

---

NEW YORK  
ZOOLOGICAL  
SOCIETY

---

ANNUAL REPORT 1988-1989



AFRICAN ELEPHANT ALERT



was performed on four-month-old Oliver T. Barnes by a team of pediatric surgeons and anesthesiologists. And nine-year-old Kelly, after undergoing MRI (Magnetic Resonance Imaging) and CT (Computer Tomography) scans of his brain, was determined by a neurology team at Montefiore Hospital to have suffered from a disabling infection early in life. Fortunately, his occasional seizures can be controlled with medication, and he continues to function well, despite a partially paralyzed right arm, as big brother to Tunko, Tumai, and Triska.

At the Central Park Zoo, a successful six-hour bilateral root-canal was performed on the polar bear Ida with the assistance of consulting human and veterinary dentists to cure abscessed canine teeth. Another kind of dental problem, afflicting Nuka, the Aquarium's 1,200-pound wal-

*The "Pudu Pox," a previously unknown virus in this small South American deer, was identified by Pathologist Dr. Tracey McNamara.*



rus, was treated in a four-hour procedure by removing regrown tusks.

With the appointment of Dr. Tracey McNamara as staff pathologist, the Bronx Zoo became only the fourth zoo in the country to provide full-time pathology services. Dr. Anne Lewis was named pathology resident. Under the expanded program, eight previously unreported viral, bacterial, and parasitic diseases, including the "pudu pox," were detected and treated. Joining the clinical staff was Dr. David Kenny as veterinary resident.

Operations of the Bronx Zoo's animal commissary, managed by George Fielding, have been consolidated under the Nutrition Program for greater efficiency in administering the diets of nearly 4,000 animals. Diet revisions have been completed for most small mammals and are proceeding for soft-billed and aquatic birds.

Undergraduate students from Manhattan College conducted two important nutrition research pro-



*Hand-feeding is one part of raising red bird of paradise chicks.*

handling of animals. For this reason, and because removing blood from a small bird can be dangerous, Amato is studying the possibility of gleaning sufficient data from tests on feathers.

Meanwhile, the breeding program proceeds. The males continue to engage in their ritual, showing off for each other in a manner that appears to attract females. And with each successive breeding season, keeper Hundgen refines the maze of interconnecting cages, tunnels, and trap doors, maximizing the males' ability to display toward one another while at the same time appealing to the females' need for territorial security.

#### **Black Rhinos United In One Gene Pool**

The black rhinoceros is one of the most endangered species in the world. From about 65,000 animals in Africa in 1972, the population has dropped



dramatically, primarily due to poaching, to less than 3,500. And it is fragmented into isolated groups, many of which are too small to be viable. Translocation is their only hope. However, mixing dissimilar animals can be as threatening to the survival of the species as reduced genetic diversity. For this reason, the genetics of the remaining black rhinos must be understood.

The Society's genetics program, launched in 1988 by the Animal Health Center in collaboration with the Animal Management Services Department and Columbia University, is now studying black rhinos. Geneticist George Amato, former research associate at Yale University, who recently joined the NYZS research staff, has found that the several groups of black rhinos once considered subspecies are not genetically distinct from one another in any major way. Now, all existing black rhinos can be considered members of one single large gene pool. Continued DNA work is expected to confirm these findings, though one subspecies, the desert black rhino of Namibia, remains to be studied.

"In the past," says Amato, "subspecies distinctions have hampered black rhino captive breeding programs. A larger available gene pool means that any given rhino has a greater number of potential mates. In other words, all black rhinos are genetically similar enough to be part of a single breeding program."

A larger available gene pool also means that captive individuals bred from parents of different subspecies from different geographical areas are, in reality, not very different. If necessary, rhinos can now be moved from one geographic area to another and placed with any of the remaining 3,500. This, of course, provides

subjects at the Zoo. One found that the wild cavy does not produce its own vitamin C and must rely on dietary sources, a fact that indicates the need for vitamin supplements. The other study examined lead levels in Zoo animals. Research on vitamins A and E in whole fish used to feed zoo and aquarium animals revealed the need to supplement diets for piscivorous mammals, birds, and reptiles.

*Vitamin E research* produced new data on levels in the blood of gorillas (they are similar to humans); sharks, dolphins, and whales (in joint studies with Sea World); and black rhinos in Africa (they vary according to location). The absorption and availability of vitamin E in elephants is the subject of a collaborative study by the NYZS veterinary and mammals staffs, researchers at NYU, and the National Research Council of Canada.

In another cooperative study, funded in part by the U.S. Fish and Wildlife Service, Nutrition Technician *Jane McGuire* is measuring the protein, fat, fiber, mineral, and vitamin levels of *prairie dogs*, the principal prey food of endangered *black-footed ferrets*.

Nutritionist *Dr. Ellen Dierenfeld* served in several AAZPA capacities: as a member of the Nutrition Subcommittee of the Animal Health Committee and as nutrition advisor to the Species Survival Plans for the Asian elephant and Puerto Rican crested toad. She was a member of the Cheetah Research



*Dr. Robert Cook (right) and assistant accompany a false gharial in the Animal Health Center van.*

Council, Coordinator of Nutrition Research for the Captive Breeding Specialist Group Rhino Program in North America, and panelist for a new National Science Foundation research thrust in conservation biology. □

#### ANIMAL MANAGEMENT SERVICES

Questions of genetic integrity and species identification, which are crucial in breeding and management programs, are now being addressed by *George Amato*, the Society's first full-time *geneticist*. Dr. Amato has already made an important discovery about the gene pool of severely threatened black rhinos (see page 26).

Other methods of *animal identification* are being studied by *Susan Elbin* in a two-year project funded by the Institute of Museum Services. Tech-



Associate Curator Dan Wharton's record of the barasingha deer in captivity includes the Bronx Zoo herd.

niques for differentiating individual animals at the Bronx Zoo, which is essential to health care, breeding, and other animal management decisions, are being considered in a wide variety of species.

As Species Coordinator for the Snow Leopard Species Survival Plan (SSP) and Regional Studbook Keeper for the Western Lowland Gorilla, Curator Dan Wharton was involved in more than 100 recommendations for managing and breeding these species.

He is also tracing the barasingha deer's long

history in captivity for that species' SSP. The *Koala Diet*, formulated under a project led by Dr. Wharton, was patented by the New York Zoological Society and the University of Sydney for eventual use in zoos as a substitute for hard-to-get eucalyptus leaves.

Coordinator of Research Michael Hutchins assisted on Bronx Zoo studies of endangered river terrapins and birds of paradise and will convene a North American regional advisory committee on monotremes and marsupials under the AAZPA.

The Workshop on Applying Behavioral Research to Zoo Animal Management, co-organized by Dr. Hutchins for the

greater flexibility to wildlife and park managers, and is an excellent example of the important role genetics research can play in conservation efforts.

### The Great Fish Food Chain

With the opening of Discovery Cove at the New York Aquarium, 2,500 specimens were added to the Aquarium's collection of aquatic animals. Like all living things, they require a continuous and nutritious supply of food. This need has precipitated the creation of a fish food chain, a breeding and feeding cycle.

Scientists at the Aquarium's Osborn Laboratories of Marine Sciences are culturing the food that larval fish require by growing algae and feeding it to rotifers, microscopic, multicellular invertebrates that double their population every 24 hours, as long as they have enough algae to eat. To many young fish, rotifers do very well as breakfast, lunch, and dinner. Slightly older fish feed on brine shrimp, which are also raised on algae for a higher nutritional value.

At the same time, under the supervision of Collections Manager Paul Sieswerda, the Aquarium has been able to simulate the temperature, salinity, and pH conditions under which some fish normally spawn. The food chain now makes it possible to actually breed fish.

The likely key to the program's success, says Sieswerda, is the team of keepers, Werner Schreiner and Robert Fournier. "They have taken the foundation established in the precise and sterile conditions of the laboratory and added the personal touch." Schreiner has many years of experience and an indefinable insight into the needs of the animals. Fournier is a recent graduate, eager to contribute thorough background re-