, England

A symposium organized by The Mammal Society and Universities Federation for Animal Welfare. The major theme concerns the various ways in which mammal populations are exploited world-wide, the concept of sustainable use and the resulting welfare considerations for animals involved. Program includes sessions on Mammal Game Ranching, Mammal-oriented Ecotourism; Mammals in Zoos and Circuses; Sport Hunting of Mammals; and Mammal Wildlife Trade and Conservation. For further information contact Victoria Taylor at UFAW, 8 Hamilton Close, South Mimms, Potters Bar, Herts, England EN6 3QD.

## **Bowling for Rhinos Update**

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



Thank you for all of your great efforts at raising money and holding "Bowling for Rhinos" (BFR) events in 1993. It is a great deal of work but we all know it is well worth it! Remember our goal this year is to exceed \$100,000. Money raised over this amount will be sent to Ujung Kulon National Park in Java, Indonesia to help save the last 47 Javan rhinos in the world and this unique ecosystem!

Please send your Chapter's check, financial sheet (from your BFR info packet) and a copy of your sponsor sheets to me as soon as possible after your event. In order to **win the trip** to the Ngare Sergoi Rhino Sanctuary or other prizes, **all money must be mailed to me by 1 September 1994**. Brunswick Corporation has donated five bowling balls again this year so the 3rd-7th money raisers will also win prizes.

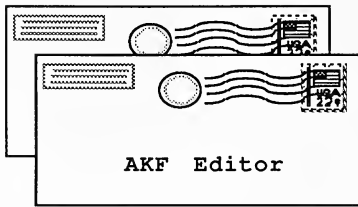
Susan Chan has requested that all Chapters which produce a BFR item, please send a sample or a photo and description of the item to AAZK Administrative Offices, 635 S.W. Gage Blvd., Topeka, KS 66606-2066. These will be preserved in the Association's historical archives and provide a more complete record of Bowling for Rhinos activities.

I now have BFR art, sample fliers, etc. on computer disks. If your Chapter would like a disk, please specify IBM or Macintosh and I will send you a free one. I will be unavailable from May 6-21, so call me with questions or sponsor sheet requests before or after these dates. I will be visiting Ujung Kulon gathering vital information for you during this time. Not to worry - this trip is not funded with BFR money. 100% of the money raised will continue to go directly to the sanctuaries. For anyone who would like more information on holding your own BFR Bowl-a-thon or any other information, please write:

Patty Pearthree  
c/o Bowling for Rhinos  
P.O. Box 199026  
Indianapolis, IN 46219-9026

or call (317) 322-8723





## Letters to the Editor

Dear Editor,

Well done folks! Your update on the Bowling for Rhino project has given the supporters of the Silvery Gibbon Project here in Perth reason for celebration (see p. 172, Vol. 19, No. 5 1992 AKF). We were thrilled to read about the proposal passed at the Atlanta conference. Extending your support to other rhino habitat is fantastic, you have maintained your support for the Ngare Sergoi Sanctuary in Kenya, and then encouraged your chapters to double their efforts to support Ujung Kulon National Park in Java as well. As you said in your article, Ujung Kulon is home to many endangered species, the Javan Gibbon (also called Silvery Gibbon) is one of those. This is an excellent example of using one high profile animal as a flagship species to assist many species in an environment and be able to raise awareness and support to protect the habitat as well.

Again, well done, a very generous and sound conservation move. We wish you good luck with your Bowling for Rhinos fundraising events, and encourage all AAZK members to GET BEHIND YOUR (PRI) MATES ! !

Best regards,

Reg and Dianne Gates  
Silvery Gibbon Project  
Staff and Docent project of Perth Zoo and the Australian Primate Society



## Great Lakes Regional Council Meeting Planned for July

The Wilds staff in coordination with the Columbus Zoo Chapter of AAZK will be holding the summer session of the Great Lakes Regional meetings. The meeting will be held at the Wilds site in southeast Ohio on Wednesday, 20 July 1994 at 7:00 p.m. The Wilds, also called the International Center for the Preservation of Wild Animals (I.C.P.W.A.) is a newly created, free-ranging breeding and research facility for endangered wildlife. This will be a good chance for those who have visited us before to see our progress and for others to come see who we are.

We welcome everyone to come early between 12:00 noon and 2:00 p.m. to set up camp, tour the facility from 3:00 - 5:00 p.m., and have a BBQ dinner from 5:00 - 7:00 p.m. The meeting will last approximately two hours and will include new and old business, Chapter updates and guest speakers. There will be overnight on-site camping for those willing to stay for the night activities. The meeting and associated activities are open to all interested AAZK members, not just the G.L. Region!

For more information contact Cathie Kreager at the Wilds at (614) 638-2804. We are asking to please R.S.V.P. before 8 July 1994 for those planning to attend.



# Births & Hatchings



## Folsom Children's Zoo, Lincoln, NE...announces significant B&H for 1993:

**Mammals** - 3.0.9 Rodrigues fruit bat (*Pteropus rodricensis*) [E/SSP]; 0.1 Bactrian camel (*Camelus bactrianus*) [DNS, 1st for zoo]; 0.0.4 Pygmy marmosets (*Callithrix pygmaea*) [T]; 1.0 Red panda (*Ailurus fulgens*) [E/SSP].

**Birds** - 6.3 Lesser Magellan geese (*Chloephaga picta picta*) [1st for zoo, rare in zoos].  
submitted by Debbie Baker, Chapter Liaison, Platte River AAZK, Lincoln, NE.

## Denver Zoo, Denver, CO...announces significant B&H for 1993:

**Mammals** - 1.0 Black howler monkey (*Alouatta caraya*) [CITES]; 0.2 Colobus monkey (*Colobus guereza kikuyuensis*) [CITES II]; 0.0.1 Cotton-headed tamarin (*Saguinus oedipus*) [DNS - CITES I, E]; 2.0 Emperor tamarin (*Saguinus imperator subgriseus*) [DNS - CITES II]; 2.0 Golden-headed lion tamarin (*Leontopithecus rosalia chrysomelas*) [CITES I, E/SSP]; 0.2 Pale-headed saki (*Pithecia pithecia*) [CITES II]; 1.1.1 Silvered leaf monkey (*Presbytis cristatus ultimis*) [1.0.1 DNS - CITES II]; 1.1 Amur leopard (*Panthera pardus orientalis*) [CITES I, E]; 0.1.4 Red panda (*Ailurus fulgens*) [CITES II/SSP]; 0.1 Serval (*Felis serval*) [CITES II]; 1.0 Siberian tiger (*Panthera tigris altaica*) [CITES I, E/SSP]; 4.2.1 Addra gazelle (*Gazella dama ruficollis*) [1.1.1 DNS - CITES I]; 1.0 Black rhinoceros (*Diceros bicornis*) [CITES I, E/SSP]; 0.2 Bongo (*Tragelaphus eurycerus isaaci*) [CITES III]; 0.2.1 Grevy's zebra (*Equus grevyi*) [0.0.1 DNS - CITES I, E/SSP]; 1.0 Hippopotamus (*Hippopotamus amphibius*) [DNS - CITES II]; 3.1 Roan antelope (*Hippotragus equinus*) [1.0 DNS - CITES II]; 2.4 Simitar-horned oryx (*Oryx dammah*) [1.0 DNS - CITES I, SSP]; 1.3.1 Red kangaroo (*Megaleia rufa*) [0.0.1 DNS -T].

**Birds** - 0.0.5 Bartlett's Bleeding Heart Dove (*Gallicolumba criniger*) [DNS - CITES II]; 0.0.5 Black-footed penguin (*Spheniscus demersus*) [0.0.4 DNS - CITES II]; 0.1.1 East African crowned crane (*Balearica regulorum gibbericeps*) [0.0.1 DNS - CITES II]; 1.2.6 Galah (*Eolophus roseicapillus*) [0.0.5 DNS - CITES II]; 0.0.3 Ostrich (*Struthio camelus molybdophanes*) [DNS - CITES II]; 2.1.6 Roul-roul (*Rollulus roulroul*) [0.0.4 DNS - CITES III]; and 0.0.1 Scarlet ibis (*Eudocimus ruber*) [DNS - CITES II]. submitted by Vickie Kunter, Chapter Liaison, Rocky Mt. Chapter, Denver, CO.

## Detroit Zoological Park and Aquarium (Royal Oak/ Detroit, MI)...announces the following significant B&H for 1993:

**Mammals** - 0.0.2 Japanese macaques (*Macaca fuscata*) [T]; 0.0.1 Matschie's tree kangaroo (*Dendrolagus matschiei*) [SSP]; 0.1.2 Red kangaroo (*Macropus rufus*) [T].

**Birds** - 0.0.9 Trumpeter swan (*Cygnus cygnus buccinator*) [0.0.5 donated to Michigan Department of Natural Resources for reintroduction program; 0.0.4 DNS]; 1st hatch for facility and pair(s) include the following: 0.0.3 African spoonbill (*Platalea alba*); 0.0.9 Black spur-winged goose (*Plectropterus gambensis niger*); and 0.0.2 Blue and yellow macaw (*Ara ararauna*).

**Reptiles** - 0.0.20 Emperor newt (*Tylotriton verrucosus*) [U].

**Fishes** - 0.0.12+ Charco palma pupfish (*Cyprinodon longidorsalis*) [recently discovered species known to be critically endangered]; 0.0.100+ Desert goby (*Chlamydogobius eremius*) [U]; 0.0.50+ Desert pupfish (*Cyprinodon macularius*) [E];

## **Births & Hatchings, Continued**

0.0.12+ Lake Victoria tilapia (*Oreochromis esculentus*) [E]; 3.1 Oscellated stingray (*Potamotrygon motoro*) [U]; 0.0.50+ Spot-bar mouthbrooder (*Haplochromis "spot-bar"*) [E]; 0.0.60 Muzquiz platyfish (*Xephophorus meveril*) [E]. submitted by Jessica Jozwiak, Vice President, AAZK Detroit Chapter.

### **Jacksonville Zoo (Jacksonville, FL)...announces the following B&H for 1993:**

**Mammals** - 3.1 Pygmy marmoset (*Callithrix pygmaea*) [E]; 1.2 Giant anteater (*Myrmecophaga tridectyla*) [1st time birth].

**Birds** - 3.0 Hammerkop (*Scopus umbretta*) [1st time hatch]; 0.0.2 Marabou stork (*Leptoptilos crumeniferus*) [U]; 0.0.2 Black-cheeked lovebird (*Agapornis nigrigenis*) [E] [1st time birth].

**Reptiles** - 0.0.4 Star tortoise (*Geochelone elegans*) [U]. submitted by Jennifer Gerez, Chapter Liaison, Jacksonville AAZK Chapter.

### **Zoo Atlanta (Atlanta, GA)...announces significant B&H for 1993:**

**Mammals** - 0.1 Western lowland gorilla (*Gorilla g. gorilla*) born 10 April '93 [parents on loan from Yerkes Regional Primate Research Center] [E/SSP]; 0.1 Sumatran tiger (*Panthera tigris sumatrae*) born 30 Sept. '93 [E/SSP]. submitted by Michelle Schireman, Chapter Liaison, Atlanta AAZK Chapter.

**McCarthy's Wildlife Center (West Palm Beach, FL)**...announces the birth of 2.1 African spotted leopards (*Panthera pardus*) [E].



## \* \* \* \* EDIBLE FLOWERS \* \* \* \*

Flowers often taste as good as they smell; they are high in vitamins (roses contain more vitamin C than anything else on Earth); and they look as good on your plate as they do in a vase.

**VIOLETS** - delightful on open-faced cream cheese sandwiches or tossed (both flowers and leaves) into salads.

**DAYLILY BLOSSOMS AND BUDS** - stuff them with cottage cheese mixed with herbs or with crabmeat, tuns or egg salad.

**DANDELIONS** - make vitamin-A-rich fritters, tempura, salads, cooked greens, desserts, wine and a fine coffee substitute. Start with the dandelion's flowers: Separate the yellow petals from the green petiole, and add them to rhubarb pie or to tossed green salads for color and vitamins. Or leave the petiole on the flower, and dip each blossom in tempura batter or pancake batter. Deep-fry them for a treat similar to fried clams. Many old cookbooks have a recipe for dandelion wine which is made from the blossoms. Not bad for a weed. But then again, as Emerson wrote in an 1878 essay, "a weed is a plant whose virtues have simply not been discovered." --from the book Nature's Everyday Mysteries.







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## **AAZK Award Nominations Are Now Being Accepted for 1994!**

The AAZK Awards Committee would like to begin accepting nominations for the **Meritorious Achievement (MA) Award** to be presented at the 1994 AAZK Conference in Atlanta. The deadline for all award nominations is **1 June 1994**. All award nominations received after 1 June will be reviewed for 1995, 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

### **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 Zoo and Aquarium Association (AZA) and the Canadian Association of Zoological Parks and Aquarium (CAZPA) Newsletters, Animal Keepers' Forum (AAZK), Awards, Honors and Prizes: Volume 1; United States and Canada. The latter is published by Gale Research Company based in Wheaton, MD and found in medium to large sized libraries across the U.S. and Canada.

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, aquaium or related facility. In the case of an AAZK Chapter, it must have been active for at least one year.
3. The nominee must be nominated by his/her peers or colleagues, while supporting nominations may be submitted by other zoo, aquarium or related facility personnel. The nominators need not be from the same institution.

## AAZK Award Nominations (Continued)

### 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.



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## Information Please

I am starting an enrichment program at our zoo. Currently we have Boomer Balls®, boxes, bags, and toilet paper rolls. I would like to hear what other zoos are using and what animals are involved. Send any information to: Patricia Carney, 15-2691 N. Mano St., Pahoa, HI 96778.

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We are a small municipal zoo and house mostly native Canadian species with a small sprinkling of exotics. I am searching for any environmental enrichment devices and/or enclosure furniture ideas which would correspond to the species we house. We are quite willing to provide a realizable honorarium for any ideas which are deemed to be practical and useable by our facility. The species which we are most concerned about are listed below, however, all ideas are welcomed and may perhaps be adaptable to suit our needs. Please send all ideas, drawings and correspondence to: Forestry Farm, Zoo, Attn: Brent L. Pendleton, Zoo Foreman, 1903 Forest Dr., Saskatoon, SK, Canada S7S 1G9 - FAX (306) 975-3326.

Species we house include: Mammals - Bighorn sheep, Capuchin monkey, Coyote, Fallow deer, Moose, Mule deer, Pronghorn antelope, Red fox, Sika deer, Timber wolf, White-tailed deer, Woodland caribou, Badger, Black bear, Common goat (Toggenburg), Dall sheep, Miniature donkey, Mouflon sheep, Plains bison, Raccoon, Red-necked wallaby, Stone sheep, Wapiti, Woodchuck; Birds - Bald eagle, Ferruginous hawk, Great horned owl, Long eared owl, Raven, Scarlet macaw, Short eared owl, Swainsons hawk, Bare-eyed cockatoo, Great gray owl, Kestrel, Military macaw, Red-tailed hawk, Senegal parrot, Snowy owl; Reptiles - Common king snake, Green iguana, Algerian (Schneiders) skink and Garter snake.

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Information is needed on the breeding habits of the African bateleur eagle (*Terathopius ecaudatus*) in captivity and proper sexing of the birds. We believe ours is a male and would like to pair him up. He is a long-term captive since 1984. Please send any info to: Marc McCarthy, McCarthy's Animal Exotics, 12943 61st North, West Palm Beach, FL 33412; (407) 790-2116.





# ENRICHMENT OPTIONS



Psychological Stimulation  
Behavioral Enrichment  
Activity Manipulation  
Occupational Husbandry

By Kayla Grams, Topeka Zoo and  
Gretchen Ziegler, Wildlife Safari Park

**TERRESTRIAL INSECTIVOROUS MAMMALS** - Rake the mulch substrate in which the animal is kept on with a potato hoe. Toss in mealworms and wait a minute or two before shifting the animal back into its enclosure giving the mealworms time to burrow down into the substrate allowing the animals to dig the mealworms out.

**ARBOREAL INSECTIVOROUS MAMMALS** - Toss mealworms into bromelids which is where arboreal mammals in the wild find rainwater and food. When watering plants, allow water to pool inside the bromelids.

**MONGOOSEES** - Occasionally provide a raw egg in the shell for the mongoose to put between its hind leg and throw it against a stationary object (rock) to break and gain access to the egg contents.

-- Kathy Kelly  
National Zoo, Washington D.C.

## ROTATING LOGS FOR GREAT APES

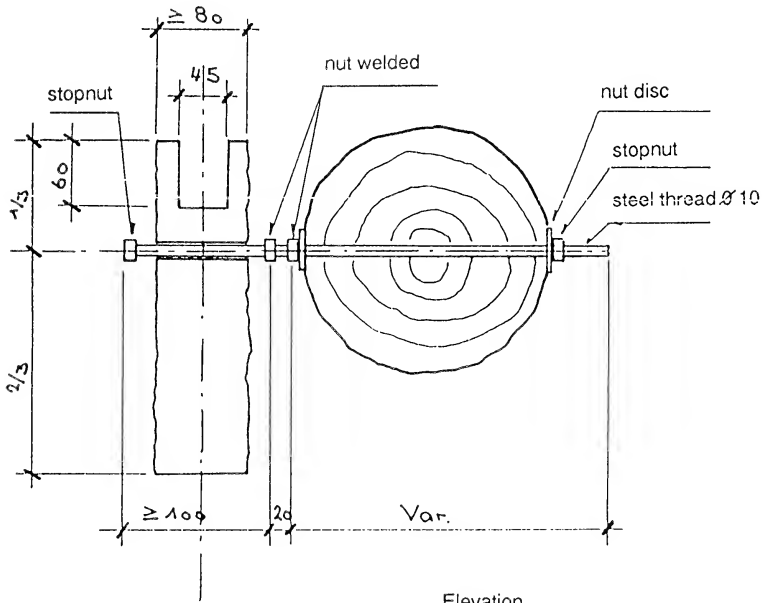
Playing with rotating logs which reward the animals is an attractive occupation for all ages in our Sumatran orangutan and Gorilla group.

The wooden logs are made of 200 mm long cuts of trunks from hazel, beech or maple. Longitudinal holes are drilled of 45 mm diameter and 60 mm depth. These holes provide space for different kinds of tidbits (nuts, raisins, mealworms,...). The logs are suspended on solid branches, drilling a transverse hole and fixing it with a bolt allowing rotation. The pinpoint should allow to hold the tidbits upside down. The logs are fixed as far outside the ceiling fence as they only can be reached with selected branches provided by the keepers. Using these sticks, the apes have to bring the log out of equilibrium and turn the log to get at the food. The device asks not only for skills and patience to turn the log but also for skills to catch the tidbits which are often a spoil of cagemates. To introduce zoo visitors to the activity, they have access to a model.

To give all the members of the group access to the device, we provide 20 logs for our group of 12 Orangutans and five for our eight-member Gorilla group. The logs are irregularly filled in absence of the animals.

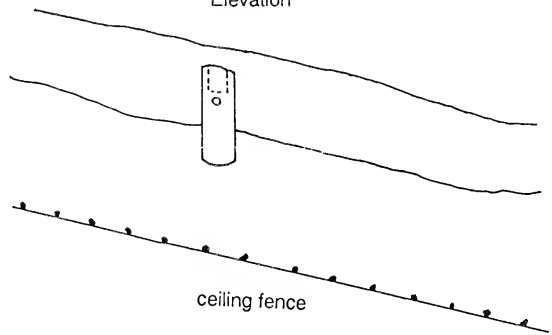
-- Kurt Rathfelder, Senior great ape keeper  
Zurich Zoological Gardens, Switzerland

Schemata

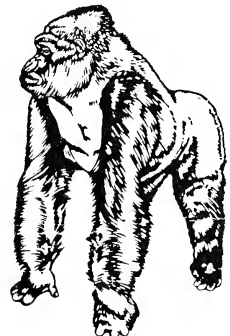
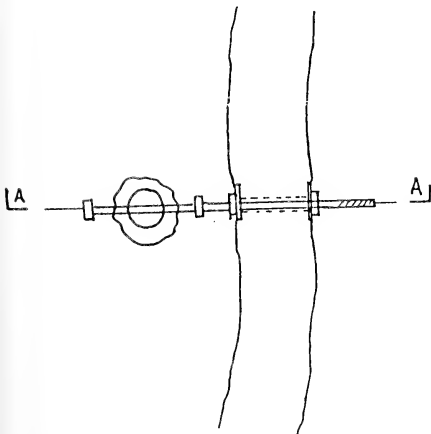


Elevation

Ground-plan

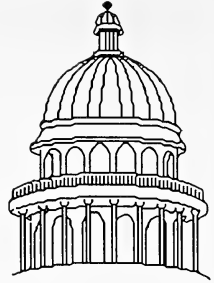


ceiling fence



# Legislative Outlook

Compiled by  
Phyllis Nilson-Wojcik  
Legislative Advisor



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## Captive-Bred Wildlife Regulations

On 11 June, 1993, the Fish and Wildlife Service (USFWS) published a proposal rule (58 FR 32632) that would revise the captive-bred wildlife (CBW) regulations and the definitions of the term "harass" and "enhance the propagation or survival". Extensive comment on the proposal was received. The USFWS has decided to eliminate education as the sole basis for justifying issuance of a CBW registration, and a final rule to that effect appeared in the *Federal Register* on 27 December 1993. Because of the complex and controversial nature of the proposed rule, this notice re-opened the comment period on the balance of the issues in the proposal, including the question of the value of education as it relates to endangered species permits. The USFWS accepted comments until 25 February.

From the initial comment period, a total of 658 written comments were received. Education was discussed in 544 letters, and was the only issue mentioned in 510 of them. The majority of these objected to the deletion of education from the definition of "enhance" in 17.3.

According to the *Federal Register*, several misconceptions were apparent in the responses. A large number of comments expressed concern or at least apparently assumed that deletion of education as the sole basis for obtaining permits and registrations would result in a ban on public display by many zoos, circuses and other entities. A small number were concerned that deletion of education might result in confiscation of animals currently used in educational displays.

As printed in the *Federal Register*, deletion of education would in no way affect the lawful possession of non-native wildlife that are currently being displayed or held by zoos, circuses, performers and other entities.

Regardless of the change in 17.21 (g) made by this final rule, those persons who lawfully possess listed species may continue to display them for commercial or non-commercial purposes without a permit under the Act as long as prohibited takings (e.g. harassment), transfers of ownership in interstate commerce in the course of a commercial activity, or exports are not involved.

Similarly, several commenters were concerned that collections of non-native animals could no longer be used for purposes of training in veterinary medicine, animal husbandry techniques, genetic research, etc. This is not the case according to the *Register*, this final rule will not affect the continuation of such activities with lawfully possessed animals.

The USFWS does have sincere doubts about the relative conservation benefits that are provided to non-native species in the wild from the public exhibition of living wildlife. As noted by the USFWS in its proposed rule:

.....thus far no one has come forward with examples of how exhibition of living wildlife has any specific affirmative effect on survival of non-native species in the wild. Therefore the Service proposes to delete education from the definition of "enhancement", but will consider changing its position in the final rule should specific evidence of conservation benefits be forthcoming during the comment period for this proposed rule.

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

The Service recommends that any serious submission in favor of retaining education in this definition should be accompanied by suggested objective standards that the Service could use to assess the conservation benefits of educational displays.

Several commenters on the proposed rule did suggest standards and criteria to enable such assessment, and these are under consideration for possible application to endangered species under 16.22. However, no comments were received that convince the USFWS that education has any role in the CBW registration system.

*>Federal Register / Vol. 58, No. 246 / Monday, 27 December 1993 / Rules and Regulations*

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## **ESA Reauthorization Still Under Consideration/Debate**

Congress continues to work on reauthorization of the Endangered Species Act which was originally enacted in 1973. Representatives Gerry Studds (D-MA), John Dingell (D-MI) and Jim Saxton (R-NJ) along with Senators Max Baucus (D-MT) and John Chaffee (R-RI) have introduced the "Endangered Species Act Amendments of 1993" -- legislation that would strengthen the ESA and the protection it provides to endangered species. The Studds-Dingell-Saxton and Baucus-Chaffee bills will increase the effectiveness of the provisions already in place by focusing efforts more on the protection of entire ecosystems, rather than individual species. More Congressional support for the ESA and the Amendments - H.R. 2043 and S. 921 - is needed. You are encouraged to write your Congressman or Senators and ask them to support the Studds-Dingell-Saxton and Baucus-Chaffee amendments. When writing be sure to identify which bill or issue you are writing about either by bill number of common name. Be brief and to the point and be sure to ask for specific action. Don't hesitate to add a personal touch if you have had direct experience with the ESA. Write at the following addresses: U.S. House of Representatives, Washington, DC 20515 or U.S. Senate, Washington, DC 20510.

*> excerpted from AZA Memo from Kris Vehrs 27 January 1994*

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## **Atlantic Salmon May Be Added to Endangered Species List**

The USFWS and the National Marine Fisheries Service (NMFS) have begun a joint study to determine whether U.S. populations of anadromous Atlantic salmon in New England should be listed as threatened or endangered under the Endangered Species Act. This consideration was prompted by a petition submitted by the Biodiversity Legal Foundation which provided information on current and historical Atlantic salmon populations, identified possible threats and cited numerous scientific articles. To ensure the review of the species' status is complete and based on the best available data, the agencies are asking the public for any information concerning the status of U.S. populations of the anadromous Atlantic salmon. The agencies will review the public comments along with all other available information to determine whether a listing action is warranted. A decision on whether to initiate listing procedures is due by October 1994.

*>Department of the Interior News Release 1/21/94*

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## **Proposed Budget Reflects Increased Commitment to Wildlife Conservation**

President Clinton's proposed fiscal year 1995 budget for the Interior Department's U.S. Fish and wildlife Service contains a 4% funding increase, including additional funds for endangered species conservation, habitat conservation planning that allows economic development to continue while protecting threatened species, and major ecosystem initiatives along the Mexican border and in South Florida and the Pacific Northwest. The proposed budget of \$1.2 billion reflects an increase of \$50.6 million.

## Legislative Outlook *Continued*

This includes \$2.9 million for ecosystem restoration activities in the Everglades and \$10.9 million for implementation of environmental protection programs in support of the North American Free Trade Agreement (NAFTA). The budget also provides \$21.3 million for the implementation of the Forest Plan for improved management of the Northwest forests to meet both economic and environmental needs, including \$10 million for the "Jobs in the Woods" initiative to provide employment opportunities for displaced workers.

Under the President's proposal, overall funding for endangered species conservation would climb 39% in fiscal year 1995 to \$81.4 million. The budget includes an additional \$8 million to increase assistance to state and local communities and private citizens in developing habitat conservation plans that will allow development to continue while conserving species protected under the ESA. The funding will allow the USFWS to implement multi-species, ecosystem-wide planning and recovery actions for protected species. *>excerpted from Department of the Interior News Release 2/7/94*



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

Leslie Rollman, New England Science Cntr. (MA)	Paul Guidetti, Roger Williams Prk Zoo (RI)
Patricia Feltham, Lutz Children's Museum (CT)	Elizabeth Nardi, Philadelphia Zoo (PA)
J. Blake Rushin, National Zoo (D.C.)	Sherry Lynne Crose, Greenville Zoo (SC)
Melanie Haire, Zoo Atlanta (GA)	Lisa Twiggs, Jacksonville Zoo (FL)
Angela Cecil, Jacksonville Zoo (FL)	Dennis Glaze, Jacksonville Zoo (FL)
Lynne Sutcliffe, Jacksonville Zoo (FL)	Bruce Holmes, Jacksonville Zoo (FL)
Melissa Stoneman, Jacksonville Zoo (FL)	Jason Mominee, Jacksonville Zoo (FL)
Angie Heggood, Jacksonville Zoo (FL)	Karen Donna, Jacksonville Zoo (FL)
Wendy Warner, Jacksonville Zoo (FL)	Gary Herman, Sea World of Florida (FL)
Janet Cooper, Miami Metro Zoo (FL)	Eric Jones, Lowry Park Zoo (FL)
Debbie Schumann, Cincinnati Zoo (OH)	Cathy Painter, Columbian Park Zoo (IN)
John Prevost, Minnesota Zoo (MN)	Karla Anderson, Minnesota Zoo (MN)
Ray Gilbertson, Zoo Montana (MT)	Retha Swatosh, Sissy's Exotics (MO)
Jennifer Cooper, Dallas Zoo (TX)	Patsy McFarlane, Caldwell Zoo (TX)
Jennifer Riley, Houston Zool. Gdns. (TX)	Colette DeGrange, Houston Zool. Gdns. (TX)
Jim Matthews, San Antonio Zoo (TX)	Sherrill Solum, San Antonio Zoo (TX)
Mary Slaybaugh, San Antonio Zoo (TX)	Luis Castro, San Antonio Zoo (TX)
Barbara Tubbs, San Antonio Zoo (TX)	Maria Browning, San Antonio Zoo (TX)
Jerry Fischer, San Antonio Zoo (TX)	Chris Pfefferkorn, San Antonio Zoo (TX)
Robert Brooker, San Antonio Zoo (TX)	Kelly Hantz, San Antonio Zoo (TX)
Gilbert Gomez, San Antonio Zoo (TX)	Celina Gomez, San Antonio Zoo (TX)
C.J. Rodriguez, San Antonio Zoo (TX)	Robert Webster, San Antonio Zoo (TX)
Wendy Hall, San Antonio Zoo (TX)	Julia McCormick, San Antonio Zoo (TX)
Jeff Perry, San Antonio Zoo (TX)	Adrienne Mitchell, San Antonio Zoo (TX)
Lance Tello, San Antonio Zoo (TX)	Guy Bulingame, San Antonio Zoo (TX)
Robert Snook, San Antonio Zoo (TX)	Linda Schmitt, Cheyenne Mt. Zoo (CO)
Craig Harmon, Cheyenne Mt. Zoo (CO)	Charles Gailband, Sea World of CA (CA)
Ann-Marie Plante, Biodome of Montreal (QB)	Peter Helmer, Riverview Prk & Zoo (ONT)
Lynn Klassen, Calgary Zoo (AB)	

### **New Contributing Members**

George Smith, Loxahatchee, FL

### **Renewing Contributing Members**

Richard A. Hahn, Executive Director, Catocin Mountain Zoo, Thurmont, MD  
White Oak Conservation Center, Yulee, FL  
Bonnie Jacobs, Senior Keeper, Lincoln Park Zoo, Chicago, IL  
David G. Westbrook, Director, Little Rock Zoo, Little Rock, AR  
Lynn Peckham, Docent, Los Angeles Zoo, Los Angeles, CA





# 1994 AAZK National Conference Omaha, Nebraska October 9 - 13, 1994

AMERICAN ASSOCIATION OF ZOOKEEPERS



"A KEEPER'S PERSPECTIVE"

## OOPS! CORRECTION!

The phone number for the Holiday Inn Central was listed as a toll-free 800# in the March 1994 issue of *AAZK*. The correct number to make hotel reservations by phone is:

1 (402) 393-3950

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And now a word from Zoolympics Chairperson (and our mascot) Bob Lastovica:

This year's Zoolympics promises to be one of the best. We have planned three events with five people to a team. A sign-up sheet will be posted at the Hotel's registration area. It will be a good time to reunite old teams from past conferences, and the perfect opportunity to create new ones.

Zoolympics will be held at the Heartland of America Park, located in downtown Omaha. A lovely park, it is close to downtown businesses, the Missouri River, and the City's "Old Market" area (filled with shoppes, restaurants and bars!).

If you have any comments or suggestions, please feel free to drop me a line. Oh, and sorry fellow "Frogmouths" from the San Diego Conference - I will be unable to participate in this year's events....

*Bob Lastovica*  
*Zoolympics Chairperson*

---

**Please Note:** The deadline to make reservations for the Post-Conference Trip to the Black Hills and Badlands of South Dakota has been extended to 30 June 1994. For more information or to make reservations, please contact:

Carol Cameron  
Affordable Adventures  
1-605-342-7691

1994 AAZK National Conference  
Omaha, Nebraska  
October 9 - 13, 1994

CONFERENCE REGISTRATION FORM

Name \_\_\_\_\_

Address \_\_\_\_\_

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

Zip/Postal Code \_\_\_\_\_ Phone (\_\_\_\_) \_\_\_\_\_

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

Position/Title \_\_\_\_\_

AAZK Chapter \_\_\_\_\_

Number of AAZK Conferences you have attended \_\_\_\_\_

AAZK Committee Member? \_\_\_\_\_

Presenting a Paper? YES \_\_\_\_\_ NO \_\_\_\_\_

Conducting a Workshop? YES \_\_\_\_\_ NO \_\_\_\_\_

Participating in Zoolympics? YES \_\_\_\_\_ NO \_\_\_\_\_

Bringing an Auction Item? YES \_\_\_\_\_ NO \_\_\_\_\_

Vegetarian? YES \_\_\_\_\_ NO \_\_\_\_\_ TYPE \_\_\_\_\_

T-Shirt ? YES \_\_\_\_\_ NO \_\_\_\_\_

SIZE: SM MED LG X-LG

Arrival Date and Time: \_\_\_\_\_

CONFERENCE FEES \* *(Does Not Include Cost of Conference Proceedings)*

AAZK Member or Spouse \$100.00 \_\_\_\_\_

Non-Member \$110.00 \_\_\_\_\_

Late Fee (after Sept. 1, 1994) \$ 10.00 \_\_\_\_\_

TOTAL FEE ENCLOSED \$ \_\_\_\_\_

\* Fees include a \$15.00 contribution to AAZK National.

Roommates are the responsibility of each registrant.

AMERICAN ASSOCIATION OF ZOOKEEPERS

Please make checks payable to: AAZK Conference '94

Return This Form and All Fees To:

Carla Wieser  
Omaha Chapter AAZK  
Omaha's Henry Doorly Zoo  
Omaha, NE 68107



"A KEEPER'S PERSPECTIVE"

# Update on Fundraising Manual and a Product/Project Survey

Hello again. First I would like to thank those who responded with survey forms since my last update:

Milwaukee County Zoo AAZK  
Jacksonville AAZK

Mt. Tahoma AAZK  
Puget Sound AAZK

I really appreciate your input. I firmly believe that this manual will be a great reference tool for all Chapters. If your group conducted a successful (or unsuccessful) fundraiser please send the information to me.

Now I am going to use a bit of peer pressure. I know from Chapter News and Chapter Annual Reports that certain fundraisers were conducted in the past on which I do not have any information. The following is a "wish list" of events that I would definitely like explained. If you were involved in any of these, please take a few minutes to complete the following survey form and return it to me at: The Philadelphia Zoo, 3400 W. Girard Ave., Philadelphia, PA 19104-1196.

*-Teri Maas, Fundraising Manual Coordinator*

## **"WISH LIST"**

**MESKER PARK** - Zoo Boo, "At the Zoo", Holiday Photo Booths, Bunny Do, Vending Machines

**DETROIT ZOO** - Zoo Boo, Vending Machines, Animal Mobiles

**TULSA AAZK** - Dog Wash, Keeping Up With The Keepers, Recycling

**SUNCOAST AAZK** - Zoo Doo

**MILWAUKEE** - Spaghetti Dinner, Cook Book, Ornamental Eggs

**CALDWELL ZOO** - Fish Feeding Machine, Garage Sale, Luncheon/Bake Sale

**NORTH CAROLINA** - Donut Sale, Quilt Raffle, Snake Photos, Bluebird Boxes, Adopt-A-Keeper, Zoo Run

**COLUMBUS** - Putt for Puffins, Auction, Recycling Trailer

**JACKSON** - Glow in the Dark Bracelet/Necklace, Christmas at the Zoo, Cookie Sales, Soda/Snack Machines

**SAN FRANCISCO** - Theater Benefit, T-shirts

**L.A. AAZK** - Patches/notepaper, Raffle Table, Carnival

**SAN DIEGO** - Photo Contest, Raffle, T-shirts

**MIAMI** - Raffle, Christmas Auction/Raffle

**VIRGINIA** - Ratite Eggs, T-shirts

**PORTLAND** - Owl Pellets, Zoo Doo, Picnic Raffles

**FLINT HILLS** - Twirl-a-coin, Magnetic Safety Signs

**SEDGWICK COUNTY** - Zoo Posters, Bake and Plant Sales

**TOPEKA** - Spiral Wishing Well, Elephant Footprints

**LITTLE ROCK** - Cook Book, Garage Sales, Zoo Run

**OKLAHOMA** - Cake Raffle, Fun & Games Carnival, Christmas Shopping at the Zoo

**DALLAS** - Logo Keychain/Thermometer

**SAN ANTONIO** - Coffee and Donut Sale

**GREENVILLE** - Rescue the Rainforest Buttons

**KANSAS CITY** - Garage Sale, Buttons, Recycling

**JOHN BALL** - Zoo Animal Buttons

**NEW YORK ZOO** - Silent Auction, BBQ

And ANY others, both successful or not.

# Fundraising Project/Product Survey Form

Name of fundraiser: \_\_\_\_\_

DESCRIBE ON FACING PAGE

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 a) excellent                      b) good                      c) fair                      d) poor

TIME FRAME

- 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)

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 photocopy 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.

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: \_\_\_\_\_

# 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) 986-6921 [w]; (204) 837-2916 [h]

### Regional Coordinators

- ALABAMA** - Fred Alvey, Zoo Atlanta, 800 Cherokee Ave. S.E., Atlanta, GA 30315  
**ALASKA** - Vacancy  
**ARIZONA** - Vacancy  
**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)** - Vacancy  
**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** - Vacancy  
**IDAHO** - Holly Liappas, Tautphaus Park Zoo, P.O. Box 50220, Idaho Falls, ID 83405  
**ILLINOIS** - Pat Swieca, 5710 W. Cullom Ave., Chicago, IL 60634  
**INDIANA** - Vacancy  
**IOWA** - Carla Wieser, Omaha's Henry Doorly Zoo, 10th St. & Deer Park Blvd., Omaha, NE 68107  
**KANSAS** - Vacancy  
**KENTUCKY** - Scott Wright, Cleveland Metroparks Zoo, 3900 Brookside Park Dr., Cleveland, OH 44109  
**LOUISIANA** - Rhonda Votino, 3535 Houma Blvd., Apt. 109, Metairie, LA 70006  
**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** - Tim Sampson, John Ball Zoo, 1300 W. Fulton, Grand Rapids, MI 49504  
**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** - Frank Leonard, Bronx Zoo, 185th & Southern Blvd., Bronx, NY 10460  
**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) 986-6921 [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** - Vacancy  
**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** - Vacancy  
**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  
**Atlantic Canada** - Bernard Gallant, RR # 7, 1081 Ryan Road, Moncton, N.B., E1C 8Z4 T5P 2T9

1994 AAZK National Conference  
Omaha, Nebraska  
October 9 - 13, 1994

HOTEL REGISTRATION FORM

Name \_\_\_\_\_

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

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

Telephone \_\_\_\_\_

Rooms will be held until 6PM only unless guaranteed with a major credit card.

Diner's Club \_\_\_\_\_ Master Card \_\_\_\_\_ AmEX \_\_\_\_\_ Discover \_\_\_\_\_ Visa \_\_\_\_\_

Card Number \_\_\_\_\_ Expires \_\_\_\_\_

Once guaranteed, there will be no refund for cancellation.

**ROOM RATES:** *(Includes Sales Tax)*

_____ 1 Double Bed	\$66.90	Arrival _____
_____ 2 Double Beds	\$66.90	Departure _____
_____ 1 King Bed	\$66.90	Check-in: 2:00 P.M.
_____ Holidome (poolside)	\$82.51	Check-out: 12 NOON

\* Not responsible for roommates

Parking at the Holiday Convention Center is free for those registered at the hotel.

To make reservations by phone, dial (404) 393-3950

Please return this form to:

HOLIDAY INN CENTRAL  
3321 So. 72nd St.  
Omaha, NE 68124



Registrations are due by 10 September 1994

# Conference '94 - Omaha, NE

**HEY !**

## **It's the SECOND CALL for PAPERS and POSTERS !**

The Program Committee is anxiously awaiting the arrival of your paper and poster abstracts, and would again like to encourage submissions in the areas of conservation, reptiles/amphibians, aquaria, invertebrates, and enrichment, though all topics will be considered for presentation.

Abstract guidelines can be found in the January '94 issue of AKF.

**Please Note:** No refunds will be given to presenters.

Please send abstracts to:

Cathy Socha, Chairperson  
Program Committee  
Omaha AAZK Chapter  
3701 South 10th Street  
Omaha, NE 68107

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### **HELPFUL HINTS for POSTER PRESENTERS**

1. Each poster should contain the following:
  - Title
  - Author and Institution Affiliation
  - Abstract
  - Title the different sections of your poster. They may include: Introduction, Material and Methods (Procedures), Results, Conclusions, References, and Acknowledgments.
2. Make the poster simple and easy to follow. Use good science, an uncluttered design, and good organization.
3. Use concise text, presenting only enough data to support your conclusions, but don't forget to state the significance of your research.
4. Allow at least 6 weeks to prepare your poster. This will permit time to gather materials, take photos, assemble your poster, and allow for setbacks.
5. Maximum poster size will be 4' X 4'. It should be readable from a distance of 5-6 feet.
6. When mounting your poster, please take into account that all posters will be displayed by hanging them on walls using pins.
7. A complete set of guidelines will be sent to presenters upon acceptance of their poster abstracts.



# The Birth of a Black Rhinoceros at the Cheyenne Mountain Zoo

By

Tracey L. Anderson, Veterinary Technician and  
Vicki Sawyer Gough, Hoofstock Keeper  
Cheyenne Mountain Zoo, Colorado Springs, CO

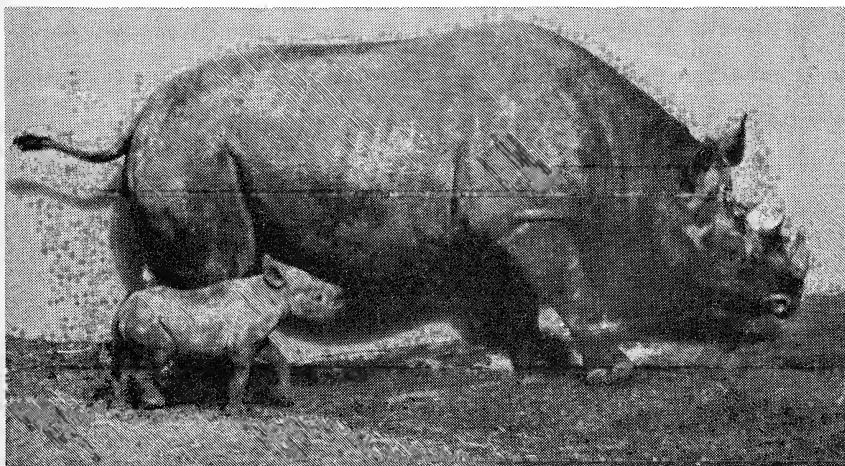
On 20 October 1993 a male Black rhinoceros (*Diceros bicornis*) was born at Cheyenne Mountain Zoo. Three weeks prior to parturition a remote video camera was set up in the female's stall to monitor the impending birth. Heavy rubber mats were placed on the concrete stall floor and grass hay bedding was put down.

Sometime between 1430 and 1630 hours, our female Black rhino gave birth. The calf was lying motionless on an unbedded portion of the stall when the keeper first observed him. The mother was very nervous and not paying any attention to the calf. At 1700 hours the decision was made by the General Curator and Staff Veterinarian to separate the mother from the calf to evaluate its condition.

On initial examination, the calf weighed 29.5 kg (65 lbs.) and his body temperature was 29.4° C (85° F). He was very weak and unable to stand or hold his head up on his own. He was placed on blankets and a space heater was placed beside him. Soon after the space heater was turned on the power to the barn went out. Towels heated in a microwave oven were used to warm him up. Power was restored in about an hour.

The veterinary staff attempted venipuncture for blood collection and to hook up an IV catheter for fluids, but the calf's blood pressure was so low that the attempt was unsuccessful. The calf was vaccinated with 5ml of a 7-way Clostridium and given 300 I.U. of Vitamin E by IM injection.

At 2000 hours the calf's body temperature was up to 35.5° C (95° F). He was responsive and could stand with assistance. We offered warmed 5% Dextrose by bottle and he managed to suckle about 118 mls. We then offered bovine colostrum by bottle. He took about 473 mls in two separate feedings about one hour apart.



"Shyanne", 0.1 Black rhinoceros (*Diceros bicornis*) with her 1.0 offspring which was born on 20 October 1993 at the Cheyenne Mountain Zoo, Colorado Springs, CO. (Photo by author)

## **Birth of a Black Rhinoceros at Cheyenne Mt. Zoo, Continued**

At 2130 hours the calf was standing by himself and was steady and alert. We decided to reintroduce the calf to its mother. Two keepers and the Associate Curator stayed in the barn out of sight in case an emergency separation was required. The rest of the group viewed the reintroduction on the video monitor at a remote location.

The calf was placed in the birthing stall. The cow was in an adjacent shift stall and could see the calf through a "howdy door". After the cow settled down, the calf was moved to the far corner of the stall. The "howdy door" was opened and the cow allowed to enter. The cow made an immediate bluff charge at the calf, but stopped short and began investigating him. Within 15 minutes she was fairly calm, so keepers left the barn and joined the rest of the group viewing the monitor.

By 0200 hours on 21 October, the mother was showing more and more positive interactions with the calf. The calf was standing and seeking out the teat. The video monitor was viewed for the rest of the early morning hours. No nursing was observed. The mother was up and down and pacing all night with the calf following her around when he wasn't sleeping.

On 21 October, at 0830 hours a confirmed nursing was seen. The nursings became regular and the calf became stronger and more active every day. On 16 November, the calf and mother were separated to give the calf 300 I.U. of Vitamin E by injection and to get a current weight. His weight was up to approximately 39.5 kg (87 lbs.).

### **Breeding History**

Cheyenne Mountain Zoo maintains one pair of Black rhinos. The male, "Aki" was purchased from Hiroshima Asa Zoological Gardens, Hiroshima, Japan. He was born 13 March 1981 and CMZ acquired him on 10 November 1983. The female, "Shyanne" is on breeding loan from the San Francisco Zoo and was brought to CMZ from the Kansas City Zoo on 14 January 1987. She was born on 11 December 1982.

Beginning on 3 August 1989, our pair of Black rhinos were placed together during the day with access to the barn and the yard. Mountings were observed but with no confirmed copulations.

Beginning on 27 April 1992, the pair were left together on a 24-hour basis with total access to the outside yard and barn stalls. Daily reports show sparring, fighting and periods of no interaction. The pair were separated with no further contact on 15 July 1992.

### **Determination of Pregnancy**

The keepers had been observing the female's cycles and by 4 August 1992 she appeared not to be cycling. Due to a chronic vaginal discharge the female was immobilized to do a rectal ultrasound. Drs. Nancy Kock from Colorado State Vet School, Richard Cambre from the Denver Zoo and Norm Armentrout from the Pueblo Zoo assisted Staff Veterinarian Dr. Mike Burton with the procedure. She had small raised lesions on her vulva, which were biopsied. The ultrasound revealed multiple 5-10 mm follicles on the right ovary. She also had a possible cystic follicle. The left ovary could not be visualized. A 3-4cm "vesicle" was seen in one uterine horn which was consistent with a possible early pregnancy. The vesicle was similar in size to 18-20 day vesicles in equines. At the St. Louis Zoo rectal ultrasound of pregnant female Black rhinos had similar size vesicles at 45 days of gestation.

On 1 September 1992, saliva that had been collected 3-4 times a week for several weeks was sent to the San Diego Zoo for hormone analysis. The results indicated the female was not cycling, but it did not confirm positive pregnancy. Salivary hormones are not accurate in detecting pregnancy until 90 days into gestation (personal communication, Nancy Czekala, 1992).

On 2 December 1992, Dr. Nancy Czekala, Reproductive Physiologist at the San Diego Zoo, confirmed positive pregnancy based on salivary hormones. Based on the hormonal evaluation and the ultrasound results, a late October 1993 due date was estimated.

## Birth of a Black Rhinoceros at Cheyenne Mt. Zoo, *Continued*

### In Conclusion

This calf marks a very significant birth for the Cheyenne Mountain Zoo and the Black Rhino SSP. It is the first viable offspring at the Zoo in 21 years. Both our male and female Black rhinoceros were unrepresented genetically until this birth.

As of this writing, mother and calf are doing fine and exhibiting all normal behaviors. (Article submitted to AKF 10 Jan. 1994).

### Acknowledgements

We wish to thank the keeper, curatorial and veterinary staff for all their hard work and long hours. Special thanks to Dr. Mike Burton for his guidance in the writing of this paper.



## Book Review



### Primate Paradigms: Sex Roles and Social Bonds

By Linda Marie Fedigan - 1992 (Originally pub. 1982)  
The University of Chicago Press  
5801 S. Ellis Ave., Chicago, IL 60637  
386 pgs. Paperback - \$18.95

*Review by Kathy Clark  
Senior Zookeeper  
Franklin Park Zoo, Boston*

When Primate Paradigms was republished in 1992, the author updated the version with a new introduction. In the introduction, Fedigan acknowledged the work of other, predominantly female, primatologists who had begun studying female primates and their social roles in the 1980's. Fedigan writes: "The basic coverage of primate sex roles and social bonds that Primate Paradigms first provided...is still sound." In fact, due to the work of those such as Shirley Strum, Sarah Hardy and Jeanne Altmann, readers of Fedigan's work can better appreciate and understand the outline she provides.

The author attempts to correct the imbalance that focused pretty much on male primates, virtually ignored female primates, and which led to a rather skewed understanding and vision of primate society and behavior. Fedigan emphasizes that this neglect of the females' role also put an overemphasis on primate aggression. Fedigan stresses the equal importance of the role of the female and how that role ties into the group structure and society as a whole.

The book is divided into five sections. The first section - "Constructing the Paradigm" - gives a good basic introduction to primates and begins an exploration of behavior, dimorphism, sex roles and primate society. Later sections delve more completely into roles, kinship and parental care. The fourth section concentrates on nine different species including Gelada baboons, Chimpanzees, Vervets and Marmosets, with respect to their lifeways and the role their gender plays. The fifth section discusses evolutionary theory and sociobiology, and how these have affected how we view male and female primates.

Primate Paradigms is very readable. It is well-written, thoroughly researched and provides some thought-provoking and challenging ideas. The discussions and arguments that the author sets forth are convincing, and backed up with extensive data. There is also a useful and elaborate bibliography. The work is further enhanced by illustrations done by Linda Straw Coehlo. I would recommend this book to anyone interested in animal behavior, particularly that of primates, and those interested in expanding, and updating some rather myopic research findings and methods of the past.

## **Book Reviews, Continued**

### **Bustards, Hemipods and Sandgrouse**

By Paul A. Johnsgard  
Oxford University Press, New York, NY  
276 pgs. Hardback \$180.000

*Review by Sara Hallager, Keeper  
National Zoological Park  
Washington, DC*

Bustards, Hemipods and Sandgrouse is a book that is guaranteed to be well received within the avian community. Paul Johnsgard has done an excellent job in reviewing these three groups of arid adapted birds. In addition, there are beautiful color plates by Major Henry Jones (from the collection of the Zoological Society of London) of all 51 species of birds described in the book.

The book begins with five comparative biology chapters. Within each chapter each family of birds is discussed and compared. Chapter One, "Taxonomic history and phyletic relationship", provides an excellent table showing 46 comparative traits of the three groups, although Johnsgard stresses in the beginning of the book that there is little evidence that these three families are closely related. There are also phylograms of each family. In Chapter Two, "Zoogeography and evolutionary trends", there are distribution maps for each family. In addition, there are excellent drawings for each family showing variation between the species. In Chapter Three, "Behavior", Johnsgard describes the behavior within each family. This includes sections on egocentric behavior, protective and evasive behavior, flocking and territorial behavior, and mating behavior.

Chapter Four, "Breeding biology", provides comprehensive information on various aspects of the breeding biology of these three families. Finally, in Chapter Five, "Exploitation and conservation", Johnsgard provides the reader with a depressing but realistic view of the status of the three families while concentrating mainly on six species of bustards that are either endangered or threatened. He concludes by briefly describing the conservation measures being undertaken throughout the world to save these birds.

The rest of the book is divided into three sections with each section describing in detail every species within the family. For each species, Johnsgard provides distribution maps, body measurements, physical descriptions, biology and ecology, social behavior, reproductive behavior, evolutionary relationships, current status and future of the species. In addition, there are numerous drawings of many of the birds unique breeding displays and social behavior. Never before has there been a reference book such as this for these species of birds.

Although the book is a bit expensive for anyone who has an interest and love of any of these birds, the information to be learned from this book is invaluable, and the book will pay for itself by enriching the reader's knowledge of these unique birds.

### **Phylogeny and Classification of Birds:**

#### **A Study of Molecular Evolution**

By Charles G. Sibley and Jon E. Ahlquist  
Yale University Press 1990. New Haven and London.  
976 pgs. Hardback \$100.00

*Review by G. Suzanne Chacon  
Bird Propagation Keeper  
Denver Zoological Gardens  
Denver, CO*

The authors of the book use DNA-DNA hybridization in estimating phylogeny of about 1,700 species of birds. The technique measures how much the DNAs of different species have changed since they diverged from their last common ancestor. Because genetic distance increases with time, the method provides a basis for inferring the phylogeny of a group from a matrix of the genetic distances separating pairs of species.

The DNA analysis is presented by 385 figures of DNA melting curves and phylogenetic trees. Many of the groups conform to earlier classification and are supported by DNA evidence. Other groups are broken into smaller groups such as the Coraciiformes and the

## Book Reviews, *Continued*

Piciformes. Certain problems of classification were not resolved by their methods. The introductory chapters detail gene structure and regulation. This is very helpful to readers with limited knowledge of genetics and molecular biology. Each following section of the book begins with a summary of morphological characteristics used in previous classification followed by a new classification based on the authors' work. Also included is an historical review of the classification of the group. This part provides an excellent overview of avian systematics, interesting and beneficial to all ornithologists.

Although there is criticism by professional systematists of the methods used by the authors, their work will be cited, tested and re-evaluated in the future. Because of the technical content this is not an easy book to read. To the scholar, this work would make a valuable reference book in any personal collection and should be added to every zoo library.

### The Way of the Wolf

By. L. David Mech

Voyageur Press, Inc. P.O. Box 338

123 N. Second Street, Stillwater, MN 55082

120 pgs. Hardbound

*Review by Robert Berghaier*

*Animal Keeper, Philadelphia Zoo*

*Philadelphia, PA*

Of the world's wild creatures, wolves are surely among the most fascinating. The nature of a wolf pack and the accompanying behaviors inherent in its structure provide ethologists with a wealth of material on canine social systems. The wolf, which until relatively recently was the most widely distributed large wild mammal in the world (a direct quote from the author), provides ecologists on three continents with classic observations of predator/prey relationships. The average person also has almost daily contact with the wolf through our own domestic version of the animal - the dog.

The author, L. David Mech, has spent nearly his entire 35-year career studying wolves and their prey. He has authored two other books and numerous scientific articles on the subject. David Mech is the the foremost and most quoted authority on wolf ecology and behavior in the wild.

The Way of the Wolf is a nonscientific account of what is known about the wolf and its behavior. Its main purpose is to try to describe the life of wolves in the wild. When information on certain aspects of wild wolf behavior is lacking, that information is supplied by studies on captive animals.

The book consists of seven chapters covering the entire animal: its form, social structure, communications, hunting, travel, courtship, and finally, its conservation. Each chapter contains excellent photographs. Many are of captive wolves or staged shots of tame animals in a wild environment. The remaining pictures are remarkable and obviously hard-earned photos of wild wolves engaging in natural behaviors. Among these are some truly beautiful examples of wildlife photography.

I cannot recommend The Way of the Wolf for use as a definitive resource book on wolves. However, it does contain a list of suggested readings which would make exceptional reference sources. The book would make a wonderful gift for someone who has a great deal of interest in wolves, or domestic dogs for that matter. For the dog owner, the book provides the basics of captive behavior that would help explain why their chosen pet has its unique and sometimes peculiar set of characteristics. The book could be used as an introductory level (high school or below) text on animal behavior and predator/prey relationships. The Way of the Wolf also serves a useful purpose by showing those who misunderstand and fear the wolf that their anxieties about the animal are unfounded. Therefore, the book can be an important aid in supporting the various wolf reintroduction efforts that have been launched in the Rockies and the Southwest United States.



# The Power of One

*By Antony Taggart, Volunteer Keeper & Fundraiser  
Quistococha Zoological Park, Peru*

With most of us, when we think of South America we think of the mighty Amazon River, the jungle and the richness in species diversity in both flora and fauna. Not many of us have much first-hand experience in regards to the injustices against animals which occur, let alone be aware of the struggles that any South American zoo might face on a day-to-day survival basis. Unfortunately, for one reason or another, it is impossible for us to individually get involved and make an incredible difference in South America, or it was, until now!

In May of last year I left behind the creature comforts of Australia to pursue a new angle of my animal husbandry career - this being working in a volunteer capacity in the Peruvian Amazon in the hope of making some contribution to the conservation of the rainforest and all of her inhabitants.

I first began working for a non-profit organization 150 miles upriver from Iquitos, Peru, but I soon turned my focus and energy towards efforts at the Quistococha (Key-sto-ko-cha) Zoological Park. Founded some 40 years ago, the zoo now also serves as a sanctuary for animals confiscated from poachers and traffickers and as an area of interest for local and international visitors. The zoo is totally unique in the sense that it only houses indigenous species local to the Peruvian Amazonian area while being located on a large 360-acre area of beautiful secondary rainforest approximately six kilometers south of the township of Iquitos, Peru.

But it is an unfortunate stem of reality that the animal facilities and cages at the zoo do not reflect the magnificence of the surrounding jungle. To say that the zoo's current enclosures inadequately house the animals would be a vast understatement, as the cages are mainly constructed from raw timber from the jungle with mesh surrounding the outside of the frames. Seeing these cages housing such magnificent animals as Ocelots (*Felis pardalis*), Pumas (*Felis concolor*) and other such outstanding members of more than 15 other South American families, makes you truly wonder how something like this could occur in this day and age. In addition to the fact that the cages are rundown and in a bad state of repair, they are also overcrowded, small in size and offer no mental stimulation for their occupants. This certainly makes the situation unacceptable on a professional, international level.

It is for these reasons that I volunteered my seven years experience as an animal keeper in Australia as well as my six years of theoretical experience, four in Applied Science in Animal Studies with the remaining two years in horticulture, so as to assist the animals and staff of this facility. My five-month stay in Iquitos was filled with highs and lows. An example of this was that I was initially told that political and financial assistance would be given to the zoo over the coming years starting in October of 1993. These finances would completely remodel the zoo making it one of the best in South America. Unfortunately, as of this writing, Quistococha Zoological Project has now been officially classified as "A Stillbirth".

After accepting the fact that the zoo was not going to get any assistance from the government of local sponsorship, the fact remained unaltered that the zoo needed assistance so I decided to go on a one-man fundraising and awareness crusade within the United States. My hope was, and still is, to try and raise enough money, material donations and public interest to improve conditions and the public standpoint of the zoo. Miami, Florida was chosen as the site to begin my work.

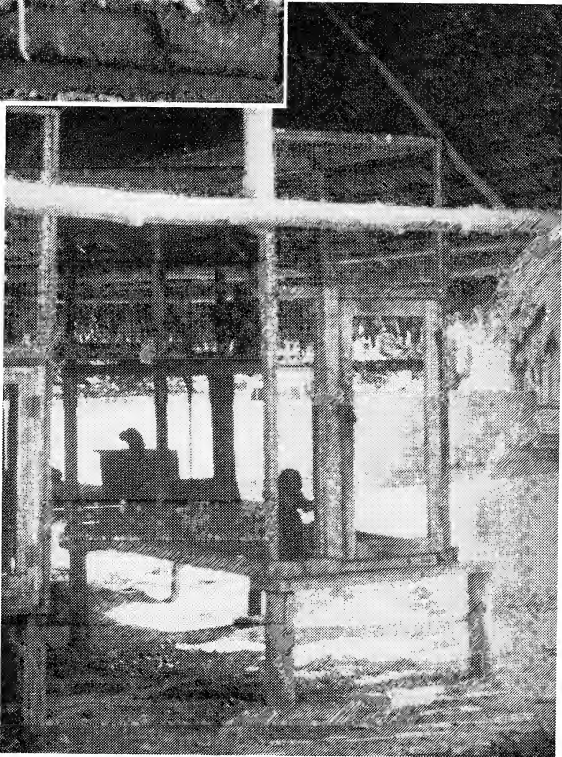
I have now been in Miami since 24 October 1993 and have kept in contact with ZCOG, AZA and AAZK and will continue to pursue these routes, however, after realizing that the greatest change can often come from just one individual or a group of determined individuals, I felt the need to reach out to all of you now in the hope that you may be able to assist me in this special conservation project.

**The Power of One, Continued**



Housed together in this 4' x 4' rundown enclosure this juvenile female Puma (*Felis concolor*) shares her quarters with a semi-mature female Ocelot (*Felis pardalis*). This major problem of overcrowding in small, rundown enclosures is an all too common sight at the zoo.

Arranged in lines these 4' x 4' enclosures house a large variety of species native to the Peruvian Amazon. Some species include such animals as Pumas, Ocelots, Pygmy marmosets (*Cebuella pygmaea*), Common squirrel monkeys (*Saimiri sciureus sciureus*), just to name a few.



(Photo provided by the author)

## The Power of One, *Continued*

To enlighten you on the more immediate problems facing the zoo, other than financial, listed below are some challenges:

- 1) Overcrowding of the current animal enclosures thus risking the outbreak of disease and unacceptable stress for the animals.
- 2) Housing animals in small, rundown, collapsing enclosures where the risk of injury or escape to the animal are above an acceptable risk level. This factor stresses the need for the zoo to urgently receive any building materials to assist in the reconstruction of more natural enclosures for the zoo inhabitants.
- 3) Trying to cope with the growing number and variety of confiscated animals being brought into the zoo by the environmental police. Thus, a long-term public education and awareness program would need to be implemented to try and curb this growing trend.
- 4) Increased perimeter security is needed so as to have greater control of the public's as well as stray dogs', movement in and out of the zoo. This would be in the form of receiving donated chain-link fencing and any other materials needed in its construction.
- 5) Improving the husbandry techniques and knowledge of the twelve local keepers currently working at the zoo. This would simply require implementing a keeper training program at the zoo with the aid of the appropriate literature and practical hands-on skills.
- 6) Developing a proper veterinary clinic and quarantine station which could adequately cope with the day-to-day veterinary problems faced by such a zoo, as well as the quarantine problems that occur from having animals of doubtful origins brought to the zoo on a nearly daily basis. These are two areas, more so than any of the other listed above, which require professional guidance and assistance, as there is a lack of professionally trained individuals and equipment to fulfill this need at the zoo.



**Housed in this 4.5' x 3.5' cage, this pair of Ocelots have little room to exercise as well as having virtually no mental stimulation. Along with this they are within full contact with members of the public thus increasing the risk of disease transfer between the animals and visitors.**



## The Power of One, *Continued*

These are but a few of the daily problems faced by myself and the other animal keepers within the zoo. It is my belief that unless things are to drastically change within the near future, considering the increasing variety and rarity of some fauna species coming into the zoo, that the loss of animal life and hence the loss of valuable genetic material will be tragic to the ecology of the surrounding regions.

A non-profit organization is currently in the process of being established in order to receive financial and material goods donations here in the U.S. on behalf of the Quistococha Zoo in Iquitos, Peru.

You have the power to change, the power to make a difference and to save so many unique species of animals; the power to transform a zoo that is struggling to survive into a powerful conservation and education tool. Such a power comes from within, it is the power of change, it is the Power of One. It is with your help that we can make a change. Please think about all that you have read today and consider the great changes that we can make together.

On behalf of all the animals and staff of the Quistococha Zoo, I thank you in advance for any assistance you may be able to offer for the improvement of this beautiful facility. For more information, you may reach me by writing Antony Taggart, 252 N.E. 87th St., El Portal, FL 33138 or by calling (305) 965-5952 or (305) 758-8032.



## Information Please

We are interested in the introduction of olfactory stimulus as enrichment for a mixture of African primates, carnivores, hoofstock, and a variety of mammals. We would appreciate input on any substances that have been found effective as stimulus, be it spices or natural animal scent. Also any unusual presentation ideas of these substances would be appreciated. Please respond to: Amy McGuire - African Pavillion, North Carolina Zoological Park, 4401 Zoo Parkway, Asheboro, NC 27203 (910) 879-7672.

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We are interested in introducing enrichment items to our African warthogs. We would like to reduce aggression and increase natural behaviors (scent marking, digging, burrowing). Any input on Warthogs or African swine would be appreciated. Please respond to: Vicxoria Cloninger, North Carolina Zoological Park - ZOG/HOG, 4401 Zoo Parkway, Asheboro, NC 27203 (910) 879-7663.

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## *Earth Day is April 22nd!*

As Earth Day approaches, here are a few things to think about. Americans are water hogs. The average American uses more than 100 gallons of water a day! To conserve water, try these tips:

1. Install a low-flow showerhead and cut bathroom water use.
2. Turn off water while brushing your teeth, shaving, or washing dishes.
3. Repair leaky faucets or toilets.
4. Don't dump toxic chemicals or motor oil down the drain.
5. Use phosphate-free detergent for dishes and laundry.

--from

*Nature News, The Nature Book Society*



I dreamed our planet  
got well again because  
everyone who lived here  
started doing things  
to help it.



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

# Chapter News

**AAZK, Inc. is pleased to welcome three new Chapters to the Association. We wish them every success with their endeavors. The new Chapters are:**

**Capron Park Zoo AAZK** - located in Attleboro, MA, this Chapter may be reached c/o the Capron Park Zoo, 201 County St., Attleboro, MA 02703. Their officers are:

President.....Shira Hinsley  
Vice President.....Susan Rifai  
Secretary.....Jean Paul Therien  
Treasurer.....Patricia Sohl  
Chapter Liaison.....Shira Hinsley

**Pueblo Zoo AAZK** - located in Pueblo, CO, this Chapter may be reached at 3455 Nuckolls Ave. (City Park), Pueblo, CO 81005. Their officers are:

President.....Teri Richert  
Vice President.....Holly Tozier  
Secretary.....Jennifer Dawson  
Treasurer.....Rod Addington  
Chapter Liaison.....Michele Smith

**Minnesota Zoo AAZK Chapter** - located in Apple Valley, MN, this Chapter may be reached c/o Minnesota Zoological Gardens, 13000 Zoo Blvd., Apple Valley, MN 5524. Their officers are:

President.....Laura Trechsel  
Vice President.....Timothy Hill  
Secretary.....Pascale Tolan  
Treasurer.....James Johnston  
Chapter Liaison.....Timothy Hill

## **San Diego AAZK Chapter**

New Officers for our Board of Directors are:

President.....Nicki McGahey  
Vice Pres.....Patricia Olow  
Secretary.....Andrew Simmons  
Treasurer.....Vickie Steele  
Liaison.....Rachél Rogers

Now that we have elected new representatives for our AAZK Chapter we are very enthusiastic about the coming year. You might recognize our liaison Rachél Rogers - yes, that's the AAZK, Inc. Vice President. She wants to get involved with her local Chapter to help generate membership and other projects we take on. Welcome aboard, Rachél, and thanks to all the new board members not holding office like Steve Wooton and Charles Gailband.

We have greatly increased our membership and want to thank all of those who help support our Chapter through our newsletter - just remember you must be a paid National Member first.

Our January Koala Management talk went very well - Lenna Doyle and Chris Hamlin did a great job teaching us more about those fascinating marsupials. We also have a great breeding program here and breeding loans to other zoos that we are quite proud of. Our next talk will be on Elephant Management by Alan Roorcroft. We will tell you more about that one in the next **AKF**

Once again, thanks to everyone who is supporting the San Diego Chapter through *The Keeper*. All proceeds will go to worthwhile causes and we will keep you updated on what conservation projects we will support next.

--Nicki McGahey, President

## **Greater Houston Chapter AAZK**

New officers elected for 1994 are:

President.....Ric Urban  
Vice President.....Christina Smith  
Secretary.....Sherri Blumer  
Treasurer.....Colette DeGrange  
Chapter Liaison.....Felicia Hill

## **North Carolina Chapter AAZK**

New Chapter Officers elected in December are:

President.....Lucy Segerson  
Vice President.....Paul Decker  
Treasurer.....Gisela Wiggins  
Secretary.....Kris Swartchick

## Chapter News, Continued

### Pikes Peak Region AAZK Chapter

Our newly elected officers for 1994 are as follows:

President.....Andrea Bernee  
Vice President.....Dennis Cordier  
Secretary.....Karen Wilkinson  
Treasurer.....Linda Schmitt  
Liaison.....Tracey Anderson

Our winter activities and fundraisers have not been as extreme as the spring and summer. The cold weather has put a damper on our monthly bake sales, but we have managed to have a few very successful sales. Girl Scout Day was particularly profitable! The funds from these sales are going to upgrade the Zoo's Library with books the keepers want for reference. We are still doing zoo-wide recycling with the profits from that benefiting our animal enrichment fund.

Our Chapter recently took on the Employee of the Month program from another in-zoo organization. This program recognizes and awards outstanding employees on a monthly basis and has an Employee of the Year at the end of every year.

We made a cash donation to the Pueblo Raptor Center. This center is a non-profit organization for the rehabilitation of injured native raptors. We purchased a "brick" in support of the soon-to-open Wolf woods exhibit at the Cheyenne Mountain Zoo. The exhibit will house Mexican wolves and the bricks purchased will line the walkway into the exhibit. Our Chapter's name will be displayed on it. We also made a donation to the Zoo's hospital for the purchase of lab supplies. This year we are strongly participating in the financial support of assisting keepers in attending educational, work-related conferences.

Our Chapter sponsored a Zoo-wide evening of ice skating at a local rink. It was great fun and we had a good turn out. We discovered several Olympic hopefuls!

--Tracey Anderson, Chapter Liaison

### Dallas Zoo AAZK Chapter

Newly elected officers for 1994 are:

President.....Jan Steele  
Vice President.....Linda King  
Sec/Treas.....Lisa Fitzgerald  
Chapter Liaison.....Kevin Lew

Thanks to our former officers Sara Weller, Sue Averill, and Ann Stevens for all their hard work, dedication, and commitment to AAZK.

In December, our Chapter sponsored the Second Annual Holiday Decorating Contest at the zoo. The entry fee was canned foods donated to a local food bank. First prize of \$50-for-a-Lunch was awarded to the "Hill" hoofstock section for their Christmas tree decorated with assorted enrichment items and an original jungle to go with it. Second prize of homemade baked goods was shared by the primate section and maintenance department. Donuts were given to both the veterinary department and the clerks in the animal management offices as third prize.

--Kevin Lew, Chapter Liaison

### Assiniboine Park Zoo Keepers Assoc.

New officers for 1994 are:

President.....Janice Martin  
Vice Pres/Treas.....John Toothill  
Secretary.....Val Norquay  
Chapter Liaison.....Mark de Denus

Our 11-year-old Chapter has been quite inactive for the past year. We have participated with low-key activity on National Wildlife Week and, with contributions, through our Conservation Parking Meter.

The Chapter is looking forward to a rejuvenation in 1994 - foremost, with a new person as President in 10 years, and also with the appointment of a new Zoo Director & General Curator this winter.

We hope to renew our interest and participation in all areas that apply to AAZK's purposes.

--Mark de Denus, Chapter Liaison

## Chapter News, Continued

### Binghamton Chapter AAZK

Our new officers for 1994 are:

President.....Jim Dunster  
Secretary.....Mike Forbes  
Treasurer.....Chris Lasher  
Liaison.....Claudine Locascio

Our entire Chapter would like to congratulate Jackie Peeler, former President and Secretary of our Chapter, on her new job with the Kansas City Zoo. Jackie has worked at Ross Park for 10 years and she will be missed. We wish her the best of luck at Kansas City; we are sure she will be as appreciated there as she was and is here. Good Luck, Jackie!

This past year proved to be a busy one for our Chapter. Our fundraisers for the year included a photo contest, a raffle during the Earth Day weekend, and a candy apple sale during our Boo at the Zoo event. Proceeds went towards adopting a wolf from Mission:Wolf in Silver Cliff, CO; and towards the printing of T-shirts with our Chapter logo. Hopefully these will prove to be another good fundraiser for our Chapter.

We also sponsored our first Bowling for Rhinos event! It proved to be a very encouraging first try, raising \$476.25 towards the cause. Hopefully this year's event will be even better!

Other plans for the new year include another photo contest, offering night tours of our facility, sponsoring a flea dip, and possibly trying our hand at Bake sales and other spur-of-the-moment type fundraisers during our peak season.

We hope 1994 proves to be a very successful year both for our Chapter and the Ross Park Zoo!

*--Claudine Locascio, Chapter Liaison*

### Jacksonville Zoo AAZK Chapter

Officers for 1994 are:

President.....Glenn Wood  
Vice Pres.....Angie Heggood  
Secretary.....Jason Mominee  
Treasurer/Chapter Liaison...  
Jennifer Gerez

This year looks to be very exciting for the Jacksonville Zoo Chapter. Richard Block, from World Wildlife Fund, will be speaking to our Chapter April 16-17. May 12-15, Andy Lodge will be giving a presentation on Ngare Sergoi.

Our Chapter also has a Docent/Keeper Day planned (Docents will get some hands-on experience with our keepers). The Jacksonville Zoo Chapter will also be helping out the zoo with Earth Day celebrations. We'll be handing out brochures about zookeeping.

Our Chapter has also adopted a giraffe and a rhino from the zoo's Adopt-An-Animal Program. We have also adopted the two miles of road in front of the zoo through the Adopt-A-Highway program. We're getting ready for our first highway clean-up.

*--Jennifer Gerez, Chapter Liaison*

### Zoo Atlanta Chapter

First off we would like to thank all those who took part in the '93 AAZK National Conference which we hosted in October. It was an amazing experience in fundraising, committee work and commitment on the part of each and every Chapter member. We are looking forward to a much calmer year in '94!

Our new officers are:

President.....Stephanie Forbes  
Vice President.....Cindy Thorstad  
Secretary.....Dawn Kurkowski  
Treasurer.....Ann Hinton

Many thanks to our past officers - President Michelle Schreman, Vice President Stephanie Forbes, Secretary Gloria Hamor and Treasurer Charles Horton - as well as to our Conference '93 Co-chairs Ellen Bradfield and Charles Horton.

So far this year we have agreed to sponsor Bowling for Rhinos, an Activities Committee is in place, as well as a Financial Advisory Committee. The Chapter also sent two members to California last month to give a presentation at the International Orangutan Conference and one member to Virginia to give a presentation at the Felid Taxon Advisory Group meeting.

## Chapter News, Continued

We have also voted to continue support of Pundreeka Rao, a keeper from India who we correspond with regularly via Sue Barnard. A scrapbook has been sent to his zoo covering our lengthy friendship.

The Chapter sponsored a coffee break at the International Orangutan Conference in San Diego. We would like to take this opportunity to encourage other chapters to sponsor activities at workshops and conferences to further keeper continuing education whenever possible.

--Michelle Schireman, Chapter Liaison

### Greenville Zoo AAZK Chapter

New officers for 1994 are:

President.....Janie Raxter  
Vice President.....Dana Accetta  
Secretary.....Sherry Crose  
Treasurer.....Anke Meyer  
Chapter Liaison.....Lisa Thomas

Our Chapter has not been very active since we had Bowling for Rhinos in July 1993. We raised \$1473.86 for BFR - our best effort yet. Many thanks to Julie Long (volunteer) who was our Chairperson, she did a great job. We would also like to thank the Friends of the Zoo Board of Directors who matched our donations.

We are still raising most funds from recycling aluminum cans. So far this year we have donated \$200.00 to South Carolina Heritage Land Trust Program. We plan on donating more throughout the year.

Dr. Raymond Fay III, our new Veterinarian, spoke at our 25 February meeting. Thank you and welcome, Dr. Fay!

--Lisa Thomas, Chapter Liaison

### Fort Worth Zoo AAZK Chapter

The Fort Worth Chapter started in July of 1993. We had an overwhelming response by the staff and had quite a few first-time AAZK members enroll to initiate the Chapter.

In October we held our first fundraiser. We had a used book sale held on the Zoo's 'Dairy Day' event in the 'Texas' Exhibit.

Books of all kinds were collected from zoo staff and docents. We raised \$450.00 which was donated to the Hope Zoo in Jamaica to help with the Jamaican iguana program.

We have had several speakers so far. Our first program was by Dr. Doug Pernikoff, our veterinarian. Doc showed slides from his work in Nepal with Asian rhinos, as well as a documentary produced for PBS about Asian rhinos. Ken Seleske who works in the Zoo's Education Dept. showed us slides from his trip to Tanzania last summer. Ken titled his talk 'The Big Cats of Africa'. Lastly, Tarren Wagener, Conservation Assistant presented a slide program about her involvement with the Red Wolf reintroduction program in the Great Smoky Mountains.

During the month of February, we held our second fundraiser, an Arts and Crafts sale in conjunction with the opening of The Fort Worth Zoo's art gallery. The zoo owns the largest collection of original oil paintings by the German artist Wilhelm Kuhnert (1865-1926), one of the first Europeans to go to Africa and paint animals in the wild instead of at a zoo or menagerie.

Despite the threatening skies the sale went on as planned. There are quite a few talented people on our staff as well as volunteers, all of whom donated something for the sale. In three days we raised \$650.00 which will be donated for a cause to be decided at a later date. We would like to thank all of the artists who donated their items for the sale. It was a big success!

--Natalie Mashburn, Secretary

### Greater Cincinnati AAZK Chapter

On 25 & 26 February, our Chapter hosted a positive behavior training seminar which featured Ted Turner, Sea World of Ohio animal trainer and Ted Molter, Sea World public relations representative. On Friday night, two free lectures were given and we also had a wonderful pot-luck banquet. Mr. Turner talked about behavior training techniques and also showed several videos produced by Sea World on positive behavior modification.

*Continued on Page 152*

*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.*

**ZOOKEEPER - Psittacines**...requires minimum of one year paid, hands-on experience with Macaws and degree or equivalent Zoo related experience. Duties include daily care, feeding and habitat upkeep, breeding programs, record keeping, medical coordination, acquisitions, training, supervising part-time staff and volunteers, presenting educational programs, etc. Must be willing to work weekends/holidays. Starting salary \$16,000-\$21,000 with year-end bonus and benefits. Excellent growth potential. Salary commensurate with experience. Send resume-references to: Washington Zoological Park, 1925 SE 54th, Issaquah, WA 98027. Position open until filled.

*The following two (2) positions are available at the Primate Foundation of Arizona. All applicants must have a negative TB skin test, negative hepatitis B surface antigen test, and evidence of a measles booster or natural disease prior to employment. For either position send letter of interest (with requested salary), resumé, and three letters of reference to: Jo Fritz, Primate Foundation of Arizona, P.O. Box 20027, Mesa, AZ 85277. Closing date is 1 July 1994.*

**REGISTRAR**...maintain and develop computer record systems to account for inventory and health status of a chimpanzee breeding colony. Works directly with Staff veterinarian. Must be proficient in Lotus 1-2-3 and WordPerfect, and type a minimum of 40 WPM. Must have good communication skills. Experience in a veterinarian practice preferred. Must be willing to make a two-year commitment. Salary negotiable. Excellent benefits.

**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 a two-year commitment. Excellent benefits. EOE.

**CURATOR**...for The Wildlife Discovery Program (a Houston I.S.D. Magnet School) is now taking applications for the 1994-95 school year. The Curator position vacancy will become available 16 August 1994 and continue until 1 June 1995 (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; or 5) Summer camp counselor experience. Salary is \$1030.00/month for 10 months with benefits. Applications will be accepted until **15 July 1994**. Applicants need to send a cover letter and their resume and three references to: Ms. Karyl Watz, Coordinator, Wildlife Discovery Program, 1513 North Macgregor Way, Houston, TX 77030.

**PACHYDERM KEEPER**...entry level or intermediate level position in handling/training elephants. General animal training experience beneficial; degree in zoology or related field preferred. Must be able to work in free contact or protected contact situations. Will be a member of a six-person team and participate in public demonstrations. Duties will also include maintenance of hippo, rhino, tapir collection. Annual salary range \$27,443.00 - \$32,443.00 depending on experience. Send resume to: Carol McCarthy, Animal Collection, Chicago Zoological Society, Brookfield Zoo, 3300 Golf Road, Brookfield, IL 60513. **Deadline for application is 30 April 1994.** EOE. M/F/V/D.

## Opportunity Knocks, *Continued*

The following two (2) positions are available at the North Carolina Zoo. If interested in either position, send resume by **22 April 1994** to: **Martha Wright, Personnel Department, North Carolina Zoo, 4401 Zoo Parkway, C-10, 001, Asheboro, NC 27203.**

**ZOOKEEPER II/PUFFIN**...requires at least two years of experience with a variety of avian species, preferably including alcids and/or penguins. A bachelor of science degree in Zoology with coursework in ornithology preferred. SCUBA certification desirable. Will help to open new alcid exhibit (includes the rearing of alcid chicks) which is part of the new North American expansion. Salary \$17,601.00.

**ZOOKEEPER II/CYPRESS SWAMP**...requires at least two years of experience with waterfowl (including artificial incubation and rearing of chicks), cougar and/or reptiles. A bachelor of science degree in Zoology preferred. Will be involved in the opening of the new Cypress Swamp exhibit, which is part of the new North American expansion. Salary \$17,601.00.



## Chapter News, *Continued*

The following day an all-day seminar was held during which Mr. Turner gave more detailed and in-depth information on training techniques and behavior modification relating to animal husbandry skills.

We were very pleased with the seminar's attendance - over 250 individuals representing 13 zoos and various kennel clubs were there. Greater Cincinnati AAZK is offering nonprofessionally-made videos of the seminar for sale. The first video is the 25 February talk and is approximately four hours in length - price \$25.00. The second video is the all-day seminar which goes into more detail and is priced at \$45.00.

If you would like to purchase both tapes, pay only \$60.00. To order one or both tapes, please contact Dawn Strasser, Co-President, Greater Cincinnati AAZK at (513) 559-7710 or send check payable to Greater Cincinnati AAZK to the Chapter c/o Cincinnati Zoo, 3400 Vine St., Cincinnati, OH 45220. Be sure to include complete return mailing address. The video orders **must** be prepaid.

--Dawn Strasser, Co-President

### Pueblo Zoo AAZK Chapter

We are a new Chapter and already have a number of programs. Our recycling program was started in 1993 and is now

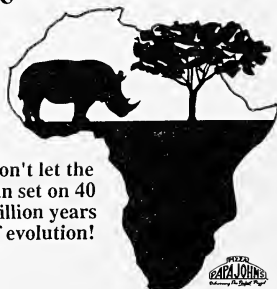
part of our treasury funding. We held a successful bake sale for 'Sweethearts Day', and are planning a vegetable garden, tree sale and Easter bake sale and egg hunt.

A huge THANKS to the Cheyenne Mtn. Zoo/Pike's Peak Region AAZK Chapter for their help in establishing our Chapter and their very generous donation to get us started.

Membership is about 50% of the paid staff here including our Curator and Director!

--Michele Smith, Chapter Liaison

### *Bowling For Rhinos '94*



Shown above is the Indianapolis Zoo AAZK Chapter's 1994 T-shirt design for Bowling for Rhinos.





# AAZK Membership Application

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**Editor-In-Chief:** Susan Chan **May 1994**  
**Associate Editors/Enrichment Options Coordinators:** Kayla Grams, Topeka Zoo & Gretchen Ziegler, Wildlife Safari Park **Volume Twenty-one**  
**Book Review Coordinators:** Melba T. Brown, National Zoo and Tom Aversa, Franklin Park Zoo **Number Five**  
**Legislative Outlook Column Coordinator:** Phyl Nilson Wojcik, John Ball Zoo

Animal Keepers' Forum (ISSN 0164-9531) is a monthly journal of the American Association of Zoo Keepers, Inc. 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.**  
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### AAZK PUBLICATIONS : CONTINUING DATA COLLECTION

Zoo Infant Development Project - Harmony Frazier, Woodland Park Zoo (Mammals)  
Teri Maas/Maggie Liguori, Philadelphia Zoo (Birds/Nonpasserines); Kim Livingstone, L.A. Zoo (Passerines)  
Jeanne Bocconelli, Newark Museum Mini-Zoo (Reptiles); Linelle Lone, Denver Zoo (Amphibians)  
Diet Notebook, Mammals, Vol. II - Susan Bunn Spencer, Grand Rapids, MI



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National Chapters T-Shirt Order Form.....	TAN INSERT

## 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 25½cm (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") 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 as space allows. However, long articles must be sent by U.S. mail. Phone is (913) 272-5821 Ext. 31. FAX (913) 273-1980.

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

Articles printed do not necessarily reflect the opinions of the  
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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 Western Lowland Gorilla (Gorilla g. gorilla) drawn by Dave Morgan, an employee in the Conservation Department at Busch Gardens, Tampa, FL. The smallest of three subspecies, Western lowland gorillas are found in the Cameroon, Gabon, the Central African Republic and Equatorial Guinea. Gorillas are social primates living in mixed groups averaging six or more individuals. A band of gorillas usually revolves around a single male referred to as a silverback. If a dominant male is not present, it is not uncommon for a female to assume the leadership role until a dominant male takes charge. The cover subject Lash is 18-years-old and is currently being introduced to five individuals that are on display at Busch Gardens Myombe Reserve. Thanks, Dave!*

# Scoops

# and

# Scuttlebutt

## Two Positions Available on Nominations/Elections Committee

Due to two recent resignations, the positions of Chair and Committee Member for the AAZK Nominations and Elections Committee are now available.

**Chair:** Responsible for the coordination of the AAZK/NEC and reporting to AAZK Board of Directors the outcome of the elections process. This duty must be taken seriously due to the credibility and accountability of this person being of the utmost importance to AAZK. Must have excellent reporting skills, computer literacy helpful, and good records keeping skills a must.

**Committee Member:** Responsible for assisting the Chair in coordinating the elections process of the AAZK Board of Directors. Must have good reporting skills and computer literacy helpful.

Send resumes and choice of position to: Rachel Watkins Rogers, Board Overseer, AAZK Nominations and Elections Committee, San Diego Zoo/Mammal Dept., P.O. Box 551, San Diego, CA 92112-0551 FAX 619-232-4117.

## Bibliography/Thesaurus Available

The 1993 Update of Reintroduction of Captive-Bred Animals Into Their Native Habitat: A Bibliography is available from Kay A. Kenyon, Librarian, National Zoological Park Branch, Smithsonian Institution Libraries, Washington, D.C. 20008. A thesaurus for cataloging books in a zoo library entitled "Library Organization and Access" is available from Linda Coates, Librarian, San Diego Zoo, P.O. Box 551, San Diego, CA 92112-0551.

## Please Note Phone Number Change for Pre-Conference Tour

Please be aware that the telephone number for the Kansas City Zoo has changed. The new number is (816) 871-5700. Individuals interested in the 1994 AAZK National Conference Pre-Conference tour at this facility may reach coordinator Jacque Blessington at this number. The trip (Saturday, 8 October) will include transportation from the KC airport to the Zoo, lunch at the zoo and dinner that evening as well as transportation from the KC Zoo to Omaha for the Conference. Registration fee is \$20.00 and space is limited so register early. Some overnight accommodations are available.



# Coming Events

## American Federation of Aviculture 20th Annual Convention

August 3-6, 1994

Knoxville, TN

Theme is "Out of Africa and Down Under". Seminars will focus on African and Australian aviculture and conservation. Pre- and Post-conference tours being offered. For more information, please call the AFA Business Office at (602) 484-0931.

## 14th Annual Conference of the Association of Zoo Veterinary Technicians

September 25-29, 1994

Cleveland, OH

Held at the Cleveland Metro Parks Zoo. If you would like more information, please contact Rhonda Kesak, Cleveland Metro Parks Zoo, 3900 Brookside Park Drive, Cleveland, OH 44109; (216) 661-6500, ext. 259.

## Association of Avian Veterinarians

Sept. 27 - Oct. 1, 1994

Reno, NV

Conference site is the Nugget Hotel. The program will offer a wide variety of continuing education opportunities with concurrent programming to satisfy a broad range of interests. A Core Seminar, Basic Avian Medicine Symposium, Main Conference, and Practical Labs will be included. For further information contact the AAV Conference Office, 2121 So. Oneida St., Ste. 325, Denver, CO 80224-2552, (303) 756-8380, FAX (303) 759-8861.

## American Association of Zoo Veterinarians

October 23-27, 1994

Pittsburgh, PA

To be held at the Hyatt Regency Hotel. Workshops will take place on Sunday, 23 October. Conference will include sessions on reptiles and amphibians, nutrition, immobilization, avian species, primates, clinical and gross pathology, environmental enrichment, aquatic animal medicine, hoofstock and large mammals, carnivores and small mammals and case reports. In addition there will be both a student and graduate student competition and a poster session. For more information contact: Wilbur Amand, VMD, AAZV Executive Director, Philadelphia Zoo, 3400 W. Girard Ave., Philadelphia, PA 19104-1196; phone (215) 387-9094; FAX (215) 387-2165.

## Association of Reptilian and Amphibian Veterinarians (ARAV)

October 22-23, 1994

Pittsburgh, PA

To be held in conjunction with the AAZV Conference listed above. This is the first conference for the ARAV and will include a general lecture session, a case report session and workshops on (1) basic reptile and amphibian medicine; (2) advanced reptile and amphibian medicine; and (3) pathology/necropsy techniques. For further information and registration materials contact Wilbur Amand at address given under AAZV listing.

## Coming Events, *Continued*

### The Exploitation of Mammals

November 25-26, 1994

London, England

A symposium organized by The Mammal Society and Universities Federation for Animal Welfare. The major theme concerns the various ways in which mammal populations are exploited world-wide, the concept of sustainable use and the resulting welfare considerations for animals involved. Program includes sessions on Mammal Game Ranching, Mammal-oriented Ecotourism; Mammals in Zoos and Circuses; Sport Hunting of Mammals; and Mammal Wildlife Trade and Conservation. For further information contact Victoria Taylor at UFAW, 8 Hamilton Close, South Mimms, Potters Bar, Herts, England EN6 3QD.



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

Angela Santaniello, Queens Wildlife Cntr. (NY)	Juliet Simpson, NYZS/Prospect Prk. (NY)
Patti Cooper, Wildlife Conservation Prk (NY)	Laura Schwarz, Queens Wildlife Cntr. (NY)
Diane Bogdan, Queens Wildlife Cntr. (NY)	Kari Tromp, Utica Zoo (NY)
Lisa Taylor, Ross Park Zoo (NY)	Kate Loza, Nat. Aviary in Pittsburgh (PA)
Cynthia Martin, N.C. Zoological Prk. (NC)	Laura Mayo, Zoo Atlanta (GA)
Patricia Ridley, Discovery Island (FL)	Timothy Riley, Gator Jungle (FL)
Norberto Vazquez, Miami, FL	Leigh Ann Refosco, Dreher Prk Zoo (FL)
Leanne Gagliardi, Lowry Prk Zoo (FL)	Susana Tapia, Busch Gardens (FL)
Alice Bodo, Lowry Prk. Zoo (FL)	Stephanie Richardson, Memphis Zoo (TN)
Sonia Holmes, Memphis Zoo (TN)	Ann Harmon, Jackson Zool. Prk. (MS)
Michael Land, Cincinnati Zoo (OH)	Scott Wisherd, Lake Superior Zoo (MN)
David Homstad, Lake Superior Zoo (MN)	Michael Skidmore, Lincoln Park Zoo (IL)
Cheryl Beseke, Lincoln Prk. Zoo (IL)	Doug Willis, Kansas City Zoo (MO)
Tamar Lowry, Dallas Zoo (TX)	Dennis Revello, The Denver Zoo (CO)
Heather Young, Cheyenne Mt. Zoo (CO)	Adam Petrovsky, San Diego WAP (CA)

#### **New Contributing Members**

Central Park Zoo, New York, New York  
William E. Brant, The Gourmet Rodent, Archer, Florida

#### **Renewing Contributing Members**

Minnesota Zoological Garden Library, Apple Valley, Minnesota  
Lloyd W. Woodburn, Topeka, Kansas  
Warren J. Iliff, Executive Director, The Phoenix Zoo, Phoenix, Arizona



## ***Clothing Made From Plastic Soda Bottles***

Somewhere out there, someone may be wearing a plastic soda pop container you once recycled. Outdoor-clothing king Patagonia recently introduced a fleece fabric called PCR Synchronilla, which contains 80% postconsumer recycled polyester fiber made from plastic soda bottles. Hoping other outdoor clothing manufacturers will adopt a "replacement ethic", Patagonia spokesman say they plan to stop using virgin polyester once the recycled fabric fully "evolves". For now, Patagonia is using the politically correct material for just a few clothing items.







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## Gorilla Protection at Karisoke Continues Despite Rwandan War

The endangered Mountain gorillas (*Gorilla gorilla beringei*) residing in Rwanda's Parc National des Volcans are reported safe in spite of the outbreak of fierce fighting in Rwanda resulting from the alleged assassination of President Juvenal Habyarimana of Rwanda and Cyprian Ntuyamira of Burundi. The two African leaders were killed on 6 April when their plane crashed just prior to landing at the airport in Rwanda's capital city of Kigali. Rwanda's ambassador to the U.S., Jean Damascene Bizimana, claimed the plane was hit by gunfire or a rocket and the French Embassy in Kigali reported there were no survivors.

At the time of this report (4/15/94) Kigali was under siege. From Dian Fossey Gorilla Fund headquarters in Denver, Greg Movesian, Development Director, said: "The U.S. Embassy in Kigali advises us that the capital is ablaze with gunfire and street fighting is raging." Mass executions of government officials and religious leaders have been reported and the U.S. State Department ordered the evacuation of all American citizens on 8 April.

At Karisoke Research Center in Rwanda's Virunga Mountains, there are no indications of any disruption in the gorilla preserve. Reached by radio from Morris Animal Foundation's Volcano Veterinary Center located in the village of Kinigi, Karisoke's director, Pascale Sicotte, reported "The gorillas are okay and the Fossey Fund will continue to operate at Karisoke." While Dr. Sicotte and her staff of expatriots evacuate, the camp staff of 30 Rwandans will stay to patrol the rainforest and keep watch over the gorillas. Earlier reports that the Rwandan camp workers had left Karisoke to seek safety in neighboring Zaire, were denied by a spokesperson for the Dian Fossey Gorilla Fund.

Rwanda has been the site of political unrest since October 1990, when rebels invaded from Uganda. At times, the fighting crossed into gorilla territory in the Parc National des Volcans. In February 1993, the Karisoke Research Center was evacuated by expatriots as well as Rwandan staff and, for the first time since Dian Fossey established the camp in 1967, the gorillas were left unprotected. Two gorilla deaths were directly attributed to the fighting. In the summer a cease fire was declared and the staff returned to Karisoke to resume gorilla study and protection activities. A peace accord was signed in the fall, and the Presidents of Rwanda and Burundi were returning from peace talks in Tanzania when their plane crashed.

*>excerpted from a Press Release from the Dian Fossey Gorilla Fund 4/8/94 and personal communication with their U.S. office by the Editor.*



### ***NWF Bolsters Environmental Laws Jurisdiction***

The National Wildlife Federation (NWF) and its affiliates have made major progress in defeating the so-called property rights movement, whose supporters seek to undermine environmental and other laws under the guise of "property rights". NWF and its affiliates helped thwart property rights advocates in 23 of the 30 states in which property rights supporters are fighting, including such traditionally conservative states as Wyoming and New Hampshire. NWF members also helped win close calls in Idaho, where the governor vetoed a bill passed by the legislative, and in Maryland and Montana, where bills passed one house but not the other. "Basically, we can assume that the 'property rights' issue will surface in any state that has a legislative meeting next year," says NWF attorney Glenn Sugameli. For more information on this issue, write to the Office of Grassroots Action, National Wildlife Federation, 1400 16th St. N.W., Washington, DC 20036. (*International Wildlife* quoted in *Nature News* from *The Nature Book Society*, Vol. 8, No. 11)



# The Role of the Keeper Advisor to a Species Survival Program (SSP)

By  
Carol Sodaro, Lead Keeper  
Chicago Zoological Park, Brookfield, IL

In 1993, the North American Orangutan SSP established a unique position in its organization: the Keeper Advisor. This SSP's management group wanted to tap a potential source of information and experience in the captive husbandry of orangutans. In addition, the group felt strongly that the keeper community not be distanced from the process that directly affects the lives of the animals for which keepers care. Keepers were nominated by SSP institutional representatives and candidates were sent information sheets to fill out regarding their experience with orangutans and other apes. Categories on the application included: age/sex structure of your institutions' orangutan collection, your background in orangutan care, and specialized experience such as enrichment, animal introductions, training, research or hand-rearing of infants. Additionally, the candidate was asked for a statement regarding ways in which a keeper advisor could contribute to the Orangutan SSP.

I was ecstatic last May when I received a letter from Lori Perkins, the Species Coordinator, that I had been elected as the first Orangutan SSP Keeper Advisor. She advised me that my term would last three years. At the end of this term, a new election will be held. I am a Lead Keeper in the Primate Department at the Chicago Zoological Park (Brookfield Zoo). For nearly 17 years I have worked with orangutans and a large, diverse collection of primates. My orangutan experience includes management and captive husbandry of a variety of age/sex groupings of Bornean, Sumatran and hybrid animals, positive re-inforcement training, captive research and journal publications, hand-rearing of infants and participation in a field study in Borneo funded through a grant from the Brookfield Zoo. Orangutans have always been my primary focus during my years as a primate keeper and I am dedicated to promoting a better understanding of the species in any way I can.



In my role as Keeper Advisor my duties include: providing husbandry advice to the SSP focusing on daily animal management, advising the SSP on developing protocols and guidelines that the management group may issue, reviewing plans for new or refurbished exhibits, networking with other orangutan/great ape keepers, serving as a liaison to the keeper community, reviewing and/or contributing to relevant sections of the husbandry manual, and interfacing with the North American Studbook Keeper, Melanie Bond (National Zoo) to provide regular contributions to *Pongo Quest* (the newsletter of the International Orangutan Foundation). I was also asked to prepare this report to *Animal Keepers' Forum* within one year of election, summarizing the role of the keeper advisor.

## The Role of the Keeper Advisor to an SSP, Continued

Over the past year, I have received numerous phone calls requesting information on exhibit design, behavioral enrichment, animal introduction advice and questions about training. It is evident that keepers everywhere are dedicated to providing the best possible care for their animals. Positive reinforcement training is a rapidly developing trend in helping to solve animal management problems. Such training can be used in a wide variety of situations while making the experience rewarding for the animal as well as the keeper. At Brookfield Zoo we have trained our orangutans for medical, husbandry and care giving behaviors. A common problem that keepers encounter is difficulty in shifting their animals from enclosure to enclosure. Offering husbandry and training advice in this situation is a challenge as many factors must be considered. Whenever I receive a request for husbandry advice, a written record detailing the information I've given is sent to Lori Perkins to review. This will help in monitoring the consistency of information provided. My other responsibilities have included reviewing pertinent information regarding the Orangutan SSP, its goals and objectives.

In September, I was asked to be the Husbandry Manual Coordinator. One of the American Zoo and Aquarium Association (AZA) charges to all SSPs is to produce a husbandry manual for their particular species. My first responsibility was to develop a draft outline of topics to be covered by the manual. To aid this process, I referred to AZA guidelines for producing a husbandry manual as well as the proposed gorilla and chimpanzee husbandry manual tables of contents. During the next few months I solicited and confirmed the authors which included mailing out a few hundred letters and making many phone calls. This was a great opportunity to become familiar with a wide range of people involved in the orangutan field. The majority of my contacts were made with zookeepers, curators, and vet staff at U.S. zoos, but also included field researchers, behavioralists, geneticists, and the director of a wildlife conservation organization in Indonesia.

My contribution to the husbandry manual will be to co-author the social behavior section and write the behavioral biology recommendations. In addition, I am in the process of developing an infant development data sheet for use at SSP institutions when a birth occurs. A wide range of behavioral, social and physical development may be monitored on these sheets and later analyzed for use in captive management.

This month I will be attending the AZA Great Ape Taxon Advisory Group (TAG) meeting in conjunction with the Orangutan SSP mid-year meeting. I will be presenting an update on the husbandry manual and look forward to experiencing what an SSP group is all about. The opportunity to serve as the SSP Keeper Advisor has been very rewarding and enriching experience. The Brookfield Zoo continues to support me in this effort, affording me tremendous career growth. I feel I have been able to make an important contribution to the captive husbandry of the orangutan at the keeper level. The Orangutan SSP hopes that the Keeper Advisor position will serve as a model to other SSPs so they will create a similar position in their management groups. We, as keepers, have a great deal to contribute to captive management of the animals for which we care.



## **NWF Grant Helps Apaches Survey Endangered Species**

With a grant from the National Wildlife Federation, the San Carlos Apache Tribe is launching an inventory of endangered, threatened and "sensitive" species on its 1.8-million-acre reservation in Arizona. The survey will identify habitats of such species as the Mexican spotted owl, Northern goshawk, Bald eagle, Peregrine falcon and Desert tortoise. The tribe will then use the data in its efforts to protect these species, says Brian Czech, former director of the tribe's Recreation and Wildlife Commission. The NWF grant and matching funds from the tribe's conservation fund will be used to hire a biodiversity specialist, who will lead an Apache survey.

*—from The National Wildlife View*



# Blood From A Stone, or Retrieval of Urine from Dik Dik for Hormone Analysis

By Lisa Fitzgerald and John A. Hnida  
Dallas Zoo and University of New Mexico, Albuquerque

## INTRODUCTION

Most keepers are familiar with the requests of veterinarians, curators, and researchers to collect samples of body fluids from the animals under their care. The requests are usually simple, made with good intention, and extremely naive. The onus generally falls on the keeper to develop a safe, reliable and non-invasive technique for collecting the sample. Such was the case when we initiated our research on behavioral estrus of Gunther's dik dik (*Madoqua guentheri*) at the Dallas Zoo.

Gunther's dik dik is one of the smallest antelope species and is endemic to Northeast Africa. Like other dik dik species, it is adapted to arid conditions, possessing a digestive tract and kidneys designed to help reduce water loss through feces and urine. The elongated, proboscis-like snout distinguishes Gunther's dik dik from the three other dik dik species. The elongation of the snout is thought to aid in evaporative cooling and water conservation. Dik dik are predominantly diurnal browsers which live in monogamous pairs within fixed territories (Kingdon, 1982).

One of the primary objectives of our research was to determine if a relationship existed between the expression of estrus behavior and hormonal condition. Blood sampling was never an option due to the invasive nature of the sampling technique. Fecal hormones were an unknown factor and would involve development of a hormone assay that may or may not have been successful. So by default we were left with urine. Several urinary hormone assays were available and an assay for the progesterone metabolite pregnanediol-3-glucuronide, or PdG, had proven to be successful in monitoring estrous cycles of several ungulate species (Blackburn (*Antelope cervicapra*), Holt et al., 1988; Okapi (*Okapia johnstoni*), Loskutoff, Ott & Lasley, 1982; Giraffe (*Giraffa camelopardalis*), Loskutoff et al., 1986; Suni (*Neotragus moschatus*) Raphael et al., 1988).

The subjects from which we were to collect urine provided us with a significant challenge; they were extremely timid, urinated small quantities from a stance approximately six inches off the ground, and were capable of refraining from urinating for at least 24 hours. Attempts at holding an animal inside its barn until it urinated were largely unsuccessful due to the dik dik's ability to retain urine and feces. Due to management considerations and behavioral observations it was also impractical to isolate the animals in the barns for long periods of time.

The focal eliminatory behavior of dik dik gave us hope for other options. We tried burying homemade urine traps comprised of screened funnels in terra cotta pots under the dung middens, but the dik dik sensed their presence and usually moved the dung pile just enough to miss the trap. At this point we knew that if we could develop a method of extracting the urine from the soil we would be successful. Our efforts intensified to include vacuum suction, gravity separation (putting the soaked dirt in a container at an angle), and pressurized filtration (squeezing the soaked dirt through a coffee filter), but all were unsuccessful.

Throughout the process we felt that centrifugation would serve as a successful tool, but we could not determine a physical design for keeping the final products separate other than destroying expensive gridded tubes after a single use. Our veterinary technician, Debbie Maloy, was the voice in the void which we sought to span. Debbie's creative suggestions led us to develop the following method for an inexpensive, non-invasive, and reliable urine collection and extraction technique.

## Urine Collection for Hormone Analysis in Gunther's Dik Dik, *Continued*

### METHODS

Consistent success in acquiring urine was achieved from the use of the following equipment and procedure.

**Subjects:** Ten (10) female Gunther's dik dik were studied. Each individual was identified by a unique ear tattoo and may also have had a colored ear tag. Social groupings were variable due to the research design and consisted of multiple female groups, one female with one male, multiple females with one male, or on occasion solitary females. Most of the dik dik were housed in the zoo's small antelope area.

**Equipment:** 30ml plastic vials, 1.25ml plastic vials, wooden tongue depressors, wooden applicator sticks, 65mm glass filling funnel, 3cc syringes, 12cc syringes, 10 or 15ml glass test tubes, centrifuge, microfilaria or Acrodisc filters, freezer (-70° C), Nolvasan®.

### Procedure:

1. Soil contaminated with urine and feces was removed from the dung pile site and replaced with dry soil to a depth of 2 to 3 inches.
2. The subject was periodically checked to see if it was going to urinate. Observations helped to determine the times of day that urination usually occurred, thus allowing urine collection to be more readily worked into the daily routine.
3. Immediately after the animal urinated and defecated, the feces were removed and the urine-soaked soil was scooped into one or more 30ml plastic vials using a wooden tongue depressor. If the urine could not be immediately extracted, the urine-soaked soil was refrigerated until it could be processed.
4. In the lab, the urine-soaked soil was transferred from the vial(s) to 3cc syringe barrels using a 65mm glass filling funnel and wooden applicator sticks.
5. Each 3cc syringe barrel was placed in a 10 or 15ml glass test tube. The test tubes were loaded into a centrifuge and spun at 3600 rpm for five minutes. The syringe flanges kept them from slipping into the test tubes during handling and centrifugation.
6. The urine that collected in the test tubes was removed to a 12cc syringe and then filtered through a microfilaria or Acrodisc filter into one or more 1.25ml plastic storage vials. Filtering removed fine sediment that may also have centrifuged out of the urine-soaked soil.
7. Storage vials were labeled with the date, time and animal identification and stored at -70° C until hormone analysis could be run on the urine sample.

8. All equipment to be reused was cleaned with dilute Nolvasan® and rinsed repeatedly with tap water.

### RESULTS

The soil extraction method usually provided urine samples of approximately 1ml (mean = 0.92ml, n = 791, range = 0.05ml - 4.25ml) from approximately 4-8 tablespoons of urine-soaked soil. Different soil types yielded varying volumes of urine, we found a sandy soil preferable. The lab time spent in spinning down the urine and cleanup was about 20-40 minutes.

Over a three and a half year period, a total of 791 soil extracted urine samples were obtained from eight (8) individual females. Samples were procured on a daily or every other day basis except during times of wet or cold weather, or in the absence of the research staff.

## Urine Collection for Hormone Analysis in Gunther's Dik Dik, *Continued*

Occasionally the subject was not the first to use the clean soil, urinating and defecating on top of another dik dik's urine and feces immediately after the other animal had urinated and defecated. Such samples, if taken, were noted as being contaminated. For the most part, the subject urinated on fresh soil, eliminating the problem of mixed urine samples.

Thirty-one samples were also collected over a 59-day period by locking a singly housed female into her staff overnight. The longest "run" collected was 26 samples over a 28-day period. Urine samples were aspirated from the stall floor with a 3cc syringe and filtered through a microfilaria filter into one or more 1.25ml plastic storage vials (mean sample volume = 0.82ml, SD = 0.67ml, n = 31).

### DISCUSSION

The soil extraction method is a simple means of obtaining urine samples from animals that cannot be isolated in enclosures with solid floors, or which have low tolerance for the presence of collectors or collecting apparatus. As such, it has potential for use on other captive species as well as free-ranging animals.

The method is not without problems. As discussed above, wet or very cold weather may preclude its application. However, some urine samples have been collected during inclement weather by placing soil in stalls, either on the floor or in litter boxes.

In addition, hormone metabolites have been found to bind with soil particles. Steve Monfort has found that soil absorption can result in an underestimation of approximately 10-15% of absolute levels of PdG in Eld's deer urine. The 10-15% reduction is consistent across the range of PdG values tested and is, nevertheless, acceptable for tracking estrous cycles in Eld's deer (S. Monfort, pers. comm.).

### ACKNOWLEDGMENTS

We wish to thank the many people who have helped this project along. Rita Buice, Anne Knapp, Dr. Sue Lindsey, Dr. Naida Loskutoff, Debbie Maloy, Dr. Steve Monfort, Tom Overskei, John Sills, Dee Smith, and the staff and research aides of the Dallas Zoo Large Mammal and Wilds of Africa sections all deserve mention for the information, enthusiasm and help provided. Mot special thanks to Dr. Cynthia Bennett and Dr. Bonnie Raphael for guidance during all phases of this project.

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(Editor's Note: Look for Lisa Fitzgerald's and John Hnida's article entitled "Detection of Estrus in Gunther's Dik Dik Through Urinary Hormone Analysis and Behavioral Observation" in the June 1993 issue of *AKE*. The above article was kindly provided by the authors to explain their urine collection methods used in the estrus study. Their study was funded in part by a grant from the AAZK Research/Grants Committee.)



## Book Review

### Evolutionary Biology of Transient Unstable Populations

Edited by Antonio Fontdevila - 1989  
Springer-Verlag, NY, NY  
175 Fifth Ave., NY, NY 10010  
293 pgs. Hardbound, \$70.00

Review by Craig S. Berg  
*Pachyderm Keeper*  
Milwaukee County Zoo  
Milwaukee, WI

As the destruction of ecosystems accelerates on a global basis, species are faced with an increasingly fragmented habitat. How will this affect the population dynamics of "wildlife" when geographically isolated populations are the rule rather than the exception? The possibilities are extinction, adaptation or evolution. Transient, unstable populations have long been considered to be a major source of species divergence. Evolutionary Biology of Transient Unstable Populations addresses the issue from this perspective.

The papers which comprise this book were drawn from the Sixth European Conference on Population Biology and Evolution, held in Spain in 1988. Since these papers were taken from conference proceedings, one must always be mindful that they were not subject to the peer review process necessary to be published in a journal. This cautionary note is not meant, however, to disparage the contents of the book in any way, after all, what sort of peer review would Darwin have received for The Origin of the Species? In fact, this book provides insights from scientists in Europe and South America who have, by virtue of their separate histories, developed different perspectives on evolutionary biology.

The book is divided into two main sections each divided into subgroupings. The first main section deals with Founder, Colonizing and Bottleneck Populations. It is subdivided into papers which explore the theoretical basis of small population dynamics and papers that provide some experimental evidence of these processes. The theoretical section furnishes a solid foundation to the rest of the book. It relies heavily upon mathematics, which will come as no surprise to someone familiar with the literature, but summaries and discussion sections at the ends of the chapters will afford comfort to those who may be daunted by symbols and derivations.

The experimental section is composed of six experiments utilizing the ubiquitous fruitfly (*Drosophila*). There are, of course, dangers in overgeneralizing from fruitfly data because the fruitfly has a number of chromosomal peculiarities, however, because of its short generation time and low maintenance cost, it is and probably will remain, the standard. The second main section is devoted to Evolutionary Mechanisms with a Molecular and a Chromosomal subsection. The Molecular section is devoted to "Fast" evolutionary mechanisms such as mobile genetic elements and retroviral-like transposable elements (RLEs). Don't let the jargon fool you; the mechanisms proposed are fairly simple and the chapters are easy to understand if you possess a rudimentary knowledge of genetics. The chromosomal subsection will probably prove the most interesting to the average reader. The chapters are concerned with rapid speciation by



## Book Reviews, *Continued*

chromosomal rearrangement and most of the examples used could not be squashed with your fingers (i.e. European rodents and South American cavies).

I recommend this book. It provides an excellent overview of speciation theory and could yield insights into a future when most populations may be unstable and may be likely to be transient.

### Wild Cats: Lynx, Bobcats and Mountain Lions

By Candace Savage  
Greystone Books 1993, 1615 Venables Street  
Vancouver, BC V5L 2H1 Canada  
136 pgs. hardback \$30.00

*Review by Julie Abraham  
Exotic Feline Breeding Compound  
Rosamond, CA*

Not to be confused with Wild Cats by Caroline Brett, this book, with its more limited focus, brings together superb photographs and a highly readable text. Savage is a powerful advocate for the preservation of biodiversity and she presents a clear message: "Our first priority should always be to safeguard abundance."

The book has 115 pages of color photographs and 22 of text, based on extensive reference material (to her credit, the author lists her sources). The writing itself conveys a sense of immediacy which borders on literature; you can almost hear the crunch of snow beneath your feet. Yet it is grounded in facts, observations and thought-provoking quotations.

The 29 contributing photographers, so documentary in their approach, have achieved fine art with their use of light, clarity and diffusion.

While this book provides a meaningful overview for newcomers, it is refreshingly eloquent for those 'in-the-know'. Candace Savage's unsentimental passion is a shot in the arm.

### African Birds of Prey

By Peter and Beverly Pickford and Warwick Tarboton  
Cornell University Press, Ithaca, NY 14850 (1989)  
Hardback \$49.95

*Karen Anderson  
Brookfield Zoo AAZK Chapter  
Brookfield, IL*

African Birds of Prey initially presents itself as being a coffee table book, but upon delving into the book you can find quite a bit of up-to-date information on many of Africa's birds of prey. However, the title of this book is a bit misleading as the book does have a definite emphasis on the species from southern Africa. The book covers 81 species found in this region and does not cover any species found only in the other regions of Africa.

The book is organized by taxonomic groupings with stunning full-page photographs of each species accompanied by the range, habitat preference, nesting activity and some behavior for each species. Also included is information on the population status of many of the birds. The author provides insight into why some of the species are doing poorly. One of the most common problems facing the birds is habitat destruction combined with a naturally low birth rate.

One may have a tendency with a book of this format to flip through the pages admiring the photos. This could be confusing when trying to I.D. the birds by reading the captions since many of the species have more than one common name and the author sometimes will use one name in the caption and another for the title page. This is where studying the accompanying text is necessary or one may turn to the appendix. Here, one can find the different common names and local names given a particular species. The appendix is also quite useful as other basic information on each species is summed up in a column of text. Included is scientific name, size, identification, habitat, distribution, status, habits, breeding, food, voice and a range map. In the main text and in the appendix, field identification tips are provided. While you certainly would not take this book out into the

## Book Reviews, *Continued*

field (in fact, it probably would not fit in a day pack), it would be useful before and after a nature tour of southern Africa.

While *African Birds of Prey* is probably not a book for the casual admirer of birds, I believe it is worth the \$50.00 investment for those who are interested in birds of prey and interested in expanding their knowledge to species outside of North America.

### The Animal Rights/Environmental Ethics Debate: The Environmental Perspective

Edited by Eugene C. Hargrove - 1992  
State University of New York Press,  
State University Plaza, Albany, NY 12246  
273 pgs., Paperback, \$14.95

*Review by Bonnie L. Brown  
Docent, National Zool. Park  
Washington, DC*

This book provides an historical approach, covering in succession a series of 11 essays that illustrate the stages of evolution over the past decade of the continuing effort to reconcile the rights of individual nonhumans with the requirements of a balanced ecosystem.

This book is not a light read. It would, however, be an appropriate textbook for a course on Environmental Ethics. Given sufficient supplemental background material, beginners in the issue through graduate students should find the book useful in looking at this complex, emotionally-charged issue from an environmental viewpoint.

Although compiled from one side's perspective, a diversity of views is presented in such chapters as: "Self Consciousness and the Rights of Nonhuman Animals and Nature"; "Environmental Ethics and Nonhuman Rights"; "The Ethics of Respect for Nature"; "The Significance of Species"; "Foundations of Wildlife Protection Attitudes"; and "Taking Sympathy Seriously: A Defense of Our Moral Psychology Toward Animals".

According to Hargrove, the book's "modest purpose" is to "present a series of positions from the standpoint of environmental ethics that has not found its way in any consistent manner, into animal rights literature".

It is a weakness of the book that it does not include any authors who specifically advocate animal rights, animal liberation, or animal welfare perspectives. In fact, the above-mentioned terms are used quite loosely in some of the book's essays. This omission gives the book the appearance of an intentional bias in favor of environmental ethics literature, lessening the book's balance and clarity.

Environmental ethics as a profession originated with the first Earth Day in 1970 when environmentalists began asking philosophers to deal with ethical issues in environmental affairs. The initial interest was in determining whether environmental attitudes could be morally justified and then to clarify the relationship between animal rights ethics and environmental ethics.

The book recognizes that ultimately the animal rights/environmental ethics debate will not be resolved by philosophers at their theoretical level but by environmental professionals and concerned citizens at the practical level. Although how the debate will end is far from certain, the book concludes with an article offering at least a sense of hope for the gradual emergence of a much deeper, more life affirming system of values.



1994 AAZK National Conference  
Omaha, Nebraska  
October 9 - 13, 1994

SCHEDULE OF SPECIAL EVENTS:

Saturday, October 8:

Mystery Event for early arrivals. Information will be distributed in Registration Packets.

Sunday, October 9:

Icebreaker featuring Omaha's newest band, **The Labels**.

Monday, October 10:

Dancing, volleyball, bowling, and billards at one of the City's hottest clubs, **The Ranch Bowl**.

Tuesday, October 11:

Early afternoon **Zoolympics** and time to browse in the downtown "Old Market". Evening - **Silent Auction** - followed by **Blues Night** at the Hotel.

Wednesday, October 12:

**ZOO DAY!** Spend the day at the Omaha Zoo, enjoying the sights, taking part in workshops, and taking in the numerous behind-the-scenes tours. **Barbecue Dinner** and **Pow-Wow** with **Nebraska's Intertribal Dancers** at the Zoo. Return to the Hotel for **Country Western Night**.

Thursday, October 13:

**Live Auction** and **Final Banquet**. Omaha's premier dance band, **The Rumbles**, follows the banquet.

AMERICAN ASSOCIATION OF ZOOKEEPERS



"A KEEPER'S PERSPECTIVE"

## Call for Exhibitors

The 1994 AAZK National Conference will be held at Omaha's Henry Doorly Zoo, Omaha, Nebraska, October 9 - 13, 1994. Exhibit tables are available for individuals, organizations, companies, or special groups who want to share information or display merchandise. Cost for AAZK members is \$25.00; non-members, \$50.00.

Exhibit hours are 8:00 a. m. - 5:00 Monday, and 8:00 a.m. - 11:00 a.m. Tuesday - Thursday. Exhibitors wanting to participate in Conference activities must pre-register. It's a great opportunity to distribute information to an enthusiastic group of individuals who share a common goal of conservation.

If you would like to exhibit or have any questions, please contact Julie Neemeyer, Omaha's Henry Doorly Zoo, 3701 S. 10th St., Omaha, NE 68107, (402) 733-8401.

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### United Airlines has been chosen as the Official Carrier for the 1994 AAZK National Conference in Omaha, Nebraska

Conference delegates will receive a 10% discount on unrestricted full-coach fares and a 5% discount on the lowest applicable fares on all United and United Express flights. These discounts also apply to delegates attending the pre-conference trip in Kansas City, MO, as well as those arriving from Canada.

For fares in the U.S. and Canada, call 1-800-521-4041, 7:00 a.m. - 10:00 p.m. E.S.T., 7 days a week. Use Reference #543QP.

Attendees also qualify for discount rates on Hertz Rental Cars. "Mileage Plus" Club members will receive credit for miles flown to Omaha.

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# 1994 AAZK National Conference Omaha, Nebraska

## Workshop Information:

A wide variety of topics are planned for this year's Conference Workshops, with something of interest for everyone!

**Zoo Day** (Wednesday, October 12) **Workshops** will be held at the Omaha Zoo and hosted by Zoo Staff and Keepers. Featured workshops will include:

--Exhibit Design

--Black-footed Ferret Recovery Program

--Genetic Banking (i.e. recovering sperm and embryos from hoofed species after death)

Behind-the-scenes tours of the Lied Jungle, Cat Complex, Giraffe Complex, and other areas of the Zoo will be offered throughout the afternoon.

**Workshops** will also be conducted at the **Hotel Convention Center**, including:

--Bowling for Rhinos

--Adopt-an-Acre/Conservation Parking Meter

--Emergency Animal Care

--Animal Enrichment

--A Keeper's Role in SSP and Studbook Programs

--Artificial Insemination in Birds

--Starting a Research Project

--Exhibiting Marine and Terrestrial Invertebrates

--Pest Management

--Australasian Rap Session\*

\*anyone interested in co-hosting, please contact Judie Steenberg at the Woodland Park Zoo, Seattle, WA.

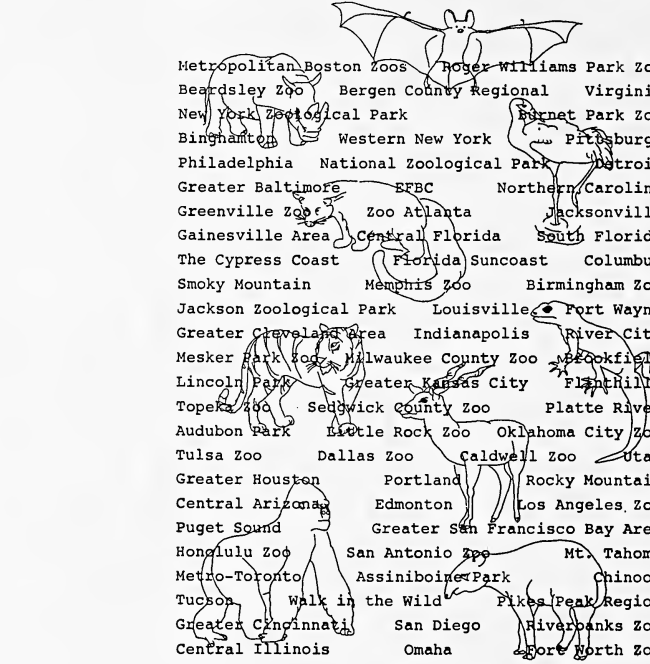
These workshops are planned for Monday evening, Tuesday morning, and, if needed, Wednesday morning, and will run approximately 1 - 2 hours each.

In addition, an informal Video Workshop will be held at the Hotel the evening of Monday, October 10th.

Anyone interested in hosting/participating in a workshop or presenting a video, please contact:

Cathy Socha, Chairperson  
Program Committee  
Omaha AAZK Chapter  
3701 S. 10th St.  
Omaha, NE 68107

# National AAZK Chapters Dedicated to Worldwide Conservation and Professional Animal Care



Metropolitan Boston Zoos    Roger-Williams Park Zoo  
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## American Association of Zoo Keepers

### NATIONAL CHAPTER T-SHIRTS

High quality dark purple shirts, animal designs in turquoise with Chapter names lettered in yellow. Includes lettering as shown above. All active Chapters are listed. Cost is \$14.00 US which includes shipping.

Please send checks payable to Rocky Mountain AAZK Chapter. All proceeds from the sale of these T-shirts will go directly to the 1995 National AAZK Conference Fund. Leave messages at (303) 337-6588. Send order to: Rocky Mountain AAZK-Conference Committee, 2900 E. 23rd Ave., Denver, CO 80205.

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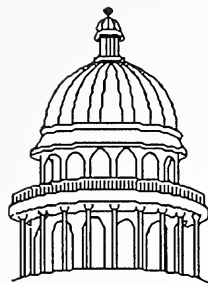
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# Legislative Outlook

Compiled by  
Phyllis Nilson-Wojcik  
Legislative Advisor



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## Endangered Species Act Update

There has been slow movement on the reauthorization of a strong Endangered Species Act. House Bill H.R. 2043 and companion bill in the Senate, S. 921, would strengthen the ESA by making it more proactive, incentive based, and ecosystem oriented. On 28 October, 1993, the co-sponsors of H.R. 2043 numbered 100 and co-sponsors for S. 921 numbered 17. As of 12 April, 1994, H.R. 2043 had 108 co-sponsors and S. 921 had 24. These bills are still in committee with no scheduled hearings as of mid-April. The bill sponsored by Rep. W.J. "Billy" Tauzin (D-LA), H.R. 1490, which would greatly weaken the ESA specifically by the "takings" issue, has gone from 88 co-sponsors to 105. This bill also remains in committee at this time. I urge you to continue to write or call your legislators asking their support of H.R. 2043 and S. 921.

U.S. House of Representatives  
Washington, DC 20515

U.S. Senate  
Washington, DC 20510

*>Personal phone conversation with Debbie Marshall, office of Vern Ehlers (R-MI), Washington, DC 12 April 1994.*

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## Your Help Is Needed To Pass Strong Clean Water Act

The Senate's Clean Water Act reauthorization bill, S. 1114, passed through the Senate Environmental Committee and is ready to be debated on the floor this spring. Although there are many issues of concern, three areas likely to be debated are toxic pollution, wetlands protection and takings amendments.

An amendment to S. 1114, proposed by President Clinton, would require Environmental Protection Agency (EPA) to develop a plan to regulate chlorine in certain industries after a study to assess the environmental and health impacts of using chlorine and alternatives. Dioxin, one of the most toxic substances ever created, is an unwanted and dangerous by-product of certain industrial uses of chlorine. Dioxin and other chlorine by-products have been found to cause severe birth defects and infertility, as well as increased incidence of breast and prostate cancer.

Please write your Senators by **29 July, 1994** and urge their support of wetlands protection and the Chlorine-dioxin amendment. Also ask them to oppose any takings legislation that would require taxpayers to pay or compensate corporate landowners if they are denied a permit to destroy wetlands. Write to your Senator at U.S. Senate, Washington, DC 20510.

*>Excerpted from National Wildlife Federation's EnviroAction - April 1994.*

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## Nongame Wildlife Wins Under Wildlife Grant Program

State efforts to conserve wildlife will get a boost from a new cooperative program aimed at funding nongame wildlife conservation projects. The U.S. Fish and Wildlife Service (USFWS), the National Fish and Wildlife Foundation, and the International Association of Fish and Wildlife Agencies has announced the selection of 58 wildlife projects nationwide to receive \$2.9 million this year under the newly established Partnerships for Wildlife Grant Program.

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

This is the USFWS's first grant program to focus primarily on nongame wildlife (species not generally hunted or fished) that are not protected under the Endangered Species Act. It also has a unique funding source comprised of an equal combination of federal, state, and private monies.

Under the new program, priority consideration is given to projects involving species considered at risk of becoming threatened or endangered. Other activities eligible for funding include surveying and monitoring declining wildlife populations, habitat improvement projects, educational efforts to increase public awareness of wildlife and habitat values, and projects providing opportunities for nonconsumptive wildlife-associated recreation such as nature photography and wildlife viewing.

Examples of the 58 Partnerships for Wildlife projects funded in 1994 include:

- Developing a plan for cooperative management of neotropical migrant songbirds in Kentucky, Tennessee, and Alabama;
  - Conducting an inventory of native fishes of the Colorado River system;
  - Studying mammals in the Greater Yellowstone Ecosystem, such as lynx, fisher and wolverine;
  - Surveying and monitoring of the Sonoran Desert population of the desert tortoise;
  - And improving habitat of grazed pastures in Wisconsin for declining populations of grassland birds.
- >Department of the Interior News Release, 3/15/94*

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## **U.S. Imposes Trade Sanctions on Taiwan**

Wildlife conservationists applauded the introduction in March of a bill to help preserve rhinoceros and tigers and ban some imports from countries that trade in these animals. The tough measure would give \$10 million to Zimbabwe and other African and Asian countries with rhinos and tigers and mandate trade sanctions that would put pressure on China, Taiwan and South Korea. In April the U.S., for the first time ever, imposed trade sanctions to protect these species. The Clinton Administration applied sanctions against Taiwan for refusing to halt the sale of tiger bones and rhinoceros horns. The sanctions will involve a ban on all Taiwanese wildlife product exports to the United States, which amounts to about \$25 million a year.

The world tiger population, which was 100,000 at the turn of the century, is below 6,000. In 1970, there were more than 65,000 African black rhinos and today fewer than 1,800, with no more than 10,000 of all five species left. The rhinos only enemy is man.

"This is the first time any country has acted on the international call for trade sanctions to protect endangered species, but if the illegal trade in rhinos and tigers is not eliminated, these species could be extinct in five years," President Clinton said in a statement.

"I am delighted that the U.S. has taken the lead in this worldwide battle to save the rhinoceros and tiger before it's too late," Diane McMeekin, head of the African Wildlife Foundation, said. "This action may make the difference between future generations seeing rhinos in parks or just in picture books."

The Clinton administration's Interagency Rhino/Tiger Task Force had considered sanctions against China as well because that country, along with Taiwan and South Korea, is considered to be among the worst offenders. But the administration apparently did not want to open another rift with the Chinese.

*>excerpted from Eco Notes, the Topeka Capital-Journal, 18 March 1994*





## WHAT'S ENRICHMENT!?

In the Conservation Research Department we have started a new zoo-wide environmental enrichment project, which will help coordinate and add to the already existing enrichment. This requires the cooperation of the staff, volunteers, and those willing to donate items needed. The project consists of providing the animals at the Knoxville Zoo with items that will enhance natural behavior. When animals are in captivity and not required to forage for their own food they sometimes tend to become bored or inactive due to lack of stimulation. We try to prevent this at the Knoxville Zoo with various types of enrichment.

An example of the most common way to stimulate natural behavior is scattering or hiding food so that the animal is required to spend more time searching for it. We would like to take this task a step further. In the last month we have been trying a few approaches. For the black bears we used an idea that the marine animals department has used in the past with their polar bears which consisted of freezing fish in a block of ice so that the bears had to work through the ice in order to get the food. "Fibber", our black bear really seemed to love it. We also gave our black and polar bears a piece of PVC pipe with honey, blackberries, and raisins in it. They all put a lot of time and effort into getting the goodies out of the pipe and then playing with the pipes afterwards. The black bear liked carrying his around afterwards while the polar bears enjoyed taking theirs into the pools.

We have also provided a treat to the primates. We used paper tubes and bamboo stalks and stuffed them with peanut butter, popcorn, etc. to provide a small challenge for these animals. For the chimps we added an extra challenge by drilling holes in the bamboo and putting raisins in it so the animals would have to manipulate the bamboo stalks in order to obtain the raisins. We have also given the primates cardboard boxes to explore and bamboo and willow to browse on. The red pandas that eat bamboo daily have also been offered large stalks of bamboo and different berries for a variation in diet.

For the elephants we try to occasionally give them boxes to manipulate and eat and provide them with extra browse such as honeysuckle or willow. Similarly with the hoofstock animals we try to provide extra browse materials for the keepers to scatter around the enclosure (we hope to tie some of the browse up high to allow the giraffes to use their long necks, in the near future). Rhinos have been seen rolling around the bowling ball and barrel that was offered. The cats have also enjoyed having a new barrel in one of their pools which was borrowed from the polar bears. They are a little cautious at first but soon take turns batting it around or trying to sink it.

As a very special treat for many of our animals TWRA donated some live fish. These were given to the tigers and binturongs but they weren't as excited about it as the black bear, polar bears and seals, all of which showed some good hunting skills. The lynx were more interested in scent marking the new bowl than catching the fish in the new bowl. The cougars, on the other hand, were immediately very interested and did some fishing "cougar-style".

## Enrichment Options, *Continued*

Lastly, our bird department hasn't been left out of all this. The condors were given some fish frozen in an ice block and a Kong toy with a mouse in it, both proved to be an exciting challenge. The bird seemed to enjoy manipulating the ice and Kong toy as much as the food inside. Our other birds have been offered some willow and as a special treat, some blackberries.

Enrichment can consist of special foods, objects to manipulate, or just creative feeding. These are a few of the ideas we have tried and we hope to try many more such as: offering many of the animals melons to eat and destroy, using PVC pipe to irregularly dispense crickets and meal worms, giving the large cats logs to dig in, and providing the hamadryas sand to play in. If you have some new ideas or would like to make a donation to this project please let us know by calling me at extension 325.

--Kim Widner, Conservation Research Assistant  
Knoxville Zoo, Knoxville TN



## Great Lakes Regional Council Meeting Planned for July

The Wilds staff in coordination with the Columbus Zoo Chapter of AAZK will be holding the summer session of the Great Lakes Regional meetings. The meeting will be held at the Wilds site in southeast Ohio on Wednesday, 20 July 1994 at 7:00 p.m. The Wilds, also called the International Center for the Preservation of Wild Animals (I.C.P.W.A.) is a newly created, free-ranging breeding and research facility for endangered wildlife. This will be a good chance for those who have visited us before to see our progress and for others to come see who we are.

We welcome everyone to come early between 12:00 noon and 2:00 p.m. to set up camp, tour the facility from 3:00 - 5:00 p.m., and have a BBQ dinner from 5:00 - 7:00 p.m. The meeting will last approximately two hours and will include new and old business, Chapter updates and guest speakers. There will be overnight on-site camping for those willing to stay for the night activities. The meeting and associated activities are open to all interested AAZK members, not just the G. L. Region!

For more information contact Cathie Kreager at the Wilds at (614) 638-2804. We are asking to please R.S.V.P. before 8 July 1994 for those planning to attend.



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# Weight Gain of a Giraffe

(*Giraffa camelopardalis reticulata*)

## After Being Orphaned at 3.5 Months of Age

By  
Mona Keith, Large Mammal Keeper  
Calgary Zoo, Calgary, Alberta, Canada

On 25 July, 1991, Carol, our adult female Reticulated giraffe (*Giraffa camelopardalis reticulata*), finally stood still, allowing Geordie to mount. He had been persistently following her for several hours, flehmen testing her urine and judging her willingness. It was a precarious position for him to be in so he had to be sure of her cooperation and her stability. The observing keepers began to count off the 15-month gestation period. The long wait would take us to the fall of 1992.

At the age of 18, Carol gave birth to her sixth calf on 21 October, 1992 at 0815 hrs, 454 days after conception. It was a male. When he was only one hour old he made wobbly attempts to stand, finally succeeding, but not for long, when he was only two hours old. Once he was able to stand and take a few steps he nursed. He was now 3.5 hours old. By 0900 hrs the next morning he was galloping unsteadily around the straw-lined enclosure.

At one day old "Mason" weighed 54kg (119 lbs.) and stood 1.8m (6 ft.) tall. At one week he was 59kg and attempting to chew on alfalfa.

A couple of months after giving birth to Mason, Carol appeared weak, unsteady on her feet, and unresponsive to keepers. She responded only partially to medication. She collapsed on two occasions. The second time proved too severe and the decision was made to euthanize her on 31 January, 1993. She was 19. The cause of her decline was not found, but 19 is a respectable age for a giraffe and she led a full and productive life at the Calgary Zoo.

Then our attention turned to Mason. At 3.5 months of age how would he respond to such an abrupt weaning? Calves are normally weaned at 7-8 months! He had begun experimenting with solid food such as alfalfa when he was only one week old. He began eating some oats and pellets when only three weeks old. At the time of Carol's death Mason was already well onto solid foods. We decided to continue with the standard diet adding no new supplement.

He quickly adjusted to life without Carol and fortunately, our young female "Mardi", was around to keep Mason company. Mardi, herself only three years old, had been slowly introduced to Mason when he was a couple of weeks old. She had shown some initial fear and aggression towards him but had finally accepted his presence. Geordie always had limited access to the other giraffes due to his aggressive tendencies. It was not until Mason was seven months old that the two were introduced for short periods.

To more closely monitor Mason's food intake we tried separating him from Mardi when we fed their oats, pellets, fruits and vegetables (both had access to alfalfa at all times). It was observed that he was more anxious when separated and did not spend as much time at the food trough so this procedure was quickly abandoned.

Although he appeared to be doing well, we wanted to be able to gauge his progress and to anticipate any problems. Weights seemed to be the best solution. We could no longer just pick him up and weigh him on a floor scale as we did when he was one day and one week old. We had no system in place to weigh older giraffes so we quickly designed a weighing platform that would function while the giraffe was confined within our squeeze\* (see photo). The platform was covered with indoor carpeting to provide traction. Mason was coaxed to step up on the platform with food and verbal encouragement and the squeeze was then closed around him. The stabilizing blocks were removed, his weight was recorded and he was let out. The whole procedure took about 15 minutes. He took to the weighing procedure easily. He was a little nervous the first few times but soon it became routine for him and the keepers. The first weight recorded using this system (130kg) was taken only four days after Carol died.



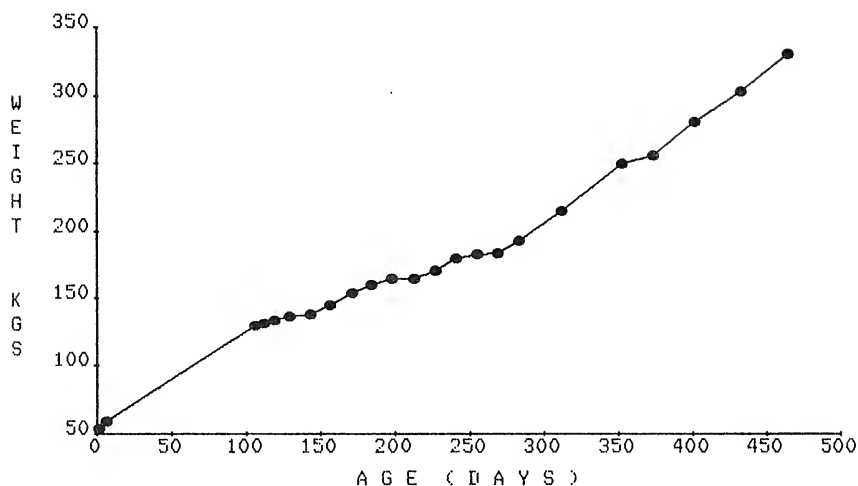
**Mason at 15 months of age in the squeeze for weighing, 29 January 1994.**  
*(Photo by Mona Keith)*

## Weight Gain of a Giraffe, Continued

The following graph and table show his weight progression.

### MASON'S WEIGHT

OCT 92 - JAN 94



DATE	AGE (DAYS)	WEIGHT (KGS)
22/10/92	1	54
27/10/92	6	59
04/02/93	106	130
10/02/93	112	131
20/02/93	122	134
27/02/93	129	137
13/03/93	143	138
26/03/93	156	145
10/04/93	171	154
23/04/93	184	160
07/05/93	198	165
22/05/93	213	165
05/06/93	227	171
19/06/93	241	180
03/07/93	255	183
17/07/93	269	184
31/07/93	283	193
29/08/93	312	215
09/10/93	353	250
30/10/93	374	256
27/11/93	402	281
28/12/93	433	304
29/01/94	465	331

## Weight Gain of a Giraffe, Continued

Monthly weights will continue to be recorded for as long as it is feasible with our present system.

\* **Giraffe Squeeze:** a manual restraint apparatus which restricts the movement of the giraffe for health care procedures such as hoof trims, blood tests, weight recording and medical treatments.

### Acknowledgments:

I would like to thank Barb Williams for her enthusiastic editorial support, and Rob Keith for his computer expertise when I ran into graph generating dilemmas.

### INFORMATION REQUEST

Mason has shown a steady weight gain and is doing well. I have had little success, however, in finding references pertaining to young giraffe weight gain with which to compare him to. The only one is found in *International Zoo Yearbook* (1991) 30:213-215, "Hand-rearing and introduction of a Giraffe at Taronga Zoo, Sydney". I'm still searching for additional references. If you have any records of giraffe weight gain and/or the weighing system used please send to: Mona Keith, Large Mammals, Calgary Zoo, P.O. Box 3036, Stn. B, Calgary, Alberta, T2M 4R8 Canada.



## Garbage Magazine's

### Environmental Index

Teenagers who say young people can make "a lot of difference to the environment" by recycling: 74%

Teenagers who say young people can make "a lot of difference" by reducing waste: 54%

People in 1988 who thought the U.S. government should be doing more to protect the environment: 97%

People who in 1988 said they would pay higher taxes to protect the environment: 32%

People in 1993 who say they would pay more: 26%

Number of newspapers with Science sections, 1990: 96

Number of newspapers with Science sections, 1992: 47.

*(Garbage Magazine quoted in Nature News from The Nature Book Society, Vol. 8, No. 11)*

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# Chapter News

## Columbus Chapter AAZK

The Columbus Chapter officers for 1994 are:

President.....Dianna Frisch  
1st Vice Pres.....Beth Pohl  
2nd Vice Pres.....Beth Armstrong  
Secretary.....Sally South  
Treasurer.....Nanci Pintavalli

In January, our Chapter, in conjunction with Project C.O.P.E., sponsored our second annual "Game Night". The main event of the evening was an euche tourney with 24 players. Lots of food and fun was had by all. We raised \$425.00 for Conservation International's Parker-Gentry Fund. This was the fund that was set up in memory of two conservationists who tragically lost their lives in a plane crash.

Our 1994 calendar of events has been planned. Some ideas for the year are two appreciation dinners (for horticulture, maintenance and guest services and the other one for docents); an auction, white-water rafting trip, fundraiser/pool party, and a hayride.

--Lori Monska-Wright, Chapter Liaison

## San Diego Chapter AAZK

The San Diego Chapter would like to introduce its newly elected officers:

President.....Nicki McGahey  
Vice Pres.....Trisha Olow  
Secretary/Designer THE KEEPER.....  
Andrew Simmons  
Treasurer.....Vickie Steele  
Chapter Liaison.....  
Rachél Watkins Rogers

## Supporting Board Members---

Charles Gailband  
JoAnn Haddad  
(replacing Steve Castillo)  
Christina Simmons, Editor  
for THE KEEPER  
Stephen Wootten, Overseer, '94 BFR

The February meeting speaker was Alan Roocroft, Manager of Elephant Programs for the Zoological Society of San Diego. His talk "The Elephant Dilemma", was an interactive discussion about the plight of the elephant in the wild and the lack of reproduction in captivity. Alan points out the bleak outlook for the future of elephants if professionals don't get involved in *in situ* conservation. A total of 47 people were in attendance.

In March the Chapter had the pleasure of supporting the "International Conference on Orang utans: The Neglected Ape" by contributions in support of coffee breaks, design of coffee break signs and tickets for the conference events. The March meeting speaker was Dr. Walter Boyce of the Anza-Borrego Bighorn Sheep Project. His talk outlined the importance of stable yew territories and how it relates to survival of the species in its wild habitat. A total of 45 people were in attendance.

In April Steve Castillo, Lead Keeper/Mammal Dept., announced that he had accepted the position of Assistant Curator of Mammals at the San Francisco Zoo. He had to resign his post of Chapter Board member and JoAnn Haddad, Keeper/Wild Animal Park, a Board nominee has filled his position. We will miss Steve and wish him well with his new position.

The Chapter is also involved in a couple of exciting projects. Their magazine The Keeper is being sold nationally by subscription and they now have 87+ subscriptions, not including Chapter members. Since the inception of the magazine, membership has gone up by 700%.

Another project in the making is a calendar called "BUNS" - a behind-the-scenes look at animals. The Chapter is offering calendars at a minimum order of 25 for the wholesale price of \$5.95 plus shipping to AAZK Chapters. The calendar is being sold at a suggested retail price of \$11.95. They can be shipped in July 1994 to interested Chapters. Contact Andrew Simmons for your orders.

--Rachél Watkins Rogers,  
Chapter Liaison



## Chapter News, Continued

### Greater Cincinnati AAZK Chapter

Nineteen-ninety-four has been a busy year so far for our Chapter. We've held a behavior training seminar, had several Chapter meetings, and are planning projects for the rest of the year.

Our Chapter has been in contact with the curator of the Emperor Valley Zoo in Trinidad, West Indies. Apparently zoo attendance has been low resulting in loss of money to buy gear and equipment with. EVZ's curator has sent a list of products that their zoo needs. If you would like to help GCAAZK in gathering items to send to EVZ you can call: Karen @ (513) 281-4701 Ext. 8348. Equipment needed varies from small, inexpensive items to costly scales and microscopes. Any help with this project will be greatly appreciated.

*--Karen Creamer, GCAAZK*

### Suncoast Chapter AAZK

The Suncoast Chapter of AAZK is based in Tampa, FL and consists of members from Lowry Park Zoological Gardens and Busch Gardens, Tampa Bay. The officers for the current year are:

President.....Kevin Shelton  
Vice Pres.....David Burch  
Secretary.....John Smith  
Treasurer.....Lee Ann Rottman  
Chapter Liaison.....John Beasley

The year is off to a great start with the formation of committees to plan events such as Bowling for Rhinos and Earth Day. We are also in the process of forming a Chapter newsletter which we hope will include member contributions.

*--John Beasley, Chapter Liaison*

### Knoxville Zoo AAZK Chapter

The Chapter has made a few changes in the last few months. We have changed our name and logo. Our name has changed from the Smoky Mountain AAZK Chapter to the Knoxville Zoo AAZK Chapter. Our new logo (see inset) contains the national symbol, a Rhino, and a Red Panda, in part due to our top breeding status of the pandas. Our new logo was drawn by Gene Peacock.

We recently lost our Vice President, Gene Peacock, to Jacksonville Zoo (Good luck, Gene!). Our new Vice President is Lisa Drummer, Senior Conservation Research Assistant. We will have officer elections in July.

Our Chapter has been spending most of its efforts preparing for Bowling for Rhinos. We have also been looking into some more fundraisers. We have started collecting coins tossed into a pond at the front of the zoo, have held employee bake sales, and are developing a photo album from which employees and volunteers may purchase photos of our animals. Some of our members also recently volunteered an evening to help with the PBS telethon to raise money for the public television station.

*--Kim Widner, Secretary*



**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) 986-6921 [w]; (204) 837-2916 [h]

**Regional Coordinators**

- ALABAMA** - Fred Alvey, Zoo Atlanta, 800 Cherokee Ave. S.E., Atlanta, GA 30315  
**ALASKA** - Vacancy  
**ARIZONA** - Vacancy  
**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)** - Vacancy  
**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** - Vacancy  
**IDAHO** - Holly Liappas, Tautphaus Park Zoo, P.O. Box 50220, Idaho Falls, ID 83405  
**ILLINOIS** - Pat Swieca, 5710 W. Cullom Ave., Chicago, IL 60634  
**INDIANA** - Vacancy  
**IOWA** - Carla Wieser, Omaha's Henry Doorly Zoo, 10th St. & Deer Park Blvd., Omaha, NE 68107  
**KANSAS** - Vacancy  
**KENTUCKY** - Scott Wright, Cleveland Metroparks Zoo, 3900 Brookside Park Dr., Cleveland, OH 44109  
**LOUISIANA** - Rhonda Votino, 3535 Houma Blvd., Apt. 109, Metairie, LA 70006  
**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** - Tim Sampson, John Ball Zoo, 1300 W. Fulton, Grand Rapids, MI 49504  
**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** - Holly Liappas (see address under Idaho)  
**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** - Frank Leonard, Bronx Zoo, 185th & Southern Blvd., Bronx, NY 10460  
**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) 986-6921 [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** - Vacancy  
**WEST VIRGINIA** - Theresa Maas, Philadelphia Zoo, 34th & Girard, Philadelphia, PA 19104  
**WISCONSIN** - Wayne Hazlett, 3768 S. 89th St., Milwaukee, WI 53228  
**WYOMING** - Holly Liappas (see address under Idaho)  
**DISTRICT OF COLUMBIA** - Theresa Maas (see address under PA)  
**Province of Ontario** - Vacancy  
**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  
**Atlantic Canada** - Bernard Gallant, RR # 7, 1081 Ryan Road, Moncton, N.B., E1C 8Z4 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 - Psittacines**...requires minimum of one year paid, hands-on experience with **Macaws** and degree or equivalent Zoo related experience. Duties include daily care, feeding and habitat upkeep, breeding programs, record keeping, medical coordination, acquisitions, training, supervising part-time staff and volunteers, presenting educational programs, etc. Must be willing to work weekends/holidays. Starting salary \$16,000-\$21,000 with year-end bonus and benefits. Excellent growth potential. Salary commensurate with experience. Send resume-references to: Washington Zoological Park, 1925 SE 54th, Issaquah, WA 98027. Position open until filled.

*The following two (2) positions are available at the Primate Foundation of Arizona. All applicants must have a negative TB skin test, negative hepatitis B surface antigen test, and evidence of a measles booster or natural disease prior to employment. For either position send letter of interest (with requested salary), resumé, and three letters of reference to: Jo Fritz, Primate Foundation of Arizona, P.O. Box 20027, Mesa, AZ 85277. Closing date is 1 July 1994.*

**REGISTRAR**...maintain and develop computer record systems to account for inventory and health status of a chimpanzee breeding colony. Works directly with Staff veterinarian. Must be proficient in Lotus 1-2-3 and WordPerfect, and type a minimum of 40 WPM. Must have good communication skills. Experience in a veterinarian practice preferred. Must be willing to make a two-year commitment. Salary negotiable. Excellent benefits.

**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 a two-year commitment. Excellent benefits. EOE.

*The following two (2) positions are open at Wildlife Safari. Interested applicants should send a cover letter and resumé to: Wildlife Safari, Attn: Personnel Department, P.O. Box 1600, Winston, OR 97496.*

**VILLAGE KEEPER**...Village Keeper position available at a 600-acre drive-through animal park. Requires a minimum of two years experience in the husbandry and care of exotics. Course work in Biology or related field as well as a strong background in hand-rearing, diet preparation, egg incubation, and the care of small primates, birds, carnivores, and marsupials is preferred.

**CARNIVORE KEEPER**...Carnivore Keeper position available at Wildlife Safari, a 600-acre drive-through animal park. The carnivore collection consists of Brown and Black bear, Tiger, a nine-member Lion pride, and a successful Cheetah breeding population. Applicants should have a minimum of two years experience in the husbandry, observation, and breeding of exotics, preferably with large carnivore species. Degree or course work in Biology or related field is also preferred.

**ELLEN TROUT ZOO POSITIONS**...seeking applicants for openings available for a **Bird Keeper**, a **Herp/Bird Keeper**, and a **Veterinary Technician**. All positions require prior zoo experience and the Veterinary Technician position requires graduation from an accredited training program and be certified or qualified for certification. All positions offer exciting opportunities for motivated and dedicated individuals. To apply, or for further information, contact Gordon Henley, Jr., Ellen Trout Zoo, 402 Zoo Circle, Lufkin, TX 75904. (409) 633-0399 by 31 May 1994. The City of Lufkin offers excellent benefits and is a Equal Opportunity Employer.

*The following three (3) positions are available at the North Carolina Zoo. If interested in either position, send resume and cover letter by 31 May 1994 to: Martha Wright, Personnel Department, North Carolina Zoo, 4401 Zoo Parkway, C-10, 001, Asheboro, NC 27203.*

**ZOOKEEPER II/PUFFIN**...requires at least two years of experience with a variety of avian species, preferably including alcids and/or penguins. A bachelor of science degree in Zoology with coursework in ornithology preferred. SCUBA certification desirable. Will help to open new alcid exhibit (includes the rearing of alcid chicks) which is part of the new North American expansion. Salary \$17,601.00.

**ZOOKEEPER II/CYPRESS SWAMP**...requires at least two years of experience with waterfowl (including artificial incubation and rearing of chicks), cougar and/or reptiles. A bachelor of science degree in Zoology preferred. Will be involved in the opening of the new Cypress Swamp exhibit, which is part of the new North American expansion. Salary \$17,601.00.

**COMMISSARY SUPERVISOR**...requires a bachelors degree in biology or related field with two years experience as a zookeeper; two years experience in a zoo commissary is desirable. Equivalent training would be eight (8) years experience in a zoo commissary, including three (3) years at supervisory level. Incumbant will oversee operation of commissary for diet preparation for approximately 1300 animals representing 300 species. Includes ordering, receiving, inventory, diet prep and supervision of a staff of seven (7). Must have good oral and written communication skills. Must have knowledge in animal nutrition, feeds and feeding, and animal natural histories; must possess computer skills and ability to learn software for analysis of animal diets. Salary \$22,568.00, plus benefits.

**CURATOR**...for The Wildlife Discovery Program (a Houston I.S.D. Magnet School) is now taking applications for the 1994-95 school year. The Curator position vacancy will become available 16 August 1994 and continue until 1 June 1995 (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; or 5) Summer camp counselor experience. Salary is \$1030.00/month for 10 months with benefits. Applications will be accepted until **15 July 1994**. Applicants need to send a cover letter and their resumé and three references to: Ms. Karyl Watz, Coordinator, Wildlife Discovery Program, 1513 North MacGregor Way, Houston, TX 77030.

**ANIMAL KEEPER/BIRD DEPT./BALTIMORE ZOO**...each candidate must have one year's paid experience in the care and handling of a variety of birds, excluding pets; or have 6 month's experience in the care and handling of animals in a zoological institution; or have a bachelor's degree from an accredited college or university in biology, zoology, animal science or veterinary technology. Under the direct supervision of a Senior Keeper and/or Curator. Send resume to: Personnel Dept., Baltimore Zoo, Druid Hill Park, Baltimore, MD 21217.



## Information Please

I would be interested in receiving any information on training Psittacines. Send to: Coleen Watkins, Keeper II, Caldwell Zoo, P.O. Box 4280, Tyler, TX 75712.

# 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 S.W. Gage Blvd.  
Topeka, KS 66606-2066

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National Zoological Park      3/95  
N.Z.P. Library  
Washington, DC 20008

# Animal Keepers' Forum

June 1994

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*Lucentheris dik dik  
showing preorbital gland*

***Dedicated to Professional Animal Care***

**Editor-In-Chief:** Susan Chan **June 1994**  
**Associate Editors/Enrichment Options Coordinators:** **Volume Twenty-one**  
Kayla Grams, Topeka Zoo & Gretchen Ziegler, Wildlife Safari Park **Number Six**  
**Book Review Coordinators:** Melba T. Brown, National Zoo and Tom Aversa, Franklin Park Zoo  
**Legislative Outlook Column Coordinator:** Phyl Nilson Wojcik, John Ball Zoo

*Animal Keepers' Forum* (ISSN 0164-9531) is a monthly journal of the American Association of Zoo Keepers, Inc. 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 66606-2066**  
**Barbara Manspeaker, Administrative Secretary**

### BOARD OF DIRECTORS

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### COMMITTEES

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Chair - Elaine Puzo, Newark Museum Mini-Zoo	Chair - Jan McCoy, Metro Washington Park Zoo
<u>Publications Funding</u>	<u>AAZK Development</u>
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<u>Exhibit Design Resource Notebook</u>	<u>AAZK Chapter Logo Products</u>
Michael Demlong, Phoenix Zoo	David Morrow, Wichita, KS
<u>AAZK Keeper Manual: USDA/AAZPA Inspection Standards</u> - Rachel Rogers, San Diego Zoo	

### MEMBERSHIP SERVICES

<u>L.I.N.K. Coordinator</u>	<u>Animal Data Transfer Form</u>
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<u>Zoo University List</u>	<u>Staff Exchange</u>
Mike Illig, Washington Park Zoo	Dale Frerking, Kansas City Zoo
<u>Keeper Accommodations List</u>	<u>AAZK Historian</u>
Todd Cleveland, Denver Zoo	Heidi Fowle, Discovery Island
<u>AAZK Library Resources</u>	<u>International Affairs</u>
Marilyn Cole, Metro Toronto Zoo	Lesa Scheifele, Norwich, CT - Coordinator
<u>AAZK Training Materials</u>	Lois Johannes, L. A. Zoo - Foreign Keeper
Laura Treschel, Continuing Education Coordinator, Minnesota Zoological Gardens	Sponsorship
Christina Simmons, Keeper Training Package Coordinator, San Diego Zoo	

### PRESIDENTIAL ADVISORS

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Ed Hansen, Reid Park Zoo	Ron Ringer, San Diego Zoo
<u>Bowling for Rhinos</u>	<u>CAZPA Liaison</u>
Patty Pearthree, Indianapolis Zoo	Tom Mantil, Metro Toronto Zoo

### AAZK PUBLICATIONS : CONTINUING DATA COLLECTION

Zoo Infant Development Project - Harmony Frazier, Woodland Park Zoo (Mammals)  
Teri Maas/Maggie Liguori, Philadelphia Zoo (Birds/Nonpasserines); Kim Livingstone, L.A. Zoo (Passerines)  
Jeanne Boccogelli, Newark Museum Mini-Zoo (Reptiles); Linelle Lone, Denver Zoo (Amphibians)  
Diet Notebook, Mammals, Vol. II - Susan Bunn Spencer, Grand Rapids, MI





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## Information for Contributors

*Animal Keepers's 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 25½cm (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") 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 as space allows. However, long articles must be sent by U.S. mail. Phone is (913) 272-5821 Ext. 31. FAX (913) 273-1980.

## 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 Guenther's Dik Dik (Rhynchotragus guentheri) drawn by Janie Hughes, Assistant Graphic Designer at the Dallas Zoo, Dallas, TX. A second drawing by Janie appears with the article on Detecting Estrus Using Urinary Hormone Analysis found in this issue. Dik dik are dwarf antelope native to the African continent. They are slightly above hare size, with a graceful shape, slender legs, and a round back which is higher at the croup than at the shoulder. Their trunk-like nose is movable and the males have horns. The males also have a preorbital gland which is used in scent marking. These small antelope live in pairs in long-term territories. After a six month gestation, the female gives birth to a single young which is fully grown at 12 months but may be sexually mature at six months. Thanks, Janie!*

## **Scoops and Scuttlebutt**

### **Topeka Chapter Donation Acknowledged**

The AAZK Board of Directors and the Administrative Office staff would like to thank the Topeka Chapter AAZK for their recent donation of \$100.00 to the Association. This amount represents approximately one-half the cost of maintaining the toll-free 800 telephone service for one month. Such donations from AAZK Chapters help in funding the operating costs of the Association and help to keep AAZK financially sound. Thanks, Topeka Chapter!

### **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, 1 Conservation Place, 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.

### **Regional Coordinator Positions Available**

Members are reminded that there are a number of States and Provinces which remain without Regional Coordinators. Areas needing RCs are: Alaska, Arizona, Colorado, Hawaii, Indiana, Kansas, Missouri, Washington, Ontario and Quebec. If you are interested or for more information on duties and responsibilities, please contact L.I.N.K. System Coordinator Mark de Denus, Assiniboine Park Zoo, 2355 Corydon Ave., Winnipeg, Manitoba, Canada R3P 0R5.

### **Two Positions Remain Available on Nominations/Elections Committee**

Members are reminded that two positions are still available on the AAZK Nominations and Elections Committee. They are:

**Chair:** Responsible for the coordination of the AAZK/NEC and reporting to AAZK Board of Directors the outcome of the elections process. This duty must be taken seriously due to the credibility and accountability of this person being of the utmost importance to AAZK. Must have excellent reporting skills, computer literacy helpful, and good records keeping skills a must.

**Committee Member:** Responsible for assisting the Chair in coordinating the elections process of the AAZK Board of Directors. Must have good reporting skills and computer literacy helpful.

If interested send resumé or for more information contact: Rachel Watkins Rogers, Board Overseer, AAZK Nominations and Elections Committee, San Diego Zoo/Mammal Dept., P.O. Box 551, San Diego, CA 92112-0551 FAX 619-232-4117.



# Coming Events

## American Federation of Aviculture 20th Annual Convention

August 3-6, 1994

Knoxville, TN

Theme is "Out of Africa and Down Under". Seminars will focus on African and Australian aviculture and conservation. Pre- and Post-conference tours being offered. For more information, please call the AFA Business Office at (602) 484-0931.

## 14th Annual Conference of the Association of Zoo Veterinary Technicians

September 25-29, 1994

Cleveland, OH

Held at the Cleveland Metro Parks Zoo. If you would like more information, please contact Rhonda Kesak, Cleveland Metro Parks Zoo, 3900 Brookside Park Drive, Cleveland, OH 44109; (216) 661-6500, ext. 259.

## Association of Avian Veterinarians

Sept. 27 - Oct. 1, 1994

Reno, NV

Conference site is the Nugget Hotel. The program will offer a wide variety of continuing education opportunities with concurrent programming to satisfy a broad range of interests. A Core Seminar, Basic Avian Medicine Symposium, Main Conference, and Practical Labs will be included. For further information contact the AAV Conference Office, 2121 So. Oneida St., Ste. 325, Denver, CO 80224-2552, (303) 756-8380, FAX (303) 759-8861.

## 15th Annual Conference of the Elephant Managers Association

Sept. 29 - Oct. 1, 1994

Toronto, Canada

Hosted by the Metro Toronto Zoo and to be held at the Guild Inn. Registration is \$89.00 (Canadian Funds). For further information contact: John Stoner, Animal Care Manager, Metro Toronto Zoo, P.O. Box 280, West Hill, Ontario, Canada M1E 4R5, Tel: (416) 392-5965, FAX: (416) 392-4979.

## American Association of Zoo Veterinarians

October 23-27, 1994

Pittsburgh, PA

To be held at the Hyatt Regency Hotel. Workshops will take place on Sunday, 23 October. Conference will include sessions on reptiles and amphibians, nutrition, immobilization, avian species, primates, clinical and gross pathology, environmental enrichment, aquatic animal medicine, hoofstock and large mammals, carnivores and small mammals and case reports. In addition there will be both a student and graduate student competition and a poster session. For more information contact: Wilbur Amand, VMD, AAZV Executive Director, Philadelphia Zoo, 3400 W. Girard Ave., Philadelphia, PA 19104-1196; phone (215) 387-9094; FAX (215) 387-2165.

## Association of Reptilian and Amphibian Veterinarians (ARAV)

October 22-23, 1994

Pittsburgh, PA

To be held in conjunction with the AAZV Conference listed above. This is the first conference for the ARAV and will include a general lecture session, a case report session and workshops on (1) basic reptile and amphibian medicine; (2) advanced reptile and amphibian medicine; and (3) pathology/necropsy techniques. For further information and registration materials contact Wilbur Amand at address given under AAZV listing.

## Coming Events, *Continued*

### Third Annual National Watchable Wildlife Conference

October 26-29, 1994

Burlington, VA

Theme is "Take A Closer Look". Conference will include workshops, panel discussions and hands-on interactive sessions. Fieldtrips for Vermont wildlife viewing included. For further information contact Hannah Kirchner or David Case at National Watchable Wildlife Conference, 607 Lincolnway West, Mishawaka, IN 46544 Tel: (219) 258-0100.

### The Exploitation of Mammals

November 25-26, 1994

London, England

A symposium organized by The Mammal Society and Universities Federation for Animal Welfare. The major theme concerns the various ways in which mammal populations are exploited world-wide, the concept of sustainable use and the resulting welfare considerations for animals involved. Program includes sessions on Mammal Game Ranching, Mammal-oriented Ecotourism; Mammals in Zoos and Circuses; Sport Hunting of Mammals; and Mammal Wildlife Trade and Conservation. For further information contact Victoria Taylor at UFAW, 8 Hamilton Close, South Mimms, Potters Bar, Herts, England EN6 3QD.

### 10th International Conference on Bear Research & Management

July 16-20, 1995

Fairbanks, AK

Sept. 11-14, 1995

Mora, Sweden

Theme is "Bears - Their Biology and Management." For both sessions, persons desiring to present papers must submit summaries of their proposed presentations. Summaries are due by 30 September 1994 for Fairbanks and by 30 October 1994 for Swedish-Norwegian sessions. For further information contact: Fairbanks - Harry Reynolds, 1300 College Rd., Fairbanks, AK 99701-1599, tel: (907) 452-1531, FAX: 907/452-6410; Sweden - Anders Bjarval, Naturvardsverket, @-171 85 Solna, Sweden, tel: Int. code + 46 8 799 10 00, Telfax: Int. code + 46 8 799 14 02.



## **SMALL FELID WORKSHOP**

### **October 13-16, 1994**

Dr. Jill Mellen, Susan Millard and Pat Quillen will join with other specialists in presenting a small cat workshop to be held at the facility of SOS CARE (near the San Diego Wild Animal Park), which presently houses 50 plus small cats of varied species and subspecies. Early enrollment is encouraged as attendance will be limited for the benefit of the animals and participants.

For further information contact: Pat Quillen, SOS CARE, 15453 Woods Valley Rd., Valley Center, CA 92082. Phone: (619) 749-3946; FAX: 619-749-1324 or call Susan Millard at (619) 738-5085.



# Births & Hatchings



Caldwell Zoo (Tyler, TX)...announces the following significant B&H from January through December of 1993:

Mammals - 3.2 Cheetah (*Acinonyx jubatus*) [E/SSP]; 0.2 Grevy's zebra (*Equus grevyi*) [T/SSP]; 1.0 South American tapir (*Tapirus terrestris*) [E]; 0.1 Black rhinoceros (*Diceros bicornis*) [E/SSP]; 0.1 Bongo (*Tragelaphus eurycerus isaaci*) [U]; 1.1 Gunther's dik dik (*Madqua guentheri smithi*) [U].

Reptiles - 0.0.20 African spurred tortoise (*Geochelone sulcata*) [1st time for pair and facility]; 0.0.10 Crevice spiny lizard (*Sceloporus poinsetti*) [1st time for facility]. *submitted by Connie Dieringer, President, Caldwell Zoo AAZK Chapter, Tyler, TX.*

Reminder of Proper B&H Format: Those submitting Births & Hatchings are reminded that such submissions should follow the format illustrated above in the Caldwell Zoo listing. We have created four categories which we hope will streamline information. Only animals which fall within these categories should be included in your report. Note the category designation in brackets after each entry. The categories are as follows:

1. Endangered (E); Covered by SSP (E/SSP)
2. Threatened (T)
3. Uncommon in Captivity (U)
4. Significant to institution
  - a. (first time birth)
  - b. (first time birth from pair)
  - c. (diet change)
  - d. (husbandry change)
  - e. (exhibit change)
  - f. (other)

Each animal listed should include common name, scientific name and should then be followed by appropriate codes. Descriptions under the "significant to institution" category should be kept brief. We hope that those people who wish to expand further on the circumstances surrounding a significant birth or hatch will consider writing an article for AKE. Such articles need not be lengthy, but will allow for more details on significant B&H. We would also encourage the submission of black and white photographs to accompany either B&H submissions or separate articles.

Finally, the deadline for submission of B&H material has been changed. **All material for B&H column must be submitted no later than the 10th of every month.** We thank you in advance for your cooperation and we would like to hear your comments on how you like this format.



## ***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. Each Board Member is assigned committees and/or projects to coordinate or oversee. The Board Oversight maintains communication with the Committee/Project Chair, advises them on the goals the Board would like to see accomplished, and encourages communication to the membership via AKF about the Committee/Project's progress. The Board Oversight 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.

This month President Jan McCoy and Vice President Rachél Watkins Rogers review their oversights. If you have any questions or suggestions for any of the committees, please contact either the Chair or appropriate Board member. Our Association is dependent on the collaborative efforts of our committees, chairs and membership.

#### **Presidential Oversight - Jan McCoy**

The Elephant Manager's Association - the EMA's Presidential Advisor to AAZK is Ron Ringer of the San Diego Zoo. The EMA is working with AZA to develop an elephant management protocol. The printing of their newsletter is being changed from the Burnet Park Zoo in Syracuse, NY to the Indianapolis Zoo, Indianapolis, IN. The Metro Toronto Zoo, Toronto, Canada, will host the 1994 EMA Conference from 29 September to 2 October. See further information on the EMA Conference under "Coming Events".

Bowling for Rhinos - Patty Pearthree is National Coordinator for BFR and serves as Presidential Advisor on this project. Patty reports that to date 49 bowling events have been held by 54 AAZK Chapters. With continued support from Chapters for this worthwhile project, we are striving to expand our commitment to other endangered rhino projects. Beginning this year, any monies over the \$100,000 dedicated to Ngare Sergoi will go to the Ujung Kulon National Park in Java. Patty has an update on Ujung Kulon under the BFR Update in this month's issue.

Ed Hansen, AAZK/IPP, is the Liaison to the Association of Zoos and Aquariums (AZA) and Tom Mantil, Metro Toronto Zoo, Canada, is Liaison to AAZK for the Canadian Association of Zoos Parks and Aquariums (CAZPA).

#### **Vice Presidential Oversight - Rachél Watkins Rogers**

AAZK Bylaws Committee - Ed Hansen (Reid Park Zoo) is Chair of the Committee. Other members include: Patty Pearthree (Indianapolis Zoo), Rachél Watkins Rogers (San Diego Zoo) and Alan Baker (Burnet Park Zoo). The purpose of this standing committee of the AAZK is to annually review the Association By-laws for possible changes due to revisions of policies or legalities the AAZK is required to fulfill. If a change is required the CHAIR is directed, by the Board, to present the proposed changes to the membership for a vote.

Ad Hoc Ethics Committee - This standing committee of the AAZK is Chaired by Ed Hansen and four other Professional members who are chosen at random by computer at the Administrative Offices in Topeka. As a safeguard, there are four alternate Professional members who are chosen in the event that any of the original members chosen can't serve. These members remain anonymous to the BOD and membership, but are notified by the President that they have been chosen for service. Should the need arise, the committee becomes 'active' and will investigate matters of formal complaint.

## From the President, *Continued*

AAZK Nominations and Elections Committee - This standing committee of the AAZK is currently seeking a Chair and a committee member to work with Kim Miller (Cleveland Metroparks Zoo) for coordination of the 1995 elections. This standing committee of the AAZK is responsible for the nominations and the election process of the AAZK Board of Directors. If you are interested in serving as a Chair or committee member please send your resume to Rachél at the San Diego Zoo/Mammal Department, P.O. Box 551, San Diego, CA 92112-0551.

Conservation, Preservation and Restoration (CPR) Committee - This committee of the AAZK is Chaired by Bret Sellers (Metro Washington Park Zoo). Bret is currently working on an evaluation process for accepting Keeper Grants in Conservation.



# Chapter News

## San Diego AAZK Chapter

Our featured speaker for the April meeting was Dr. Russell Mittermier, Director of Conservation International, and famed primatologist. His talk reviewed the current status of the "Loss of Biodiversity" and "The Muriquri" of South America.

Dr. Mittermier feels strongly about linking field scientists and zoo/aquaria staff on 'in situ' projects together, as he states..."the high tech expertise of zoos and aquaria will be needed in the future for saving species." Mittermier believes the top four conservation organizations that are working well are Zoological Society of New York's International Wildlife Conservation Center, World Wildlife Fund, Conservational International and The Nature Conservancy. In a private discussion with him following his talk Dr. Mittermier told me he thought "...Zoo keepers are the field conservationists of zoos".

There were a total of 47+ attendees and the Chapter charged \$1.00 members/\$3.00 nonmembers. Chapter President Nicki McGahey reported orders for the "BUNS: A Look Behind the Scenes of Animals" calendar are arriving already. If you are interested contact the San Diego Chapter c/o Andrew Simmons for information about ordering calendars at wholesale prices as a fundraiser for your chapter.

THE KEEPER magazine has reached a total of 200 subscriptions/memberships and may now apply for a bulk rate permit --congratulations Andrew (Designer) and Christina (Editor) Simmons! The next issue of THE KEEPER will focus on 'The Problem With Primates' and will include articles about various issues of concern regarding primates.

--Rachél Watkins Rogers  
Chapter Liaison

**Correction** - There was an error in the last Knoxville Zoo Chapter news. It stated that Gene Peacock went to Jacksonville. It should have stated that he moved to Jackson, MS. We regret the error.





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# The Gorilla Workshop I Conservation Fund

The Columbus Zoo is pleased to announce the formation of a conservation fund which will support field research and conservation of wild gorillas. Funds raised from the first Gorilla Workshop in 1990 will be used to support *in situ* conservation projects dealing with Lowland and Mountain gorillas with a special emphasis on Lowlands.

The fund will allocate \$1,300.00 per year for a period of five years beginning in 1995. The deadline for 1995 proposals is **15 August 1994**. The review committee will consist of the Columbus Zoo Ape House staff and our Assistant Director of Conservation and Education. Allow a two-month period before hearing back from the committee concerning acceptance or rejection.

A special emphasis will be placed on supporting keeper initiated projects although this will not exclude already existing projects run by field primatologists. Rather, we would like to promote a cooperative effort between keepers and field researchers.

The following criteria will be used to evaluate proposals:

1. How does the project directly benefit gorillas in the wild?
2. How does the project directly benefit indigenous people surrounding the study site?
3. How does the project emphasize the role of zoos as supporters of *in situ* conservation?

A follow-up report would be required detailing accomplishments within a six-month period following completion of the project. In addition, a summation of the project will be published in *Gorilla Gazette* within a six-month period of completion of the project.

Please send proposals to:

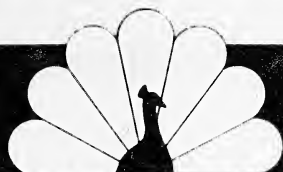
The Columbus Zoo Ape House Staff  
Attn: Beth Armstrong  
Box 4000, 9990 Riverside Drive  
Powell, OH 43065-0400



## 1990 Gorilla Workshop Proceedings Available

A collection of abstracts and entire papers presented at the 1990 Gorilla Workshop on topics ranging from wild Lowland gorilla diets to captive management is now available for \$15.00 (postage included). Authors who presented papers at the conference will be given a gratis copy. If interested, please contact: The Columbus Zoo Ape House Staff, Attn: Beth Armstrong, Box 400, 9990 Riverside, Powell, OH 43065-0400. Make checks payable to: The Columbus Zoo/Gorilla Workshop.





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*North Platte, NE 69101-0721*

# Demographics of Elephant Handlers A Survey

Dear Elephant Handler,

Like most of you, I've been asked a million questions about elephant handling. Many of the questions are about fellow keepers/handlers. Please take a few minutes to update information about your facility and your department. I would appreciate information in the second section from each person in your department. Feel free to photocopy this survey. Thanks for your time!

## About your facility:

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

Elephants: Asian male(s) \_\_\_\_\_ age(s) \_\_\_\_\_ African male(s) \_\_\_\_\_ age(s) \_\_\_\_\_  
Asian female(s) \_\_\_\_\_ age(s) \_\_\_\_\_ African female(s) \_\_\_\_\_ age(s) \_\_\_\_\_

Number of handlers on staff: \_\_\_\_\_

Number of people who work elephants in one day: \_\_\_\_\_

Keeper hours spent in elephant area daily (including morning and evening): \_\_\_\_\_

Working cows with: Protected Contact \_\_\_\_\_ Free Contact \_\_\_\_\_ Combination \_\_\_\_\_

## For the next section, copy/complete for each person working elephants at your facility.

Sex: \_\_\_\_\_ Age: \_\_\_\_\_

Marital Status: \_\_\_\_\_ Children: \_\_\_\_\_

Religion: \_\_\_\_\_ Race: \_\_\_\_\_

Education: HS \_\_\_\_\_ Associates \_\_\_\_\_ Bachelors \_\_\_\_\_ Masters \_\_\_\_\_ Other \_\_\_\_\_

Number of years working in zoos: \_\_\_\_\_ Number of years working elephants: \_\_\_\_\_

I have worked at \_\_\_\_\_ number of facilities. I work elephants \_\_\_\_\_ days a week.

Address where results of this survey should be sent: \_\_\_\_\_

Current plans call for the results of this survey to be published in the Elephant Manager's Association Newsletter and *Animal Keepers' Forum*. Please return surveys by 1 August 1994 to: Laurie Task, Tulsa Zoo, 5701 E. 36th St. N., Tulsa, OK 74115.



# Bowling for Rhinos Update

*submitted by Patty Pearthree  
National BFR Chairperson  
Indianapolis Zoo, Indianapolis, IN.*



In addition to supporting the Ngare Sergoi Sanctuary in Kenya, Bowling for Rhinos will now support the Ujung Kulon National Park in Java! The proposal that passed at the 1993 National Conference was that the first \$100,000 we raise each year will continue to go to Ngare Sergoi. Any additional money raised will now go to Ujung Kulon through the "Adopt A Park" program set up by Ron Tilson, Director of Conservation at the Minnesota Zoo. However, if a crisis should arise at Ngare Sergoi, such as a forest fire, we will be able to send all our money to Ngare Sergoi that year.

Ujung Kulon is a 300-square mile National Park that is home to the last 47 Javan rhinos in the world. Its annual running costs are \$50,000 to \$75,000, so \$5,000 to \$10,000 would go a long way in saving this ecosystem! Java is an island of Indonesia in the Asian Pacific which harbors one-eighth of the world's mammal, bird, reptile, amphibian and plant species. Ujung Kulon is home to some of the rarest plants and animals on earth. Some 40 mammal species are known to inhabit the park. In addition to the Javan rhino, the Javan gibbon, two species of leaf monkey and the Javan tree shrew are found nowhere else in the world. Other inhabitants of the park include Flying lemur, Banteng, Wild dog, Binturong, Asian small-clawed otter, 250 bird species, Green sea turtle, Saltwater crocodile, and more than 50 rare plant species.

To begin relations with Ujung Kulon, AAZK, Inc. donated \$5,000 on 31 January 1994. This was money that was recovered from the dissolution of the Toledo AAZK Chapter. Toledo had intended the funds to go to rhino conservation so this was a great start. I will be visiting Ujung Kulon May 6-20 so I can give everyone an update at the conference in Omaha. (*Editor's note: Patti's trip is privately funded and does not use any BFR monies.*)

For additional information on holding your own BFR Bowl-a-Thon or any other information, please write:

**Patty Pearthree**  
c/o Bowling for Rhinos  
P.O. Box 199026  
Indianapolis, IN 46219-9026

or call: (317) 322-8723

After your BFR event, please send checks made out to "AAZK, Inc. - Bowling for Rhinos", a financial statement (a blank one will be sent to you upon request or they may be found in your information packet), and a copy of all sponsor sheets to the above address. If your Chapter produced a T-shirt, button, poster, etc. for BFR '94, please send either a sample or a photo of the item with pertinent information to the AAZK Administrative Offices, 635 S.W. Gage Blvd., Topeka, KS 66606-2066 for the historical archives.



## Florida's Key Deer Making Comeback

Brought back from the brink of extinction over the last 50 years, miniature Key deer in Florida represent a qualified success story in the troubled history of people-animal relations. You see them in quiet neighborhoods in the evenings, hanging around the houses like living lawn statuary. The 300 or so Key deer, found nowhere else, are preserved in part by an extensive series of government-mandated protections ranging from low (and strictly enforced) speed limits to restrictions on development. Key deer, which average just over two feet high at the shoulder, are closely related to the full-size Virginia white-tailed deer. (*from Eco Notes, The Topeka Capital Journal, March 18, 1994.*)

# AAZK NOMINATION AND ELECTIONS COMMITTEE ANNOUNCEMENT

The AAZK Nominations and Elections Committee, known as NEC, is seeking the next generation of nominees for election to the AAZK Board of Directors (BOD). We are looking for dynamic individuals who are willing to work for the advancement of the AAZK and the development of its goals. We currently have four positions up for election in 1995 - those seats held by Ellen Bradfield (Zoo Atlanta, GA), Mark de Denus (Assiniboine Park Zoo, Can.), Ed Hansen (Reid Park Zoo, AZ) and Rachél Watkins Rogers (San Diego Zoo).

The AAZK BOD is responsible for the decisions and policies that are made to run our Association. Each Board member is assigned committees/projects to oversee and in effect manage these committees/projects for the Association. If you think you are ready for this type of work let it be known to one of your peers so they may nominate you. If you know someone who would be a good nominee, fill out a nomination form (forms will be published in the July 1994 issue of *AKE*) and send it in for processing. AAZK is dependent on the work of its members to survive as a vital Association.

The current composition of the BOD reflects seven members, five Directors and two Officers (President and Vice-President). The Directors serve four years and the Officers serve two years. Why are we telling you this now? Because we need time to check out the nominee forms before they are processed. The deadline for submission of nominations is **31 January 1995**. Since we are currently seeking a CHAIR and NEC member please contact Rachél Watkins Rogers, Board Overseer, at the San Diego Zoo (619)231-1515, Ext. 4672 to leave a message or FAX (619)232-4117.



## AAZK Announces New Professional/Contributing Members

Mary Spoelstra, Bergen County Zoo (NJ)	Martin Junco, Bronx, NY
Susan Reeves, Bronx Zoo (NY)	Himani Walia, Herdon, VA
Linda Pastorello, The Zoo at Gulf Breeze (FL)	Allison Reynolds, Central Florida Zoo (FL)
Catherine Donelan, Busch Gardens (FL)	Robert Morrison, Busch Gardens (FL)
Jason Lankford, Knoxville (TN)	Richard Meek, Memphis Zoo (TN)
Robert Maguire, Memphis Zoo (TN)	Lawrence Mike Turri, Memphis Zoo (TN)
James Naelitz, Jr., Cleveland Metroparks Zoo (OH)	Rose Calvert, Hoof & Paw Exotics (IN)
Fracisco Madamba, Jr., Cleveland Meroparks (OH)	Teresa Calvert, Hoof & Paw Exotics (IN)
Tonv Schaver, Impressive Animal Productions (IN)	Dallas Ripsky, Cosley Animal Farm (IL)
Scott Wade, Kansas City Zoo (MO)	Tammy Romary, Topeka Zoo (KS)
Pamela Trueblood, Primate Foundation of Arizona	Terry Burleaud, Seigfried & Roy Prod. (NV)
Marcie Barnes, San Diego Wild Animal Park (CA)	Peter Klose, Jungle Cat World (Ontario)
Dale Gienow, Jungle Cat World (Ontario)	Ranne Westgate, Jungle Cat World (Ont.)
Heather Stewart, Jungle Cat World (Ontario)	Jody Mothersill, Jungle Cat World (Ontario)
Kim Auckland, Metro Toronto Zoo (Toronto)	Colin Springett, Storybrook Gardens (Ont.)
Sylvain Ethier, Biodome De Montreal (Quebec)	
Anthony Taggart, Quistococha Zool. Prk., Peru	

### New Contributing Members

Susan Moy-La Veau, Lincoln Park Zoo, Chicago, IL

### Renewing Contributing Members

Richard Buthe, Philadelphia Zoo, Philadelphia, PA  
Dr. William C. Sadler, Business Group Director, Purina Mills, Inc., St. Louis, MO  
Folsom Children's Zoo, Lincoln, NE

# Fundraising Manual Project Update

*submitted by Teri Maas, Project Coordinator  
Philadelphia Zoo, Philadelphia, PA*

Thanks to those who answered my last appeal in the April issue of *AKF*:

Central Illinois AAZK	National Zoo AAZK
Jackson Zookeepers Association	E.F.B.C. AAZK
Cheyenne Mountain Zoo AAZK	Ft. Worth AAZK
Oklahoma City AAZK	Binghamton AAZK

We are slowly chipping away at my 'wish list'. This 'Wish List' is made up of projects/fundraisers we know took place as reported in Chapter activity reports, surveys or in Chapter News. I hope to have this project ready for printing by this year's National Conference in October. Please send me any information on your Chapter's fundraisers as quickly as possible. Return completed insert form from April 1994 *AKF* or send information to me at: The Philadelphia Zoo, 3400 W. Girard Ave., Philadelphia, PA 19104.

I am including my 'wish list' again (minus a couple who responded last time). Again, if you were involved in any of these fundraisers, please take a few minutes to complete the survey form from the April *AKF*. If you did not participate in an event but know someone who did, please encourage them to complete a form. Thanks.

## *'Wish List'*

**MESKER PARK ZOO** - Zoo Boo, "At the Zoo", Holiday Photo Booths, Bunny Doo, Vending Machines.

**DETROIT ZOO** - Zoo Boo, Vending Machines, Animal Mobiles

**TULSA AAZK**- Dog Wash, Keeping Up With the Keepers, Recycling

**SUNCOAST AAZK**- Zoo Doo

**MILWAUKEE**- Cook Book, Ornamental Eggs

**CALDWELL ZOO**- Fish Feeding Machine, Garage Sale, Luncheon/Bake Sale

**NORTH CAROLINA** - Donut Sale, Quilt Raffle, Snake Photos, Bluebird Boxes, Adopt-a-Keeper, Zoo Run

**COLUMBUS**- Putt for Puffins, Auction, Recycling Trailer

**SAN FRANCISCO**- Theater Benefit, T-shirts

**L.A. AAZK**- Patches/notepaper, Raffle Table, Carnival

**SAN DIEGO**- Photo Contest, Raffle, T-Shirts

**MIAMI**- Raffle, Christmas Auction/Raffle

**VIRGINIA**- Ratite Eggs, T-Shirts

**PORTLAND**- Owl Pellets, Zoo Doo, Picnic Raffles

**FLINT HILLS**- Twirl-A-Coin, Magnetic Safety Signs

**SEDGWICK COUNTY** - Zoo Posters, Bake and plant Sales

**TOPEKA**- Spiral Wishing Well, Elephant Footprints

**LITTLE ROCK**- Cook Book, Garage Sales, Zoo Run

**DALLAS**- Logo Keychain/Thermometer

**SAN ANTONIO**- Coffee and Donut Sales

**GREENVILLE** - Rescue the Rainforest Buttons

**KANSAS CITY** - Garage Sale, Buttons, Recycling

**JOHN BALL** - Zoo Animal Buttons

**NEW YORK ZOO** - Silent Auction, BBQ





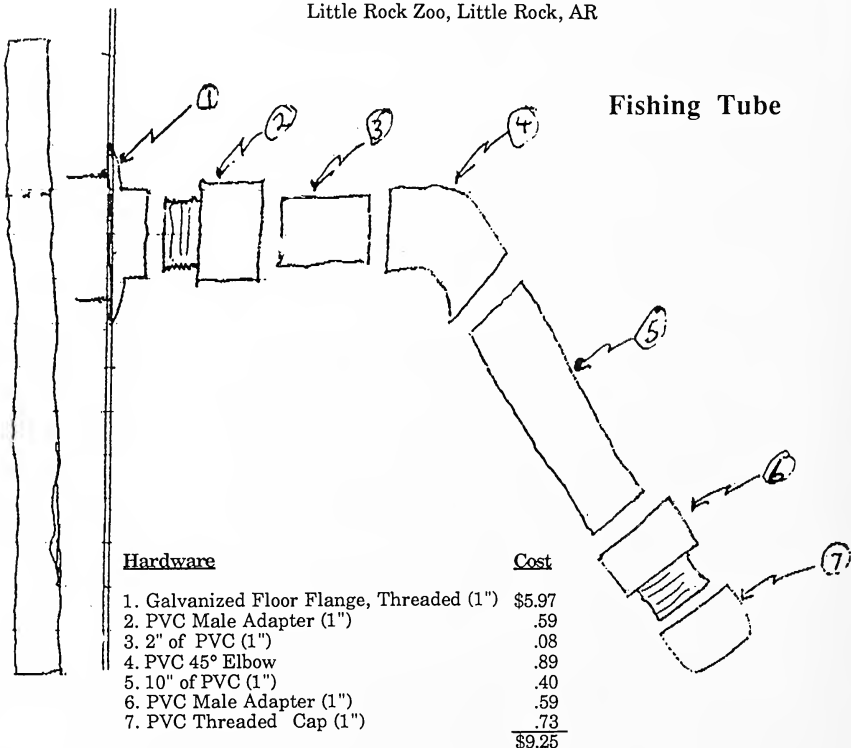
By Kayla Grams, Topeka Zoo and  
Gretchen Ziegler, Wildlife Safari Park

**APES** - The large plastic barrels available from most car washes are one of our favorite items. Once they are thoroughly rinsed, we use them with all apes. Intact, they are used as drums, pedestals to sit on, and display items. Filled with water, food items which float are placed in them providing long periods of activity. With one or both ends cut off, they are used to recline in. Best of all, they are usually free and virtually indestructible.

In addition to, or as a replacement for seeds and raisins scattered in the exhibits for forage items, we like to use frozen mixed vegetables and canned fruit cocktail in light syrup. These are both low in fat.

We also use 'fishing boards', hardly an original idea. One of our docents, Jeff Johnson, made them for us after seeing a video of them at other zoos. He has provided a drawing and price list for a simple fishing tube, which when mounted to a board can easily be mounted to our doors with bolts.

--Ann Rademacher, Great Ape Keeper  
Little Rock Zoo, Little Rock, AR



## Enrichment Options, *Continued*

**HIPPOS** - If you want to see the capabilities of the massive jaws of the hippo, toss in a large watermelon and watch the melon disappear in seconds (it only takes one good bite).

**TIGERS, LIONS, POLAR BEARS** - All these animals enjoy wrestling with an empty beer keg. Place the keg into their pools and it will float causing quite a challenge for the tigers and bears or leave it on dry land for the lions to stalk and wrestle.

**RHINOS** - try giving them a bowling ball, beer keg, or large log to push around. Although you may not see them using these devices right away you should eventually begin to notice them being moved from day to day.

**RAVEN** - We give our raven an ear of corn with the husk still on. He likes to shuck it, then hide for later. We also drill holes in logs and stuff raisins in them for him to hunt and peck out.

--Kimberly Widner, Conservation Research Assistant  
Knoxville Zoo, Knoxville, TN



## **"I Heard It In The Long Call"**

*By Rachel Watkins Rogers, Sr. Keeper/Mammal Dept.  
San Diego Zoo, San Diego, CA*

Have you heard about THE LONG CALL? Yes, it is a vocalization of the male Orangutan (*Pongo pygmaeus*), but now it's a newsletter for Orangutan keepers and other interested individuals! a meeting of some 20 zoo keepers with global interest in Orangutans attended the "International Conference on Orang utans: The Neglected Ape" held in Fullerton, CA from 5-7 March 1994. This was the second conference of its kind and the first held in the United States.

Keepers from two zoos in Australia, one in England and 20 American zoos attended. Some keepers shared their work with delegates representing scientists, veterinarians, zoo managers, conservationists and government officials from Southeast Asia by presenting papers or posters. This unique conference was organized by students at California State/Fullerton and staff of Zoo Atlanta and the zoological Society of San Diego.

If you are interested in contributing an article, ordering a subscription (Orangutan keepers receive a copy free, others must subscribe for a donation of \$5.00) and/or for further information write to: Suzanne M. Husband, Editor, THE LONG CALL, Toledo Zoo, 2700 Broadway, Toledo, OH 43609 Tel: (419) 385-5721, Ext. 258.

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# Book Reviews

## Last Animals at the Zoo: How Mass Extinction Can Be Stopped

By Colin Tudge - 1991

Island Press, 1718 Connecticut Ave. NW, Suite 300

Washington, DC 20009

266 pgs. Clothback - \$22.00

Review by Mike Seidman  
Keeper III, Phoenix Zoo  
Phoenix, AZ

## Conservation as Science Fiction

For those interested in the captive propagation of endangered species in zoos, I heartily recommend this book: it's an excellent summary of the increasingly refined strategies employed by zoos for maintaining fitness--both genetic and behavioral--in their sequestered animal populations. The author has a roving, insightful mind and he explores the myriad aspects of captive propagation and re-introduction without, for the most part, glossing over the ethical dilemmas or practical difficulties.

Zoo biologists are becoming experts in preventing the loss of genetic variation in small populations, and this book is testimony to that growing expertise. It explicates strategies such as the equalization of founder representation and family size and it is packed with pertinent details on techniques such as artificial insemination, *in vitro* fertilization, embryo transfer, cloning, the storage of gametes and embryos, and the increasing sophistication of behavioral enrichment techniques. Studbooks and Species Survival Plans are explained and the subspecies problem elucidated. Each topic is discussed with clarity and surprising depth.

Only one problem mars the book--its main thesis, that captive propagation is the key to stopping mass extinction. The thesis begins with the premise that the primary cause of mass extinction, human over-population, is irreversible in the short term, and that widespread pollution, war and fragmentation, as well as lack of money, will limit the effectiveness of habitat protection. From this bit of cautious and warranted skepticism he makes an olympian leap of faith, resting the future salvation of wild animals on the assumption that people will voluntarily choose to reduce their population during the next 50-100 years. If that happens, he blithely continues (p. 52), in another thousand years human numbers will come down to present levels (that's all), habitat will once again become available and--lo and behold--2000 jealously guarded, still wild vertebrates can be set free to reconstitute the natural world.

This is the stuff of science fiction. And yet the author, Colin Tudge, is neither the originator nor the sole proponent of this "solution" to the extinction crisis. Some eminent biologists also promote the "thousand-year ark" scenario. This puzzles me.

In a thousand years, will zoo animals bear much resemblance to the animals originally brought in from the wild? Captive breeding programs are designed--somewhat arbitrarily I believe--for 200 years but, as the author admits, the planet won't be "ready" to accommodate the animals for another thousand years. Without new genes from the wild, genetic drift and inbreeding make loss of genetic variation inevitable. Exempted from selective pressures for 1000 years (and subject to selection for a captive environment), what are the chances that these generic animals will survive in their old habitats, or in any habitat? How many reintroductions fail today because the "fit" between animal and habitat has been lost in just a few generations?

The quality of future habitat is also problematic under this scenario. For one thing, the current ecological (and social) crisis is only partly a matter of habitat destruction and



## Book Reviews, Continued

animal extinctions. It's the life support system of the planet that's in danger--the air we breathe, the water we drink and even the thermal limits within which our kind of life can flourish.

Given that the world's ecosystems are beginning to unravel "as we speak", what sort of world will await these time-warped animals? Do we have reason to believe that anything worthy of the name "habitat" will remain after a thousand more years of dense human population? (Since in a thousand years, the world will likely resemble the most arid desert imaginable, maybe we should be saving 2000 desert invertebrates?)

Aside from air, soil, water and temperature considerations, what of the really essential organisms, invertebrates, plants, fungi, microorganisms, etc., and what of ecological processes? It takes more than a few vertebrates to make a functioning, evolving ecosystem. What will hold it together and allow a place for our cherished megafauna?

And then there's the human factor. We cannot predict tomorrow's weather accurately; to think we can plan for a thousand years is simply ludicrous. And can we count on future generations to ensure that breeding programs are fulfilling their goals? Captive propagation is extremely costly. In a desperately over-populated world, will there be continuing incentive to expend time and money on captive propagation of anything not intended as food? Zoo animals, of course, are usually among the first to be consumed during trying times. (Isaac Asimov would be ashamed--If the "ark" scenario were at least good science fiction, such plot twists would not have been left out.)

Aside from practical difficulties, I am disturbed that such an outlandish fantasy could be seriously proposed at all. The extinction crisis cannot be shrugged off to the future, in the hope that more enlightened and technologically advanced people, or blind luck, will absolve us of our ecological and moral sins. Can we watch the world collapse around us smug in our conviction that everything will be all right in 1000 years?

There is no way around it: to save animals, we are going to have to change the way we live. NOW. At this moment, here in North America, proposals are being made to create huge areas of true wilderness, areas large enough to accommodate fire and other disturbances, and the continuing evolution of all organisms including large predators and their prey.

To institute these proposals, however, even to take them seriously, will require a radical shift in our thinking. We must break the hypnotic grip of the illusion that we humans are separate from and superior to the rest of nature, that nature is our property, and that total control is our manifest destiny. Overpopulation is inevitable in a culture that does not acknowledge limits of any kind. Rather than working on trying to control our appetites so that we may live in harmony with the world around us, we attempt to impose our will on nature, to transform it to fit our fantasies.

This "Ark" idea is just more of the same, more indulgence. Putting the solution off to the future allows us to feel we are "doing something" about the extinction crisis without having to address the cause of it, our all-consuming lifestyles; it allows us to continue playing god with the external world without having to look inward and confront the real source of (and solution to) the problem.

Fortunately---to come back down to earth--the value of this book--and of captive propagation--is in no way dependent on the "thousand year ark" idea. Tudge's presentation of the science of captive propagation--the details of which comprise most of the book (pages 55-241) - is excellent; and the details are relevant to conservation even if we delete the fictional element.

Most zoo biologists, as far as I can tell, believe the contribution of captive breeding to long-term conservation will be modest. When they do analyze the subject of how long animals taken from the wild should be kept in a captive breeding situation, they conclude that the least amount of time is the best\*. What may be a reasonably successful method of helping some species over the short term does not translate into a long-term panacea.

## Book Reviews, Continued

Although they sometimes seem to use the "ark" idea as a public relations ploy, no zoo professional that I am aware of openly and rigorously promotes it (at least not in its thousand-year form). If widespread belief in the idea exists among the zoo community, I would like to see it acknowledged. Perhaps this book will spur debate on the issue.

### Commercialization and Wildlife Management: Dancing with the Devil

By Alex W.L. Hawley - original edition 1993

Krieger Publishing Co., P.O. Box 9542, Melbourne, FL 32902-9542

136 pgs. Cloth \$16.50

Review by Fred H. Alvey  
Keeper II, Dept. of Herpetology  
Zoo Atlanta, Atlanta, GA

"Required reading" is perhaps not an appropriate phrase in a book review; however, after reading *Commercialization and Wildlife Management: Dancing with the Devil*, this reviewer can only hope to be forgiven for sounding peremptory. *Dancing with the Devil* is **MUST** reading for anyone involved with wildlife conservation.

Alex W.L. Hawley and his colleagues have compiled a remarkable book, dealing with a controversial subject: financial profiting from wildlife as an alternative means of conservation. *Dancing with the Devil* was meticulously researched, and provides informative, enjoyable reading. In it, the authors outline the often fascinating history of wildlife management in the Western World. Many would be surprised to know that the environmental problems, so alarming to us now, were no less worrisome to the people of 500 B.C., and that Plato was an environmental activist, particularly concerned over the effects of deforestation.

Further on, the authors discuss the successes and failures of wildlife management, culminating with a refutation of the popular notion that the North American system of wildlife conservation has failed. On the subject of commercial utilization of wildlife, the writers make plain their misgivings, and back these up with much data. But they stop short of rejecting the concept outright (it is more or less a *fait accompli* now, in any case), recognizing the oft-forgotten need to link the needs of people with the needs of nature. Commercialization of wildlife, for all the frightening pit-falls, may or may not help provide this indispensable link.

In concluding chapters dealing with ethics, accountability, and the many parties involved, Hawley and his colleagues are impartial in their criticisms, indeed, environmentalists come in for their share. But throughout *Dancing with the Devil*, there is a commendable and refreshing lack of bitter recriminations, misanthropy, and doom prophecies. Although recognizing the sad state of the natural environment ("a mess", Hawley), the book concludes with a note of almost guarded optimism, and invites the reader to "look deeply, be thoughtful, and decide".

## Information Please



Information is needed for *Polyborus plancus* (Crested caracara) and *Corvus brachyrhynchos* (Common crow) including exhibit design, diet, educational uses, and glove training. Please send information to: Sheri Leavitt, Children's Zoo keeper, Houston Zoological Gardens, 1513 N. MacGregor, Houston, TX 77030.

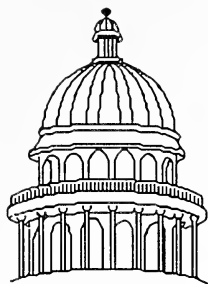
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**WANTED - Cassette Tape Exchange:** organizations interested in exchanging recordings of various animal vocalizations for use as behavioral enrichment items. Please contact The Detroit Zoological Parks Dept., Detroit AAZK Chapter, 8450 West Ten Mile Road, P.O. Box 39, Royal Oak, MI 480068-0039 - Attn: Beth Safko.



# Legislative Outlook

Compiled by  
Phyllis Nilson-Wojcik  
Legislative Advisor



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## Biodiversity Treaty

The full Senate will soon vote on ratifying the BIODIVERSITY TREATY. There is fear that the "Wise-Use Movement" will be actively opposing ratification. Failing to get the treaty ratified would be a major setback for conservation in the U.S. and internationally.

The Biodiversity Treaty was signed by over 150 countries at the 1992 Earth Summit in response to the unprecedented rates in the loss of biodiversity in recent years. It was signed by President Clinton during a 1993 Earth Day ceremony. The treaty has since been ratified by some 40 nations. Many nations, however, look to the United States for leadership and await U.S. ratification before they will act.

The convention has three overall goals: the conservation of biological diversity, the sustainable use of its components, and the fair and equitable distribution of benefits from genetic resources. It aims to create incentives for the conservation and sustainable use of biodiversity while protecting special ecosystems and vital natural habitats.

**WHAT YOU CAN DO: Write your two Senators -  
U.S. Senate  
Washington, DC20510  
(202) 243-3121**

Urge them to strongly support the swift ratification of the Biodiversity Treaty.

>SIERRA CLUB "Special Action Alert" from GreenDisk Feb/Mar 1994, Vol. 2, No. 5

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## Global Waste Dumping Ban

The Conference of the Parties of the Basel Convention on the Transboundary Movement of Hazardous Waste adopted a total ban on the export of toxic waste, including for recycling, beginning December 1997, from OECD countries to non-OECD countries.

Kevin Stairs, Greenpeace's political advisor, credited the Group of 77, led by Sri Lanka, Denmark, and China, with forcing the issue to conclusion. A key decision by the European Union (EU) Council of Ministers brought all EU countries in line to support the ban including Germany and the U.K. The only Parties left opposing the ban at the end were Australia, Canada, and Japan. The U.S., which is not a Party, also worked actively to undermine the proposal, according to Stairs.

Ninety-eight percent of the 400 million tons of waste produced annually comes from OECD countries, according to the United Nations Environment Programme. The United States is among the largest generators and exporters of hazardous waste - since 1989 the U.S. has exported at least 780,000 tons of hazardous waste.

>GREENPEACE News Release from GreenDisk Feb/Mar 1994, Vol. 2, No. 5

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## **Petition for Peace in Rwanda to Protect the Last Mountain Gorillas**

A petition for peace in Rwanda is being circulated, sponsored by the Dian Fossey Gorilla Fund, Englewood, CO, and Partners in Conservation at the Columbus Zoo, Powell, OH. The petitions will be delivered to U.S. President Bill Clinton, to the U.N. Secretary General Boutros Boutros-Ghali, representatives of the European Community, and to Rwandan political representatives. Before the current conflict began, about 320 of the last Mountain Gorillas were living in the Rwandan rainforest. There is concern the fighting will seriously upset the groups, possibly with devastating results. Also due to the fighting, it is difficult, if not impossible, to monitor their safety. If you have not yet received a petition, please call:

Partners in Conservation, Attn: Charlene Jendry  
Phone: (614) 645-3400 FAX: 614-645-3465 or

The Dian Fossey Gorilla Fund Phone: (303) 790-9460

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## **Wolf Reintroduction Into Yellowstone Passes Final Hurdle**

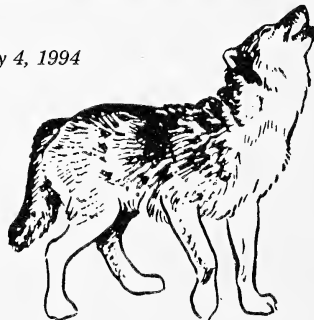
The Interior Department's U.S. Fish and Wildlife Service has officially recommended that an "experimental population" of wolves be reintroduced to Yellowstone National Park and central Idaho as part of recovery actions for the endangered Gray Wolf. More than 160,000 comments were logged on the draft Environmental Impact Statement released last July, the largest response to any action ever proposed by USFWS.

"The wolf reintroduction issue has inspired an unprecedented outpouring of public comment," said Mollie Beattie, USFWS Director. "This speaks volumes about the wolf's prominence in our society's folklore, literature, and culture."

The Service's recommendation for wolf reintroduction specifies introducing wolves from Canada into Yellowstone National Park and on Department of Agriculture U.S. Forest Service lands in central Idaho. The introduced populations would be designated "nonessential experimental" under Section 10 of the Endangered Species Act. Such designation allows management flexibility, including provisions allowing wolves to be killed or harassed, under certain conditions, if determined to be preying on livestock or if wild populations of deer, elk or other large game are severely affected by wolf predation. The recommendation encourages compensation to landowners who suffer losses to wolves, to be funded by private interests (at least one non-governmental agency has already established a fund for this purpose).

It is generally agreed that wolves will eventually repopulate the Yellowstone ecosystem naturally as animals from Canada and Montana expand their range, but this process could take decades to occur. Should wolves reestablish themselves naturally, they would receive full protection of the Endangered Species Act, and there would be less management flexibility. Under the Service's recommendation, wolf populations would be expected to recover by 2002.

>Department of the Interior News Release May 4, 1994



# 1994 AAZK National Conference Omaha, Nebraska

## Tentative Daily Schedule:

SATURDAY, OCT. 8th:

- Early Registration
- Executive Session Board Meetings
- Board Members Luncheon



SUNDAY, OCT. 9th:

- Registration
- National Committee Workshops
- Icebreaker

MONDAY, OCT. 10th:

- Conference Welcome/Opening Remarks
- Morning and Afternoon Paper Sessions
- Evening Workshops
- Video Workshop
- Evening at "The Ranch Bowl"



TUESDAY, OCT. 11th:

- Morning Workshops
- Zoolympics at Heartland Park
- Afternoon Free Time/Tour of "The Old Market"
- Silent Auction
- "Blues Night"

WEDNESDAY, OCT 12th:

- Morning Workshops
- Zoo Day: Workshops, Tour Zoo, BBQ and Pow Wow
- "Country Western Night"



THURSDAY, OCT. 13th:

- Morning Paper session
- Awards Luncheon
- General Meeting
- Final Banquet
- Live Auction
- "Mardi Gras" Dance

1994 AAZK National Conference  
Omaha, Nebraska  
October 9 - 13, 1994

CONFERENCE REGISTRATION FORM

Name \_\_\_\_\_

Address \_\_\_\_\_

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

Zip/Postal Code \_\_\_\_\_ Phone (\_\_\_\_) \_\_\_\_\_

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

Position/Title \_\_\_\_\_

AAZK Chapter \_\_\_\_\_

Number of AAZK Conferences you have attended \_\_\_\_\_

AAZK Committee Member? \_\_\_\_\_

Presenting a Paper?	YES _____	NO _____
Conducting a Workshop?	YES _____	NO _____
Participating in Zoolympics?	YES _____	NO _____
Bringing an Auction Item?	YES _____	NO _____

Vegetarian? YES \_\_\_\_\_ NO \_\_\_\_\_ TYPE \_\_\_\_\_

T-Shirt ? YES \_\_\_\_\_ NO \_\_\_\_\_

SIZE: SM MED LG X-LG

Arrival Date and Time: \_\_\_\_\_

CONFERENCE FEES \* *(Does Not Include Cost of Conference Proceedings)*

AAZK Member or Spouse	\$100.00 _____
Non-Member	\$110.00 _____
Late Fee (after Sept. 1, 1994)	\$ 10.00 _____

TOTAL FEE ENCLOSED \$ \_\_\_\_\_

\* Fees include a \$15.00 contribution to AAZK National.

Roommates are the responsibility of each registrant.

AMERICAN ASSOCIATION OF ZOOKEEPERS

Please make checks payable to: AAZK Conference '94

Return This Form and All Fees To:

Carla Wieser  
Omaha Chapter AAZK  
Omaha's Henry Doorly Zoo  
Omaha, NE 68107



"A KEEPER'S PERSPECTIVE"

1994 AAZK National Conference  
Omaha, Nebraska  
October 9 - 13, 1994

HOTEL REGISTRATION FORM

Name \_\_\_\_\_

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

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

Telephone \_\_\_\_\_

Rooms will be held until 6PM only unless guaranteed with a major credit card.

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Card Number \_\_\_\_\_ Expires \_\_\_\_\_

Once guaranteed, there will be no refund for cancellation.

ROOM RATES: *(Includes Sales Tax)*

_____ 1 Double Bed	\$66.90	Arrival _____
_____ 2 Double Beds	\$66.90	Departure _____
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_____ Holidome (poolside)	\$82.51	Check-out: 12 NOON

\* Not responsible for roommates

Parking at the Holiday Convention Center is free for those registered at the hotel.

To make reservations by phone, dial (404) 393-3950

Please return this form to:

HOLIDAY INN CENTRAL  
3321 So. 72nd St.  
Omaha, NE 68124

**HOLIDAY  
CONVENTION  
CENTRE**



Registrations are due by 10 September 1994

Conference '94  
Omaha, NE

## THIRD CALL FOR PAPERS AND POSTERS

The **15 July 1994** deadline for submitting paper and poster abstracts is almost here !

All abstracts should be limited to two paragraphs, and must include the following information: name of presenter/author(s), zoological affiliation, position/title, title of paper, equipment needed (poster authors please specify "poster presentation here").

If accepted for presentation, paper authors will be notified in writing by **15 August 1994**. A copy of the "Guidelines for Submission of AAZK Conference Proceedings" along with the special lay-out sheets on which to submit your paper will be sent out by AAZK Administrative Offices and AKE Editor Susan Chan. Please remember, a copy of your paper which meets the guidelines and conforms to required specifications **MUST** be turned in prior to your presentation at the Conference. According to policy set by the AAZK Board of Directors, failure to submit your paper in accepted format by your presentation time (unless special arrangements have been made with AO), will result in your being barred from presenting a paper at an AAZK Conference for three (3) years. All papers submitted in appropriate format will be included in the 1994 Conference Proceedings and authors who submit their papers correctly will receive a gratis copy of the Proceedings.

Posters will be on display from Sunday through Thursday. We are planning on two informal poster sessions on Monday and Thursday to give people an opportunity to chat with the poster presenters about their projects.

Some "Helpful Hints" for poster presenters may be found in the April 1994 issue of AKE. A complete set of guidelines will be sent to each presenter upon acceptance of their abstract.

**Please Note:** No refunds on Conference registration fees will be given to presenters.

Please send all abstracts to:

Cathy Socha, Chairperson  
Program Committee  
Omaha AAZK Chapter  
3701 South 10th Street  
Omaha, NE 68107-2200



"A KEEPER'S PERSPECTIVE"

1994 NATIONAL CONFERENCE  
OMAHA, NEBRASKA



# Detection of Estrus in Gunther's Dik Dik (*Madoqua guentheri*) Through Urinary Hormone Analysis and Behavioral Observation

By

Lisa J. Fitzgerald and John Hnida\*

Dallas Zoo, 621 E. Clarendon, Dallas, TX 75203

(\*Department of Biology, University of New Mexico, Albuquerque, NM)

## INTRODUCTION

Identification of estrus (the reproductively receptive period, or "heat") and knowledge of estrous cycles (the interval between occurrences of estrus) are essential to assisted reproduction procedures such as artificial insemination and embryo transfer. This knowledge can also be of use in daily management of zoo animals. Reliable determination of estrus can facilitate decision making in captive breeding programs. Questions about whether to breed, which individuals to breed, as well as verification of reproductive success can be addressed by understanding estrous cycles. Familiarity with estrous and estrus allows animal staff to determine pregnancy in a non-invasive manner, and provides another tool for monitoring animal health.

Estrous cycles have been successfully monitored in a variety of ungulates through measurement of urinary progesterone metabolites pregnanediol-3-glucuronide (PdG) and non-specific PdG like compounds (immunoreactive PdG, or iPdG) (Blackbuck, *Antelope cervicapra*, Holt et al., 1988; Okapi, *Okapi johnstoni*, Loskutoff, Ott, & Lasley, 1982; Giraffe, *Giraffe camelopardalis*, Loskutoff, et al. 1986; Suni, *Neotragus moschatus*, Raphael, et al., 1988; and equids, Kirkpatrick, Lasley & Shideler, 1990). With the exception of Suni, there is no published information on dwarf antelope estrous cycles.

Small founder populations of dwarf antelope species in North American zoos have dictated a need for a better understanding of reproductive biology in order to maximize propagation, increase genetic diversity, and improve management practices. The Dallas Zoo maintains and breeds Gunther's dik dik (*Madoqua guentheri*), Klipspringer (*Oreotragus oreotragus*), and Suni. The sizeable in-house population of Gunther's dik dik (6.11 at present) has proven to be an excellent vessel for the study of dwarf antelope estrous cycles.

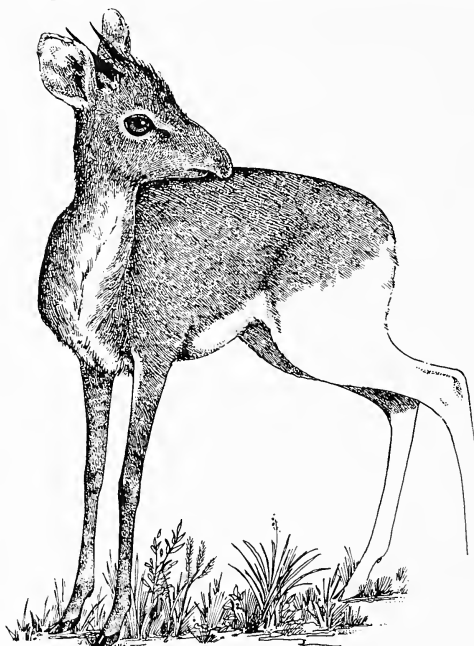
The objectives of the study are threefold: to determine if urinary iPdG can be used to reliably monitor Gunther's dik dik estrous cycles; to define and quantify behaviors associated with estrus; and to determine if iPdG levels and observations of estrus are related. If iPdG levels verify behavioral observations of estrus then an important and relatively inexpensive means of detecting estrus will be available for use and development. It is hoped that this study of Gunther's dik dik will serve as a model for the study and management of other dwarf antelope species, especially those which are endangered.

## METHODS

The behavioral study group consisted of ten female Gunther's dik dik ranging in age from 1.5 years to approximately 9 years. Each individual was identified by an ear tattoo, and some individuals also had colored ear tags. Dirt enclosures ranged in size from 80 m<sup>2</sup> to 412 m<sup>2</sup>, were enclosed by chain link, and furnished with plants, rocks, and branches for marking. Concrete floored barns measured from 13 m<sup>2</sup> to 26 m<sup>2</sup>, were bedded with hay, and heated during cool months. Diets consisted of 16% ADF grain fed in the morning and alfalfa and water provided *ad libitum*. Fresh browse was provided as available and the animals also consumed fallen leaves, flowers, and fruit.

## Detection of Estrus in Gunther's Dik Dik, *Continued*

Each female was exposed to two 12-week social conditions as a part of the study design; housed with a genetically sterile, but behaviorally intact, male Kirk's dik dik (*Madoqua kirki*), and housed with one or more female Gunther's dik dik. The first condition allowed repeated observation of estrus behavior in the presence of a male. A Kirk's dik dik was used in the study because of the availability of a cytotype hybrid. Cytotype hybridization in Kirk's dik dik has produced a limited number of sterile males (Ryder, et al., 1989). The second condition allowed observation of estrus behavior in the absence of a male, and in an unnatural, but necessary captive social grouping. As a third condition, three females were exposed to a fertile male Gunther's dik dik in order to measure behavioral estrus in the presence of a conspecific male, and to observe for estrus-like behaviors during pregnancy.



The ethogram consisted of 39 discrete behaviors. Behavioral data were collected between September 1989 and November 1992 using focal sampling of all occurrences of behavior. Focal observations were 15 minutes in duration and were scheduled randomly between 060 and 1700 hours for a total of 4.5 hours per week per animal.

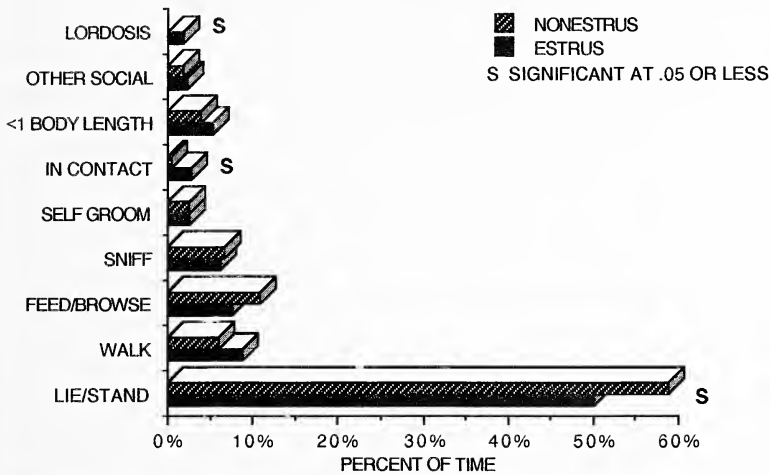
Urine was collected concurrently with behavioral data using a soil extraction method described by Hnida & Fitzgerald (1990). Briefly, this involved exploitation of the focal eliminatory behavior of dik dik in a relatively non-invasive manner. Through identification of daily urination patterns it was possible to replace soiled substrate from the dung midden with clean dirt, and then collect fresh urine-soaked soil. The urine was extracted from the soil by packing the soil in syringe barrels, fitting the syringes into test tubes and centrifuging for five minutes. Urine was then poured from the test tubes, filtered, and frozen. A total of 867 urine samples from nine (9) females were collected using this technique.

Radioimmunoassay (RIA) for iPdG was performed by methods previously described by Robeck, et al. (1993). Eight hundred-twenty-two (822) samples were measured for iPdG levels and all assays were performed blind of behavioral information.

Nonparametric statistical analysis was performed using the Wilcoxon Signed Rank test. Significance was accepted at  $p \leq .05$ . Analysis was performed using Statview 512+, a Macintosh application.

**RESULTS**

A comparison of duration of behavior between estrus and nonestrus days is shown in Figure 1. Analysis of behavioral data for six (6) females (43.5 hours) revealed trends towards greater locomotor activity, lessened maintenance behaviors (self-grooming, feeding, sniffing objects), and greater social contact on estrus days. Lordosis (a decurve flexing of the spine) was only observed on estrus days. Significant decreases were noted in the percent of time spent lying and standing on estrus days. On estrus days, significant increases were also observed in the percent of time spent standing in contact with a cagemate, standing less than one body length from a cagemate, approaching a cagemate, head rubbing on a cagemate, decurve stretching (a full body stretch with hindlegs extended and the spine curved), and lordosis.



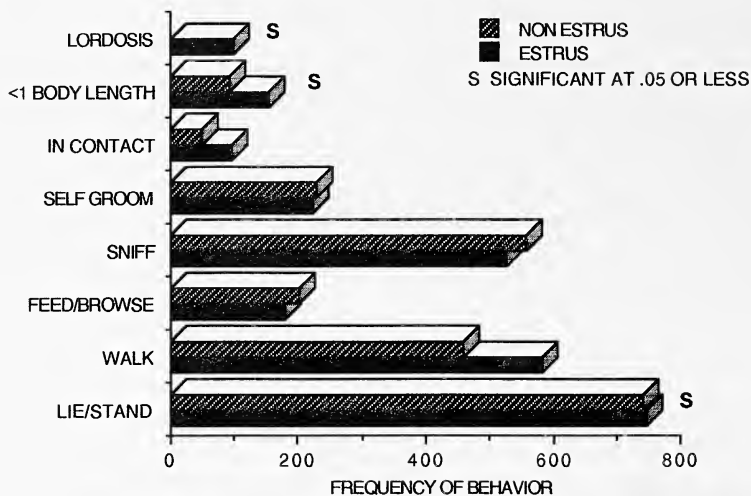
**FIGURE 1 - Estrus and Nonestrus Behavior Displayed by Percent of Time, N = 6, n = 43.5 hours**

Figures 2 and 3 depict frequencies of behavior on estrus and nonestrus days. Analysis of frequencies of these behaviors revealed similar trends and significant differences to those found in the duration data. An additional significant decrease was seen in the number of withdrawals from cagemates on estrus days.

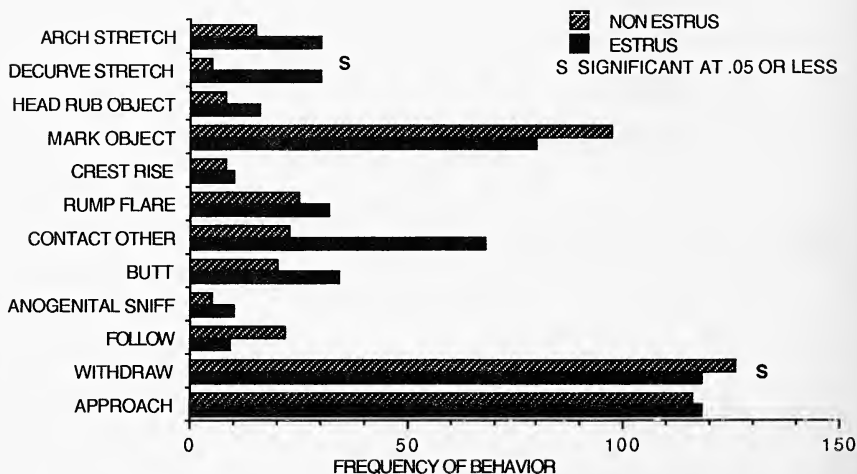
Behavioral estrus durations and inter-estrus intervals are described in Table 1 for 10 and 12 individual females.

Urinary iPdG data are presented for two (2) females in Figures 4 and 5. Low iPdG levels were indicative of animals which were in a period of the estrous cycle either immediately prior to, during, or immediately following estrus. Behavioral estrus is indicated on each graph and was determined based upon the presence of lordosis. Trends between low iPdG levels and behavioral estrus were evident.

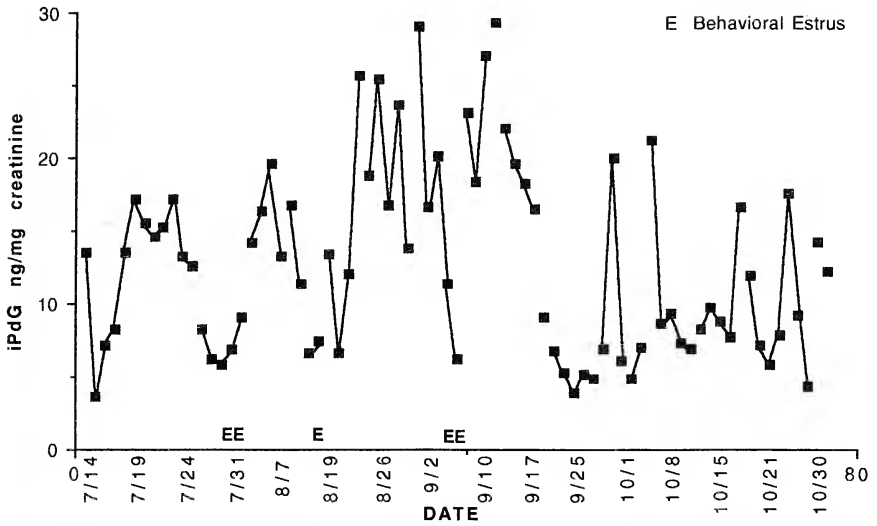
**Detection of Estrus in Gunther's Dik Dik, Continued**



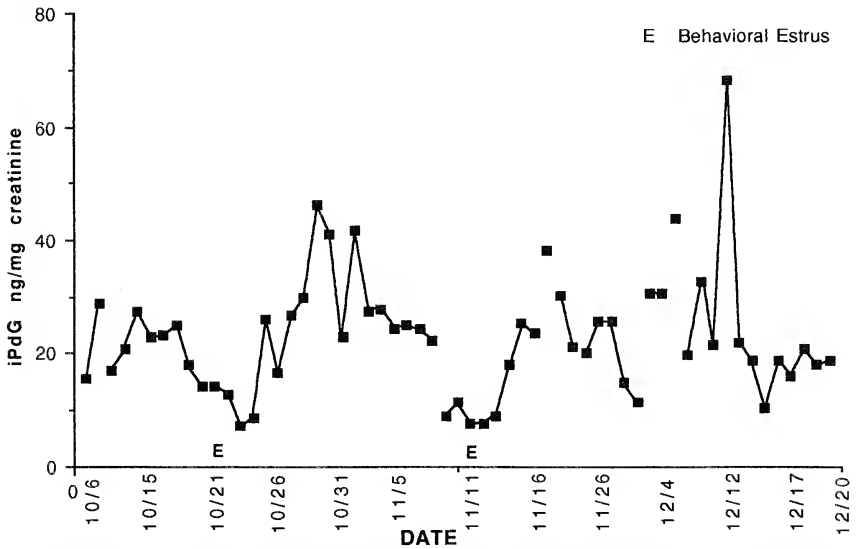
**FIGURE 2 - Frequency of Behavior by Estrus and Nonestrus Days, N = 6, n, 43.5 hours**



**FIGURE 3 - Frequency of Short Duration Behavior by Estrus and Nonestrus Days, N = 6, n = 43.5 hours**



**FIGURE 4 - Immunoreactive PdG (iPdG) Concentrations - Malkia 1991**



**FIGURE 5 - Immunoreactive PdG (iPdG) Concentrations - Tali 1990**

**TABLE 1 BEHAVIORAL ESTRUS PARAMETERS MEASURED IN DAYS**

	<b>Inter-Estrus Intervals</b> N =10, n = 94	<b>Estrus Duration</b> N =12, n = 160
Mean	17.54	1.48
Standard Error	1.45	.86
Mode	17	1
Range	13-21	1-7

## DISCUSSION

Through behavioral observation of Gunther's dik dik, several useful behavioral indicators of estrus have been identified. Heightened locomotor activity, decreased maintenance behavior, and increased social behavior may be difficult measures of estrus but can be reliably used by staff familiar with their animals. More easily observed behavioral indicators of estrus include lordosis, head rubbing on cagemates, and decurve stretching. Preliminary data indicate that head rubbing and decurve stretching may be individually dependent (4 of 6 females, and 3 of 6 females respectively) and not necessarily applicable to all female dik dik. Other individual expressions of behavioral estrus observed during daily routine include approaching the keeper, and vocalizing (squeaking or twittering). Vocalizations can be very soft and may not be audible at times. Lordosis is not always observed on every estrus day, but if animal staff are informed and attentive it provides the most accurate and readily identifiable behavioral indicator of estrus.

Further analyses of the data are planned, however, initial results are promising for correlating low iPdG levels with the occurrence of behavioral indicators of estrus for the rest of the study group. Behavioral measurement of intervals between estrus periods also appears to coincide well with cyclically low iPdG levels. Identification of exact hormonal estrus is not necessarily accurate through behavioral means and would require measurement of serum estrogens or urinary estrogen metabolite concentrations. However, behavioral monitoring may be used to improve detection of estrus when the expense and risk of identifying hormonal estrus are impractical.

For captive management application, once an estrus day is observed staff can project that the next estrus day will occur within approximately 17 to 18 days, or that parturition will occur in approximately 170 to 180 days. Knowledge of inter-estrus intervals and estrus behavior allows for the development of strategic husbandry plans, early and non-invasive determination of pregnancy, and preparation for artificial reproduction techniques. The Dallas Zoo relies on these methods for management of their dwarf antelope population and believes that the method may have application to many other aseasonal, polyestrous, monogamous species.

## CONCLUSIONS

- 1) Urinary immunoreactive pregnanediol-3-glucuronide (iPdG) can be used to track Gunther's dik dik estrous cycles.
- 2) Certain behaviors can also be used to track Gunther's dik dik estrous cycles. The most accurate measure of behavioral estrus is the presence of lordosis.
- 3) Observed behavioral estrus coincides well with low levels of iPdG.
- 4) The methods and techniques utilized in this study are applicable to other species and should be of use in developing captive breeding and management procedures.

ACKNOWLEDGEMENTS

Project funds were provided by the American Association of Zoo Keepers, Inc., the Sophie Danforth Conservation Biology Fund, and the Dallas Zoological Society. A portion of the funds for this conservation project were provided through a grant from the Institute of Museum Services, a Federal agency that offers conservation project support to the nation's museums. Essential RIA data were provided through the expertise of Texas A & M Veterinary College, Department of Veterinary Physiology and Pharmacology personnel: Dee Smith, Todd Robeck, Craig Turczynski, and Mark Westhusin. The data could never have been collected and analyzed without the invaluable assistance of Dallas Zoo research aides Allison Case, Amy Fernandez, Michelle Harbaugh, Suzi Leonard, Diane Michaels, Jaji Murage, Sherri Reneau, Jenny Skipper, and Cindy Smith. Support was provided by the Dallas Zoo and its staff. Various staff members helped immensely in facilitating the research including: Tom Alvarado, Rita Buice, Joe Christman, Ron Kagan, Fred LaRue, Debbie Maloy, Amos Morris, Tim Overskei, Bonnie Raphael, Steve Smith, the staff of the Large Mammal Department and the Wilds of Africa mammal section, and the veterinary technicians. Sara Weller and Ann Stevens kindly reviewed this paper. Much gratitude is expressed to Cynthia Bennett for providing four years of guidance, encouragement, support, and editorial review.

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# AAZK Book Sale

The Beardsley Zoo AAZK Chapter offers these discounted books for sale as part of their fundraising efforts towards conservation projects. Prices listed are 10-20% off publisher's list prices.

<u>Sug. Price</u>	<u>SSALES</u>	
\$9.95	\$8.00	<u>America's Neighborhood Bats</u> - Marlin D. Tuttle. Bat behavior and biology, a key to the identification of common North American species, range maps, glossary, and an extensive list of sources for additional information. 96 pgs. paperback
\$65.00	\$52.00	<u>The Encyclopedia of Mammals</u> - David W. Macdonald, Ed. Lavishly illustrated, comprehensive source book to all known species of mammals. 960 pgs. hardcover
\$19.95	\$16.00	<u>Survivors in the Shadows</u> - Gary Turbak Illustrated by Lawrence Ormsby. 'Threatened and endangered Mammals of the American West'. More than one hundred species of animals, living in seventeen western states, in the shadows of human progress. 176 pgs. paper
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\$14.95	\$12.00	<u>Peterson Field Guides</u> - varied # of pages, paperback Insects, Animal Tracks, Ferns, Mammals, Advanced Birding, or Beetles.

Previous books offered still available, some with price increases (Previous book lists may be found in the March 1991 and November 1993 issues of *AKF*). If interested in any of these, please contact Jeanne Yuckienuz at (203) 576-8082 for price updates). To order: List the books you want with your name and complete mailing address. Include shipping fee (\$2 for first book, \$1 for each additional book) in check or money order (U.S. FUNDS ONLY) payable to: AAZK BOOK SALE, Beardsley Zoo, 1875 Noble Ave., Bridgeport, CT 06610.





# Wild Things in Wild Spaces: Interpreting native species on the zoo grounds

By  
*Michael J. Demlong, Senior Exhibit Technician  
The Phoenix Zoo, Phoenix, AZ*

## Why interpret natives species?

Look around any urban zoo in North America and chances are you'll find fragments of wilderness tucked in between the "naturalistic" exhibits. These wild spaces are hidden treasures, homes to indigenous organisms that ironically offer interpretative potential greater than any artificial exhibit. Yet in our quest for personal visions of progress, visitor recreation, education, or conservation (of typically exotic species), we usually overlook and often destroy both wild things and wild spaces in our own backyard. This destruction contradicts the very conservation/preservation gospel we preach so loudly to zoo visitors.

As you prepare to bulldoze for that new exhibit take care not to overlook the potential for native interpretive opportunities around your zoo grounds. For example, before building an expensive aviary full of exotic tropical birds and concrete trees, consider interpreting species in your own backyard first. Instead of an aviary, why not hand a \$20 bird feeder from a tree in view of the zoo visitors. Quite possibly the objectives anticipated with the expensive aviary can be accomplished in an inexpensive and more environmentally friendly way using a bird feeder.

## Some techniques for interpreting local species

Have you noticed how zoo visitors are often more fascinated in free-ranging species on the zoo grounds (e.g. squirrels, wild birds, peacocks, fish, snakes, insects) than in the species presented in captive situations? Have you heard the screams of delight and surprise? A definitive explanation for this excitement is unclear, but I guess the reason is the unexpected thrill a visitor experiences when surprised by a real "wild" animal. The excitement of self discovery and a personal encounter with another animal, helps reinforce the realization that we are only one animal of many, instead of one animal over many.

A few zoos have tried--but few have succeeded--in interpreting the wild things in wild spaces on their grounds. Deciding where and how to interpret the residents of wild spaces is the challenge. Keep in mind when interpreting nature that simpler is always better. But simpler does not mean easier, and interpreting wild spaces and wild things often requires more time and creative thought. In this paper I will briefly discuss a few simple techniques used here at The Phoenix Zoo to interpret wild spaces for zoo visitors. If not immediately obvious, the common denominator linking all the following techniques is the permanence or predictability of the natural phenomenon/spaces.

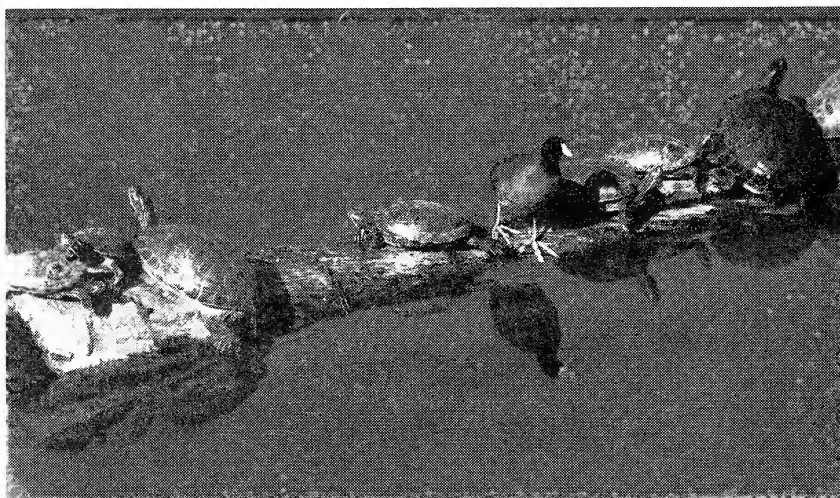
### Turtle Logs

As you enter The Phoenix Zoo, you cross a wide concrete bridge over a large lagoon. Long ago an attentive zoo employee noticed how the resident lagoon turtles liked to rest on tree limbs floating in the water, much to the delight of visitors. So the employees threw a couple of large dry logs (9-12" in diameter) into the lagoon at strategic viewing locations, and anchored them in place with chain and blocks. These logs immediately became popular sunning spots for the four species of freshwater turtles living in the lake, as well as various species of waterfowl.



**Zoo visitors may simultaneously read the signage and view the turtles on the log below.**

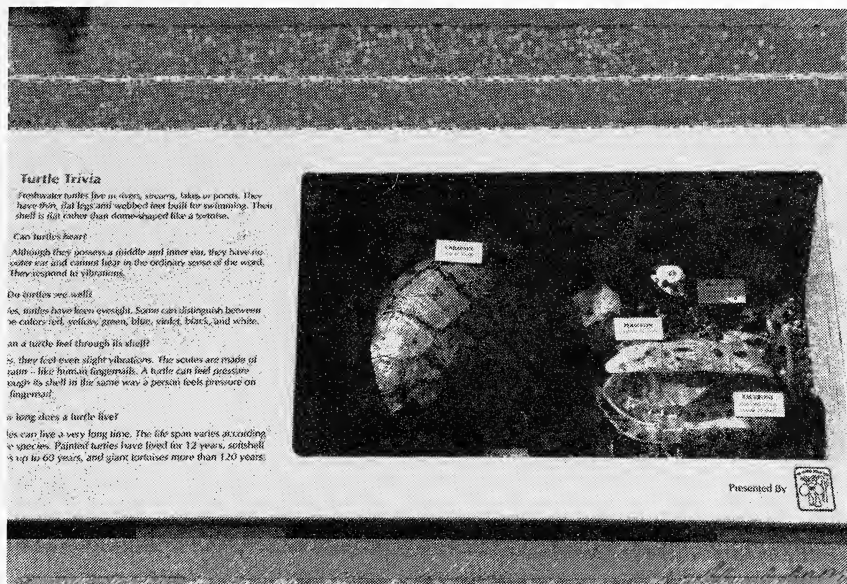
*All photos for this article by Larry Gossman*



**Half submerged logs make great resting places for reptiles and birds alike. The chain is tied around the log and anchored with a concrete block.**

## Wild Things in Wild Spaces, Continued

Vandal-resistant graphics and a specimen box containing a cut-away view of a turtle shell were installed on the bridge to interpret the phenomena. These graphics interpret the thermoregulatory behavior of the turtles, their reptilian characteristics, and anatomical evidence to demonstrate their classification as vertebrates.



### **Close-up of interpretive signage and artifacts in museum box.**

Our turtle log is a perfect example of an inexpensive interpretive opportunity, applicable at any zoological park or aquarium with water and turtles. Final cost will mainly depend on the presentation and extent of the graphics used to communicate your message. The dry dead logs are the least expensive part as they are usually available around your park for free. If possible select a rot-resistant species to ensure longevity, and one with rough bark. Then be sure to securely anchor the log in the water so that it doesn't float away. You can use a couple of pieces of chain or cable to do this, just attach one end around the log and the other end to a cement block or bucket of cured concrete.

Eventually even the driest log will become water logged and sink to the bottom. One solution for keeping your log permanently afloat is to cut a big wedge-shaped strip out of the log or drill a series of large holes through it. Then fill these open spaces with urethane foam to make the log more buoyant (a naturally hollow log works even better).

## **Nest Viewers**

Unlike turtle logs which lure native animals to designated sites, one can also interpret an existing wild space frequented by wildlife. At The Phoenix Zoo we easily identified many of these spaces, but the challenge remained to successfully direct the visitor's attention to the phenomenon without traditional signage.

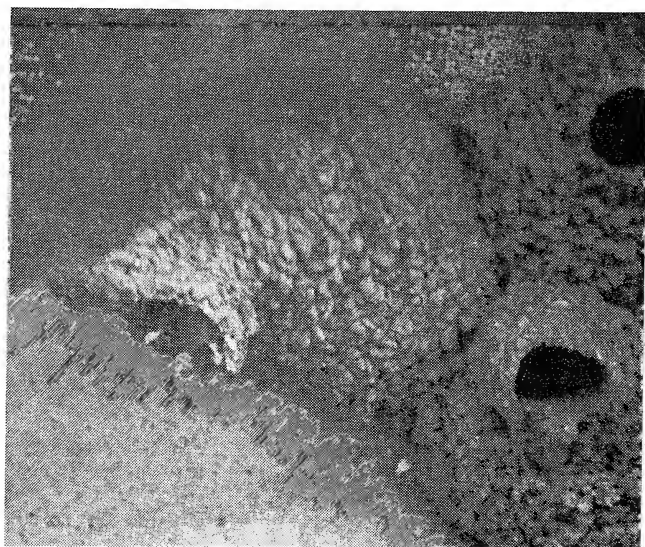
Back again on the zoo's main bridge we directed our visitor's attention to the daily activities of a large colony of cliff swallows, building mud nests and feeding their young underneath. How did we do this? Zoo visitors on the bridge look down upon two, 2' x 4' mirrors precisely angled to reflect on the conglomeration of mud nests underneath. With patience, visitors can watch the building of nests, feeding of progeny, or skirmishes between neighbors.

**Wild Things in Wild Spaces,** *Continued*

We made our viewers from acrylic mirror backed with an aluminum panel and mounted on a square tube frame. Each unit is designed and fabricated with hinged arms so it can be pulled up close to the guardrail for easy cleaning.



Photo above shows a suspended 2' x 4' mirror reflecting on the Swallow's mud nests underneath the bridge. The photo below reveals a close-up of the mud nest and its builder.



## Wild Things in Wild Spaces, Continued

### Focusing Scopes

Another wild space we wanted to draw attention to was a Harris' hawk nest about 60' up in a eucalyptus tree. First we thought of using an optical telescope to give visitors a better view, but telescopes are expensive, fragile, and vulnerable to vandalism. What we decided to design and build is what I call a focusing scope, a hollow pipe permanently attached on a pedestal (metal post) and sighted in on the object of interest. When the visitor looks through the pipe their vision is focused on the natural object, making it easier to find when they stand away.



**This focusing scope is aligned on a large Harris' hawk nest. Note scope in lower righthand corner.**



**Photo at left shows the zoo visitor's view through the focusing scope.**

**Photo below shows the focusing scope in closer detail.**

*All photos for this article by  
Larry Gossman*



## Wild Things in Wild Spaces, *Continued*

Success with this scope depends on its precise alignment and secure attachment to the ground. The upshot here is for about five dollars of metal and a few hours of labor, we had a very popular, virtually maintenance free, interpretive device.

Other imaginative applications for a focusing scope around the zoo might include: a rhino wallow, an ostrich nest, a woodpecker hole, a squirrel nest, an epiphyte in a tree, the favorite daytime roost for an owl, or the favorite nectar plant of local butterflies. The only limitations to applications around the zoo are your own creativity and ambition.

## Summary

The aforementioned ideas are just a few ways in which we have succeeded in interpreting wild spaces and wild things--surely countless more exist. Just remember any device used to bring attention to native wildlife should not disturb the residents or make them more prone to predation.

Lastly, simply pointing out to visitors wild spaces or the resident wild things is meaningless. Intriguing graphics must accompany each interpretive device to explain the complexity and intrinsic beauty of the phenomena. Hopefully, you will be able to plant in the zoo visitor the seed of respect for Mother Nature.

## Acknowledgements

I wish to thank Dick George and Mike Seidman for their thoughtful comments on this manuscript, and Larry Gossman for providing the exceptional photographs.



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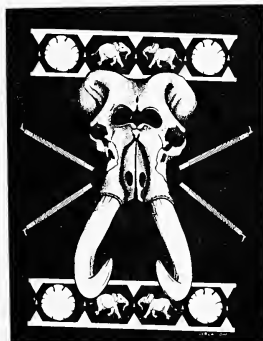
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# Sumatran Rhino Closer to Extinction

New information indicates that the Sumatran rhino (*Dicerorhinus sumatrensis*) may now be the most endangered of all rhinoceros species.

Fewer than 500 Sumatran rhinos are now believed to exist in very small and fragmented populations, mostly in Indonesia and Malaysia, with perhaps a few in Thailand and Myanmar. Previous estimates from 1984 had estimated that there were as many as 1,000 Sumatran rhinos living in the wild. This decline has occurred despite significant efforts on the part of both Malaysia and Indonesia to protect this dwindling species. While habitat loss is more of a problem for the Sumatran rhino than it is for any other rhino species, most of the decline in their population can be attributed to poaching.

The latest figures were officially disclosed at a meeting of the Asian Rhino Specialist Group (AsRSG) of the Species Survival Commission (SSC) of IUCN. This information has emerged through more intensive surveys that have been in progress in Malaysia and Indonesia. The largest change in numbers has been in Indonesia as revealed during a Population and Habitat Viability Analysis Workshop conducted jointly by the Indonesian Department of Forest Protection and Nature Conservation (PHPA) and the Captive Breeding Specialist Group which specializes in small populations for the IUCN-SSC.

The plight of the Sumatran rhino is reflective of the dire status of the three species of Asian rhinos. Much of the focus about the extinction crisis for rhinos has been on Africa's black rhino, which has declined 97% in the last 20 years and perhaps 85% in the last 10. However, there are still as many black rhinos in Africa as there are rhinos of all three Asian species combined: Sumatran rhino (500), Javan rhino, *Rhinoceros sondaicus* (<100) and Indian/Nepalese rhino, *Rhinoceros unicornis* (1,900).



Although the numbers of the Javan rhino are lower, its population has not continued to decline at the rate of the Sumatran rhino. Although the African black rhino has declined more rapidly over the last 10 years, there are still 5 times as many black rhino as there are Sumatran rhino. Consequently, the Sumatran rhino probably has the dubious distinction of being the most critically endangered of the rhino species, and perhaps of all larger mammals.

The demand for rhino horn as a medicinal ingredient in Asia is the root cause of the three Asian rhinos' plight. Traditional Chinese medicine uses rhino horn to treat fevers and other ailments such as epilepsy, malaria, poisoning and abscesses. In China itself, the last rhino was killed more than 1,000 years ago. Trade in rhino horn continues despite the fact that rhinos are listed on Appendix I of the Convention on International Trade in Endangered Species (CITES), which makes all commercial trade in rhinos and their byproducts illegal.



## Sumatran Rhino Closer to Extinction, *Continued*

The Sumatran rhino is also known as the Asian Two-horned or Hairy Rhinoceros. Indeed, the species can develop a rather heavy coat of hair, especially when in captivity. The Hairy Rhinoceros is also related to the Woolly Rhinoceros which lived during the Ice Ages in Europe and Asia until about 10,000 years ago, when it became extinct, probably due to human pressures.

Sumatran rhinos are wanderers, migrating freely up and down mountain chains and seldom staying very long in one area. They seem to favour the steepest, wettest, and most inconvenient country and are, therefore, extremely difficult to find and study. Even a clear hoofprint of a Sumatran rhino can be hard to locate because they have a habit of placing their rear foot in the same place as their forefoot.

Despite the Sumatran rhino's inaccessibility, poachers still manage to catch these animals. The traps they place tend to consist of a runway of bamboo on a known rhino path. This runway has a trip wire near the ground that, when broken, releases a heavy spear embedded in a log, which drops through the shoulder blades of the rhino. The animal then bleeds to death.

With such a fragmented and small population, conserving the Sumatran rhino is going to require even greater efforts and resources. The IUCN/SSC, WWF and the IRF have been working closely with the governments of Indonesia and Malaysia on intensified programmes for the Sumatran rhino.

If you desire further information on the Sumatran rhino, or other rhino species and the efforts to conserve them, please contact:

Dr. Simon Stuart  
IUCN Species Survival Commission (SSC)

or Tom Foose Programme Officer  
IUCN/SSC Asian Rhino Specialist Group  
International Rhino Foundation  
Tel: (1 614) 228 0402 Fax: (1 614) 228 7210

>From *Green Disk*, Feb/March 1994

Vol. 2, No. 5.



## ***Korea's Whale Catch Beefs Up the Argument for an Antarctic Whale Sanctuary***

Chagalch'i in Pusan, South Korea's second largest city, is the country's oldest and best known seafood market. Merchants openly sell whale meat there. It's the same story at the city's Shin Sewha department store.

When TRAFFIC (Trade Records Analysis in Flora and Fauna in Commerce) reported these findings last November, the International Whaling Commission (IWC) asked the Republic of Korea to check the species and origin of the meat.

According to TRAFFIC, the meat appears to be from baleen species, which are all protected from hunting under the IWC, and banned from trade under the Convention on International Trade of Endangered Species of Wild Fauna and Flora (CITES).

"Both British and American diplomats told me they regularly saw whale meat in the markets," says TRAFFIC investigator Judy Mills, who was actually conducting a survey on rhino horn when she discovered the whale meat.

Vendors talked to her openly until she questioned them about the cost and species of whale meat on display. "They became defensive and shooed me away," says Mills. "They know they are doing something wrong."

Last October, Norwegian authorities confiscated a 3-ton shipment of minke whale meat, headed for South Korea, after an airline courier noticed that boxes labelled "shrimp", were oozing blood. An investigation is pending.

*Continued on Page 220*

# 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) 986-6921 [w]; (204) 837-2916 [h]

### Regional Coordinators

- ALABAMA** - Fred Alvey, Zoo Atlanta, 800 Cherokee Ave. S.E., Atlanta, GA 30315  
**ALASKA** - Vacancy  
**ARIZONA** - Vacancy  
**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)** - Vacancy  
**COLORADO** - Vacancy  
**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** - Vacancy  
**IDAHO** - Holly Liappas, Tautphaus Park Zoo, P.O. Box 50220, Idaho Falls, ID 83405  
**ILLINOIS** - Pat Swieca, 5710 W. Cullom Ave., Chicago, IL 60634  
**INDIANA** - Vacancy  
**IOWA** - Carla Wieser, Omaha's Henry Doorly Zoo, 10th St. & Deer Park Blvd., Omaha, NE 68107  
**KANSAS** - Vacancy  
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**MAINE** - Jeanette Nadeau (see addresses under CT)  
**MARYLAND** - Theresa Maas, Philadelphia Zoo, 34th & Girard Ave., Philadelphia, PA  
**MASSACHUSETTS** - Jeanette Nadeau (see addresses under CT)  
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**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  
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**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** - Frank Leonard, Bronx Zoo, 185th & Southern Blvd., Bronx, NY 10460  
**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  
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**NORTH DAKOTA** - Bob Debets, Assiniboine Park Zoo, 2355 Corydon Ave., Winnipeg, Manitoba Canada R3P 0R5 (204) 986-6921 [w]  
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**DISTRICT OF COLUMBIA** - Theresa Maas (see address under PA)  
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**Provinces of Alberta & British Columbia** - Grant Tkachuk, 10139 157th St., #206, Edmonton, Alberta  
**Atlantic Canada** - Bernard Gallant, RR # 7, 1081 Ryan Road, Moncton, N.B., E1C 8Z4 T5P 2T9

*Institutions wishing to advertise employment opportunities are asked to send pertinent data by the 15th of each month to: Opportunity Knocks/ΔKE, 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.*

*The following two (2) positions will be available in Mid-August 1994 at the Caribbean Gardens, home of Jungle Larry's Zoological Park. Send resume and references to: Manager/Show Staff, P.O. Box 7129, Naples, FL 33941. Applicants must respond promptly for consideration.*

**ANIMAL HANDLER/SHOW DEPT.**...successful applicant shall be a friendly, outgoing team player. The ability to relate and interact with the public is a must. Individual shall be responsible for the basic husbandry of small mammals and reptiles and will be required to handle these exotics in an educational show atmosphere. Salary commensurate with experience.

**TRAINER PSITTACINES/RAPTORS.**...seeking individual with the ability to frame a show using macaws and birds of prey. Applicants shall train and present these species and be responsible for their general husbandry. Individual will work in a six-member show department and may also be called upon to assist in the care and showing of felines, reptiles, small mammals, and pachyderms. Salary is negotiable.

**ZOOKEEPER - Psittacines.**...requires minimum of one year paid, hands-on experience with Macaws and degree or equivalent Zoo related experience. Duties include daily care, feeding and habitat upkeep, breeding programs, record keeping, medical coordination, acquisitions, training, supervising part-time staff and volunteers, presenting educational programs, etc. Must be willing to work weekends/holidays. Starting salary \$16,000-\$21,000 with year-end bonus and benefits. Excellent growth potential. Salary commensurate with experience. Send resume-references to: Washington Zoological Park, 1925 SE 54th, Issaquah, WA 98027. Position open until filled.

**CURATOR**...for The Wildlife Discovery Program (a Houston I.S.D. Magnet School) is now taking applications for the 1994-95 school year. The Curator position vacancy will become available 16 August 1994 and continue until 1 June 1995 (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; or 5) Summer camp counselor experience. Salary is \$1030.00/month for 10 months with benefits. Applications will be accepted until **15 July 1994**. Applicants need to send a cover letter and their resumé and three references to: Ms. Karyl Watz, Coordinator, Wildlife Discovery Program, 1513 North MacGregor Way, Houston, TX 77030.

**ELEPHANT KEEPER(S)**...the Lee Richardson Zoo is seeking resumé from highly motivated, team-oriented individuals. The position(s) requires a high school diploma and one year of elephant experience. A basic understanding of operant conditioning and its application to a protected contact management system is desirable. Responsibilities would include the care and maintenance of two female African elephants in a protected contact situation, as well as care of other species. Salary \$6.69-8.83/hr. depending on education and experience, plus excellent benefits. Send resumé by **15 July 1994** to: Jeff Bullock, Lee Richardson Zoo, P.O. Box 499, Garden City, KS 67846.

**ANIMAL KEEPER**...responsible for care and maintenance of varied animal collection, including work with indoor and outdoor filtration system. Position requires rotational responsibilities with all animal species. Requires two (2) years college in Life Science and one year's documented experience working with animals in a zoological institution. Competitive salary, plus excellent benefits. Send resume and letter of interest to: John Keeley, Director of Operations/Husbandry, Grassmere Wildlife Park, P.O. Box 40266, Nashville, TN 37204.

## Opportunity Knocks, *Continued*

**ZOOKEEPER/CHILDREN'S ZOO**...collection includes nursery, barnyard animals, and small carnivores and primates. Must work weekends/holidays. Physically demanding. Minimum wage to start, post probationary period (90 days) wage dependent on experience and training; good benefits. Opportunity for qualified individual to design and implement an environmental enrichment program for varied collection of 2,000 animals. Enjoy the sun, the surf and the culture of Mexico. Send resumé to: Michelle Willette-Frahm, DVM. Gladys Porter Zoo, 500 Ringgold St., Brownsville, TX 78520. Position open until filled.

**BIRD KEEPER (2 Positions available)**... Must be experienced, effective, aviculturally ambitious, literate, entirely dependable and team-oriented. This is a rare opportunity to get in on the ground floor of the reorganized, newly privatized and developing Tracy Aviary. Salary starts at \$17,000.00. Send resumé to: D. Grenville Roles, Curator, Tracy Aviary, 589 East 1300 South, Salt Lake City, UT 84105. Position open until filled.



## Anarctic Whale Sanctuary, *Continued from Page 217*

"If smuggling is taking place in supposedly well-regulated countries such as Norway, under a global moratorium on commercial whaling, you can imagine what could occur if the ban was ever lifted," says Cassandra Phillips, WWF's Antarctic and Cetacean Officer. "As a precautionary measure, WWF is urging governments to support the proposal to create a Southern Ocean Whale Sanctuary to safeguard the southern hemisphere's main feeding grounds for sperm whales and all baleen whales except Bryde's."

If the IWC votes for what is known as the Revised Management Scheme, but not for the whale sanctuary, about 2,000 minke whales could be hunted in the Southern Ocean.

"Whaling in the Antarctic would fuel a vast uncontrollable international market in whale meat," explains Phillips. "It would also probably lead to a resurgence of pirate whaling, which has undermined the IWC's effectiveness in the past." A closed-door meeting for IWC members was held in February on Australia's remote Norfolk Island to discuss the sanctuary proposal. At the time of going to press, the meeting's outcome was unknown, but the adoption of the sanctuary was guaranteed to dominate the annual IWC meeting in May.

(By Leigh Ann Hurt ---WWF News (ISSN 0254-3893) is published bimonthly by the International Secretariat of WWF-World Wide Fund For Nature. Copyright ©1993 by WWF-World Wide Fund For Nature (formerly World Wildlife Fund).

>From March/April 1994 "WWF News" (News Desk section)  
via GreenDisk Feb/Mar 1994 Vol. 2, No. 5



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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 S.W. Gage Blvd.  
Topeka, KS 66606-2066

Address Correction Requested



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Washington, DC 20008

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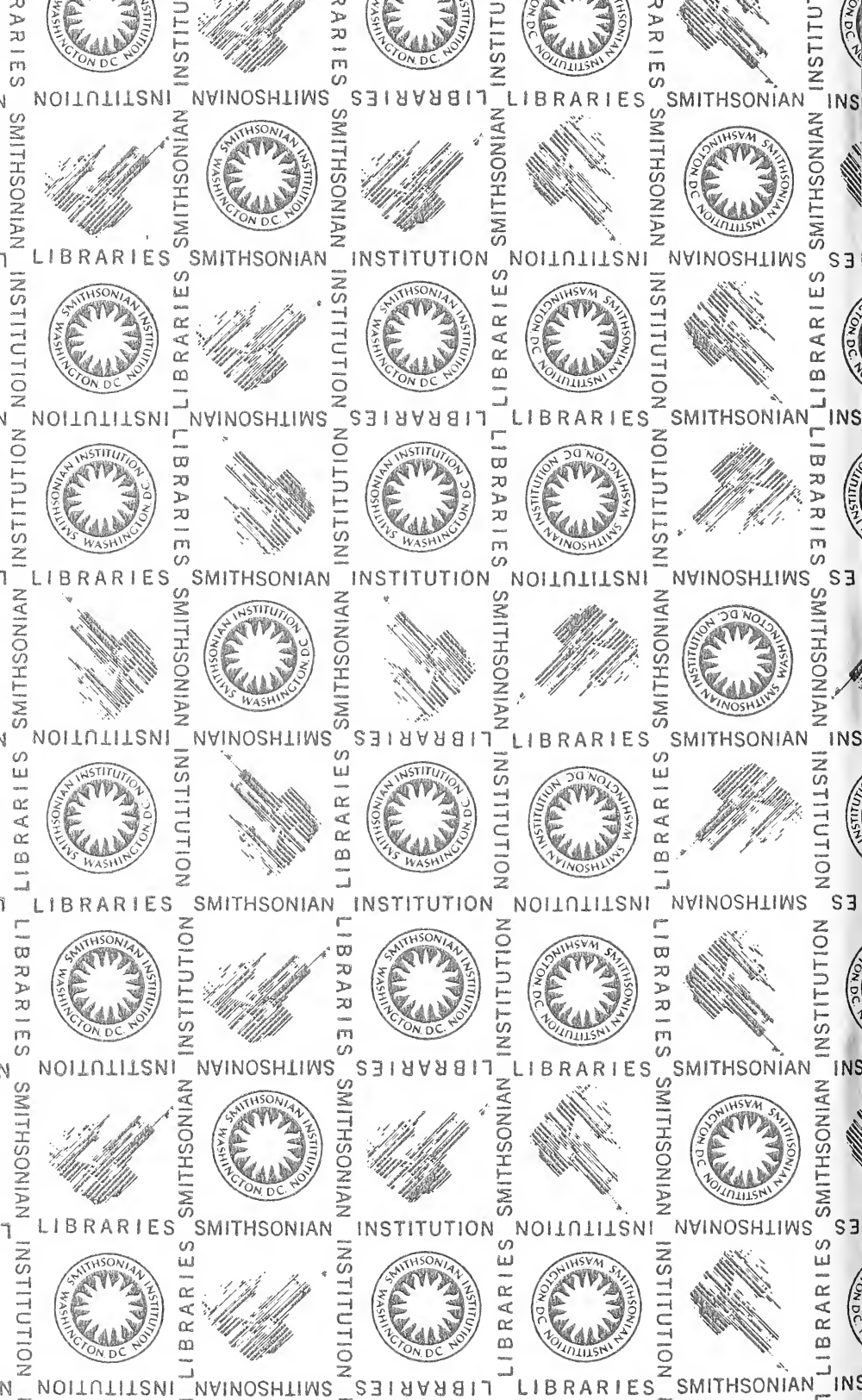
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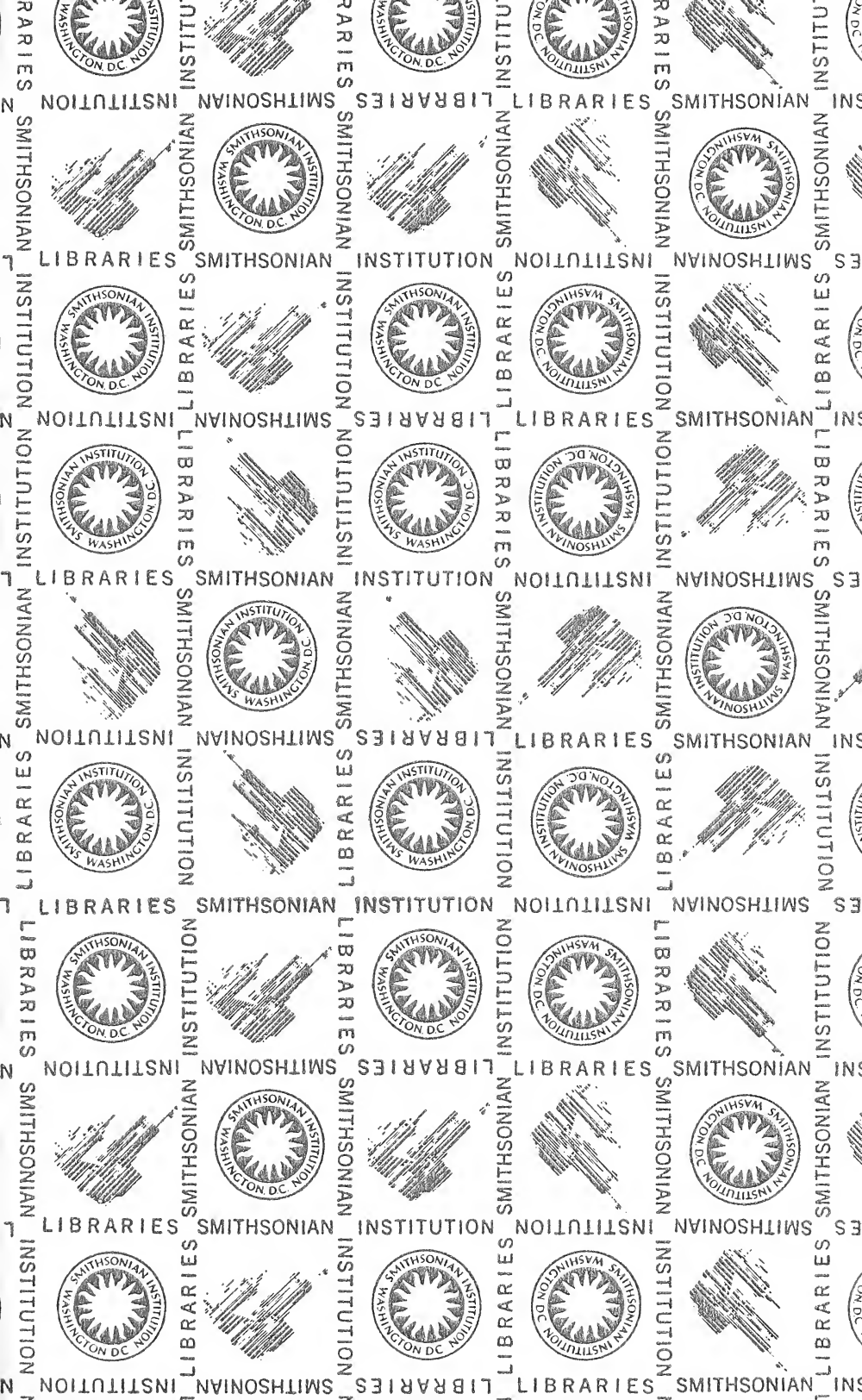












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