

SAN DIEGO RHINO CONFERENCE HIGHLIGHTS

An International Conference on Rhinoceros Biology and Conservation was held in San Diego May 9-11, 1991. Sponsored by the San Diego Zoo, the conference attracted over 300 registrants from 30 different countries. Those in attendance and participating included zoo biologists, field biologists, governmental representatives, representatives of non-governmental conservation organizations, veterinarians, and academics. Conference organizer, Dr. Oliver Ryder, and his staff should be commended for putting together an excellent conference. Not only was the program interesting, but details like the daily conference news bulletins and the immediate availability of session summaries were also much appreciated.

The sessions covered a variety of concerns, ranging from disease, nutrition, reproduction, and other biological aspects of rhino conservation, to short and long range strategic planning for rhino conservation. Although the sessions were marked by controversy as well as consensus, the conference seemed to be well-received by those in attendance. Still knee-deep in post-conference details more than a week later, Dr. Ryder said that he was pleased with the outcome and that he felt that the conference "pointed some future directions where parties interested in both *in situ* and *ex situ* conservation can work together to provide a more secure future for rhinos."

It is not possible to summarize the presentations of all of the plenary session and keynote speakers in this publication. That has already been done very ably in Dr. Ryder's Conference Report. In addition, an edited volume, consisting of 30 manuscripts, as well as additional contributions that were not included at the conference, is being assembled for future publication. In

this space, we shall instead randomly select a few topics.

One somewhat controversial subject that arose several times during the conference was the concept of sustainable utilization. Several field managers from Africa, including Rowan Martin from Zimbabwe, and Jeremy Anderson from South Africa, advocated using practices such as horn harvesting or trophy hunting as a means of getting rhino programs to pay for themselves. Anderson estimated the proceeds from the sale of one horn to be about \$8,000, and the profits realized from one trophy-hunting expedition at over \$30,000. Horns could be considered a renewable resource because, according to Peter Morkel, the regrowth rate ranges (See CONFERENCE on Page 6)

WANTED: Funding requests for *in situ* rhino research, management, or conservation projects. Requests should include a 50-word abstract which summarizes the project (for publication in AROUND THE HORN), a project narrative (not to exceed three pages) which explains in more detail what you want to do, why you want to do it, and how much money you are requesting, and a *curriculum vitae* for the project coordinator. We will publish quarterly the funding requests we receive in an effort to facilitate zoo participation in *in situ* rhino conservation efforts. (See Editorial on page 2.) Send requests to Karen Wachs, Cincinnati Zoo CREW, 3400 Vine Street, Cincinnati, Ohio, 45220, USA.



EDITORIAL

Sometimes it seems like there is not a conservation problem in the world that can't be solved by throwing enough money at it. Perhaps I get this feeling from the incredible number of solicitations I find each day in my mailbox from the scores of conservation organizations upon whose mailing list my name mysteriously appears. These fervent pleas for cash instill in me a certain fleeting omnipotence as I sift through them to decide who will be the recipient of my next \$30 donation.

Just think for a minute about what an endless supply of money could mean for *in situ* rhino conservation efforts. Land could be bought and set aside for rhino habitat wherever needed. Sophisticated surveillance systems could be set up to effectively deter poachers. Money would be available to pay for the costly process of translocating animals out of potentially unsafe settings where war or civil unrest appears imminent. Meaningful studies on demographics, population dynamics, disease, nutrition, behavior, reproduction, reintroduction and other pertinent topics could be funded. Vital manpower and equipment could be purchased in order to successfully conduct intensive surveying, management and monitoring of rhinos in the wild.

Money could also be a powerful tool in acquiring intangibles like interest, commitment, and cooperation among conservation professionals as well as ordinary people who live within the rhino's range. This could be accomplished by means as diverse as funding neighborhood education programs, rewarding government officials for their support, or simply paying a decent living wage to people whose livelihood is closely tied to that of the rhino.

The preceding is admittedly an oversimplification of a vastly complicated situation. But there's no denying that money is a much needed component in the field of *in situ* rhino conservation. Field managers and biologists were clamoring for it at the San Diego Rhino Conservation Conference last May. We need to somehow come up with more of it in order to give rhino conservation our best shot.

Where should the money come from? Should the costs of preserving wildlife be borne exclusively by the countries in which the animals reside, or should it be the responsibility of the world community? Some contend that wildlife should pay for itself through sustainable utilization. For rhinos, this could include things like harvesting of horn for sale on the world marketplace, or revenues generated by the tourist-attracting potential of the rhino's physical presence. Where rhino

population size permits, controlled trophy hunting or sales to private owners or zoological institutions might also be considered.

What role should zoological institutions play in wildlife conservation? Promoting conservation is certainly a goal which all zoos share. Conservation is, however, a multi-faceted concept which can be addressed in many ways. Perhaps the way that most zoos do it best is through public education, captive propagation, and research.

But maybe it is time for zoos to go a step further in the spirit of conservation by lending more financial support to field studies and other *in situ* conservation efforts. A few zoos already have made longstanding commitments in these areas. For example, the New York Zoological Society, through its conservation arm, Wildlife Conservation International, has been actively supporting field projects since 1899. Bronx Zoo Director, Dr. Bill Conway, believes that to do so is a responsibility which zoos must take on. He also believes strongly that this type of funding support should stand alone and be totally independent from the acquisition of animals by zoos for breeding or display purposes. In the past, zoos frequently have been criticized for being conservation imperialists because of what are perceived to be less than altruistic motives in funding conservation projects in the range countries.

What's a zoo to do?

Zoo support for field conservation does not have to be on a grand scale in order to be effective. Recently, Dr. Ron Tilson initiated a program at the Minnesota Zoo called Adopt-A-Park. He convinced the Zoo's Board to expand the Zoo's conservation activities by pledging a certain amount of the Zoo's annual operating budget to help support rhino conservation activities in Ujung Kulon Park, the Javan rhino's last remaining stronghold. With the \$25,000 that was allocated for Ujung Kulon this year, Dr. Tilson purchased boats, engines, and some much needed communication equipment, all for use by the guards who live in and patrol the Park.

We at AROUND THE HORN would like to facilitate similar zoo participation in *in situ* rhino conservation. We want to function as a communication vehicle between zoos and persons involved in rhino field projects. We will publish quarterly the funding requests we receive from the field managers and researchers in an effort to let zoos know exactly where the funding needs are. Zoos that decide to fund projects are free to request additional information or set their own reporting and documentation requirements. AROUND THE HORN will serve only as a communication device for this. So let us hear from you.

Karen Wachs

MINNESOTA ZOO'S "ADOPT-A-PARK" PROGRAM AID JAVAN RHINOS

By Ronald L. Tilson

"The Minnesota Zoo's Mission is '...to strengthen the bond between people and the living earth.' We acknowledge a responsibility to provide leadership in conserving the biological diversity of our planet and in protecting the wild species living under our stewardship. One way to accomplish this is to support the preservation and restoration of endangered species' natural habitat as outlined in the Zoo's Conservation Policy. We chose Ujung Kulon National Park in western Java, Indonesia, as the international site where we would concentrate our efforts."

The idea of a zoo conservation partnership with Indonesia originated at a meeting organized by the Species Survival Commission (SSC) of the World Conservation Union (IUCN), in June of 1989. Assembled were rhino biologists, conservators and enthusiasts from around the world representing the Asian Rhino Specialist and Captive Breeding Specialist Groups (CBSG) of the IUCN, the Indonesian Directorate of Forest Protection and Nature Conservation (PHPA) and Park Management, World Wildlife Fund for Nature (WWF), The Nature Conservancy, several North American zoos and a number of universities. After three days in Bogor (Java), Indonesia, they produced a Rhino Recovery Plan that was to give direction on how to save Javan and Sumatran rhinos from extinction. Much recent controversy has been generated as a result of the recommendations set forth in this plan. It is still far from clear as to which is the most prudent path. At the heart of the conflict is the question of whether propagating endangered rhinos in captivity is more or less of a risk than leaving them to their "natural" fate in the wild. This report does not evaluate the merits of either position, but instead focuses on how zoos can contribute to both efforts.

Aside from the conflict, there were two consensual recommendations: 1) the long-term survival of Javan and Sumatran rhinos is among the highest conservation priorities in Indonesia; and 2) the responsibility for saving these two species rests with the people of Indonesia. But, because their survival is of such significance to the whole world, the international community should help as well.

Soon after that meeting, Prince Philip, President of WWF International, carried a letter to President Soeharto of Indonesia, and asked for his support in conserving rhinos. President Soeharto responded by requesting his Director General of Forestry to develop a rhino conservation strategy to carry out the "spirit" of the meeting referred to above. One of the many documents that were shuffled around at the

meeting was a report titled "CONSERVATION MANAGEMENT OF JAVAN RHINOCEROS IN UJUNG KULON NATIONAL PARK," authored by W. Ramono and C. Santiapillai. Their conclusion was that the most important conservation issue in the Park was the lack of a communication and transportation system necessary for effective anti-poaching activities by Park staff. It seemed curious to me that in a hierarchical order of priorities—rhino conservation was Indonesia's highest priority, Ujung Kulon was the most significant site for Javan rhino conservation, Park staff needs for equipment to ensure protection of Javan rhinos was the highest priority—all came down to a relatively straightforward appeal that in itself was modest in cost, but enormously important in its ability to have significant impact.

The report caught my attention and formed the basis for developing a conservation initiative undertaken by the Minnesota Zoo, reported on here. The significance of conserving rhinos in Indonesia, the sense of urgency conveyed at the rhino meeting, and a probable plan on how the Minnesota Zoo could go about meeting these needs was brought to the Zoo Board of Directors for their consideration.

The conservation initiative referred to here is fairly simple in design. The Minnesota Zoo wished to contribute to an *in situ* conservation program in line with the Zoo's Conservation Policy, which states "the Zoo will continue to support the preservation and restoration of endangered species' natural habitats." The support of Ujung Kulon National Park in western Java, Indonesia, is a perfect choice for us because: a) it is an extremely important area of biological diversity in Indonesia; b) it provides refuge to a critically endangered mammal - the Javan rhino- as well as several threatened species displayed in the Zoo's flagship exhibit named Asian Tropics; and c) it is an area of Southeast Asia about which Zoo staff have considerable (See JAVAN on Page 4)

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knowledge and expertise. Most compelling is that this national park is in clear need of support, which makes our outreach program to help protect Ujung Kulon and its endangered species a natural extension of the Zoo's Conservation Policy.

There are several unique features of our "Adopt-A-Park" that distinguish it from other zoo-oriented conservation programs.

- * Our program is based on a long-term commitment to support *in situ* actions, and is fueled by developing trust and sharing common goals with our Indonesian hosts.

- * We emphasize a grassroots approach in that our financial support goes directly where it is needed, avoiding administrative overhead.

- * Our costs are modest, yet we are having a significant impact, all of which feeds back to our Zoo, our Asian Tropics exhibit and our graphical interpretation of what conservation means to us.

- * Our program is not linked to extraction of any animal in return for our support. Rather, we believe the value of being recognized as a protector of biological diversity, not a collector of it, is priceless.

The "Adopt-A-Park" program for Ujung Kulon was unanimously approved by the full Board of Directors and submitted to the Minnesota Zoo Foundation for funding. At about the same time, I met with the Indonesian Director General of Forestry, Mr. Sutisna Wartaputra, and the Director of Nature Conservation, Dr. Effendy Sumardja, and requested their approval of this zoo-sponsored *in situ* conservation program to help protect Ujung Kulon National Park.

The program was officially recognized in 1990, when Director General Sutisna agreed with the terms of the Minnesota Zoo's plan to help protect the ecological stability of Ujung Kulon and thus ensure the long-term survival of the Javan rhino.

Start-up costs of this "Adopt-A-Park" partnership were approximately \$25,000, to be used for purchasing a field communication system (complete with two-way radios, antennae, cables, boosters, speakers, and solar panels) for linking the guard posts, field bikes for patrolling the eastern edge of the Park, two diesel marine engines, an ocean-going boat for ferrying staff and supplies to remote areas of the Park, and smaller boats for patrolling inland rivers. A visit to Ujung Kulon was conducted in October-November, 1990, at which time the field equipment was pur-

chased and placed in the field. The purposes of a follow-up visit in April-May, 1991 were to re-establish communications with Park staff, to deliver solar panels to guard posts on the easternmost boundary of Ujung Kulon, and to facilitate a television documentary about the interrelatedness of rainforest stability and long-term survival of endangered wildlife, as characterized by Ujung Kulon National Park and the Javan rhino. A future objective is to establish a conservation/education center for Park visitors at one or more of the guard posts in the Park and for residents living on the eastern edge of the Park. As this program continues, requests from the Indonesian conservation authorities will be integrated into the overall strategy of the program.

Ujung Kulon, which means "west point" in Indonesian, derives its name by virtue of being located on the extreme westernmost tip of Java. It is Indonesia's premier reserve and one of the few remaining wilderness areas on the densely populated island of Java. The Park is irregularly shaped - 30 miles at its longest, 12 miles at its widest - and is connected by a narrow one-mile wide isthmus to a reserve of forest to the east. Protected on three sides by the sea, Ujung Kulon provides the last refuge for some of Java's unique wildlife on an island where 100 million land-hungry people have cleared almost all of the original lowland forest. Most significant, the palm-rich and rattan-tangled swamp forest of Ujung Kulon provides sanctuary for one of the world's rarest animals, the Javan rhino.

Indonesians are keenly sensitive to the extinction of high profile animal species. Within this century the Bali and Javan subspecies of tiger have been lost, and the Bali mynah is precariously close to extinction. Unless serious attention is focused on the plight of the Javan rhino, it too could disappear. In our pre-history, Javan rhinos were found from northeast India, across Indochina, and south through the Malay archipelago to central Java. By 1900, Javan rhinos had been hunted to extinction in all but Ujung Kulon, their last refuge, where about 60 Javan rhinos survive today. Recent information suggests that a handful of 5-15 Javan rhinos may still persist in southern Vietnam as well. No representatives of the species are found in zoos.

Of the three Asian rhino species - Javan, Sumatran and Indian - the Javan species faces the worst scenario for long term survival. Factors contributing to the Javan rhino's decline include a continuing reduction and erosion of their habitat, and decreasing browse availability (most probably due to increased numbers of banteng). Although Ujung Kulon as a park

remains fairly stable ecologically, other factors threatening the rhinos' survival are directly related to the species' small population size, their susceptibility to infectious disease carried by domestic livestock entering the Park, and their vulnerability to cataclysmic environmental disasters, such as cyclones, tidal waves, or volcanic eruptions. Another clear insidious threat is from poachers, looking to kill the rhino for its horn.

Twenty years ago the Javan population of rhinos in Ujung Kulon was on the thin edge of extinction. Authorities figured there were about 20 animals left. Protection measures allowed the population to crawl up to its present level of about 60 animals. The sudden death in 1982 of five animals (an alarming 8% of the total) punctuates the fragility of this small isolated population. Since then, two animals were killed by poachers, one in 1985, and another in 1987.

What I find most intriguing is the question of how many Javan rhinos are there in the Park? Present estimates are based on measurements of footprints in the mud, collected by teams of field observers. No individual identities of rhinos have been established (although there currently is a remote photography project in place just to do this), yet all the arguments and conflict about what should be done to protect the rhinos are based on these highly questionable field censuses.

As pointed out by Kathy McKinnon, WWF advisor to Indonesia, greater investment in Ujung Kulon and more effective management of the Park will benefit not only the Javan rhino, but hundreds of other species. Ujung Kulon is one of the best known and most beautiful of the Javan parks, a national refuge of global importance. It protects one of the last remaining fragments of lowland forests on Java and more than 50 species of rare plants, some recorded only from this locality. The Park also harbors such rare and endangered species as the wild dog, leopard, banteng and three endemic primate species which occur only on Java: the Javan gibbon and two Javan leaf-eating monkey species. More than 250 bird species are recorded in the Park, as well as numerous rare amphibians, fish and reptiles. Using the Javan rhino as a "flagship" species attracts attention and funds to the Park and helps to conserve a unique area of Javan wildlife.

For anyone interested in supporting the "Adopt-A-Park" program in Ujung Kulon National Park or in selecting a park of their choice where Indonesian endangered wildlife could be protected, please contact the author, Ronald L. Tilson, Ph.D., Director of Conservation, Minnesota Zoo, Apple Valley, MN 55124 USA.

RHINO INFRASOUND STUDY

By Elizabeth von Muggenthaler

A number of papers report studies of the auditory vocalizations of rhinoceroses (Tembrock 1963, Frame & Goddard 1970, Spellmire 1991). These note the existence of low frequency sounds in the animal's repertoire, but none present data regarding vocalizations in the infrasonic (below human hearing) range. A study conducted by Elizabeth von Muggenthaler, Dr. Joseph Daniel, and John Stoughton, during the spring of 1991, presents preliminary evidence that rhinos, in addition to auditory vocalizations, produce infrasound.

Von Muggenthaler, while trying to duplicate infrasonic studies with elephants, discovered a unique vocalization pattern. The analysis that was used distinguished between the elephant's signatures and this new pattern. Two white rhinos, housed next to the elephant's enclosure, were recorded and determined to be the originators of the new pattern.

A total of 25 rhinos, representing all four captive held species, were recorded at various institutions across the United States. Equipment consisted of a Bruel & Kjaer portable FM recording system and a Sony Hi-8 video recorder. Generally recording sessions lasted from twenty minutes to two hours. Oftentimes, the best results were achieved when rhinos that were usually together were reunited after having been temporarily separated.

After each rhino recording session, the tapes were analyzed using a Macintosh computer with real-time spectrum and amplitude graphing software, and a Bruel & Kjaer spectrum analyzer. The vocalizations were first graphed and then run through the spectrum analyzer using a fast Fourier transform analysis.

Results from this study indicate that all four captive species of rhinoceros produce infrasounds. Typically these range between 10 and 75 hertz. Audiologists generally consider the lower limit of human hearing to be between 16 and 20 hertz, and this may be only detectable as vibrational sensations without distinct pitch. White rhinos produce vocalizations with spectral energies at 14, 20-24, 30-38, and 40-50 hertz. Black rhinos have spectral energies ranging 6-16, 21-28, and 32-50 hertz; Indian rhinos are at 8-10, 16-22, and 42-52 hertz; and Sumatran rhinos are 8-53, and 76-96 hertz.

(See INFRASOUND on Page 6)