



# A commitment to conservation

| editorial |

The sharp increase in loss of species from our planet did not attract mass media attention until the late 1960s. And despite all that has been said and written since, species continue to become extinct at an alarming rate.

Clearly, the fight for endangered species will be one of the major ongoing stories of the twenty-first century. Success in the fight will demand that we rethink our environmental, economic and societal values.

*Endangered Species* magazine is dedicated to educating people about species conservation issues, disseminating information about scientifically valid conservation programmes, and serving as a forum for all of those individuals and institutions involved in the fight. Our main function will be to facilitate the flow of information between scientists and the public, and among conservation professionals.

The current trend is towards a global approach to the problems of conservation. More and more of the world's zoos are collaborating with other professionals and with governments to establish conservation programmes in the wild. Indeed, we could speak of an emerging global "super-zoo", embracing a broad spectrum of experts, institutions, governments and individual supporters. This global approach also recognises that all endangered species – not just animals – must be considered simultaneously in conservation efforts.

While endangered species will be the focus of our magazine, we will also feature items and exhibits of interest from the world's zoos, aquaria and botanical gardens. In many cases these exhibits are the only opportunity the public has to learn about the beauty, astonishing diversity, and importance of the natural world. Such education is vital if we are to encourage people to care about endangered species and to support conservation programmes. In turn, it is public concern which will motivate communities and governments to take the social, economic and political measures required to reduce the rate of species loss.

In this our first issue, we invite you to cast a critical eye over our work. For us, this is just the beginning. Please share your ideas, suggestions and criticisms with us. That invitation applies as much to interested individuals as to professionals in the field.

We already know what the bad news is. The good news is that when people of good will work together, hope can emerge – for all of Earth's species, including the human family.



Photographer  
Tim Davis digitally  
combined images  
of a tiger and of  
flames to illustrate  
our cover story.

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TONY STONE IMAGES

Terry Sellards  
EDITOR

## *The global perspective on zoos and conservation*

ISSN 1442-682X Volume 1, Issue 1 Summer 1999

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PRINTER Quebecor Printing Inc.

PUBLISHED BY Thylacine Publishing Pty Ltd  
A.C.N. 085 159 584

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*Endangered Species* magazine is published quarterly in July, October, January and April. Opinions expressed by writers are not necessarily those of the editors nor of the individuals, organisations or institutions which are the subjects of articles published herein. Printed in Canada.

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**SUBMISSIONS:** All articles are commissioned by the publisher. Writers and photographers who wish to be considered for future commissions should submit samples of their best published work. Any material sent to the magazine must be clearly identified and accompanied by a suitably sized, stamped, self-addressed envelope. Every care will be taken, but no responsibility accepted for damage or loss of submitted material.

# Endangered *species*

Volume 1, Issue 1 Summer 1999



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ERWIN & PEGGY BAUER/AUSCAPE



# sts of our future

Story: Gretchen Jamieson Photography: SOS Rhino

## | global perspective |

On the island of Borneo at the edge of a remote jungle forest, Dr Nan Schaffer is thoughtfully studying an ultrasonic image. Her subject is a 20-year-old female Sumatran rhinoceros. She's looking for clues, any information that will help her understand how to save a species of animal she describes as docile and romantic, a species which the rest of the world simply calls endangered. No one has seen a live baby Sumatran rhino for more than 12 years.

The Sumatran is one of the five species of rhinos remaining on earth – it is estimated that a scant 300 of the Sumatran rhino survive. Javan rhinos number even fewer: a ghostly 70. Though there are more of the white (6500), black (2500) and Indian (1900) rhinos, each breed is considered endangered and appears on the Red List published by the International Union for the Conservation of Nature (IUCN).

These frighteningly small numbers are the result of poaching, which has decimated the herds by as much as 80 to 95 percent, as is the case with black rhinos. The reasons for rhino killings are as old as pain, vanity and greed. Rhino horn is valued at US\$30,000 per pound (0.5 kg). Prized for medicinal and ornamental purposes, the horn is nothing more than keratin and hair. It is not an aphrodisiac, as many believe. But dispelling the myths does not seem to help the rhinos. In fact, Schaffer believes only one strategy can help them – proactive intervention by humans. We must work fast and effectively to save the rhinos in their habitat. Humans have been their exterminator, and

humans must be responsible for their survival. "The rhinoceros is an ancient beast. They have been on this earth for more than 40 million years, yet their extinction may occur in my lifetime," Schaffer says.

In many ways, Schaffer's career has paralleled the actual and philosophical development of zoos. In the 1970s and 1980s, zoos were viewed by some as "arks". They dedicated themselves to saving the world's animal wealth. Through exhibiting animals to the public, zoos could raise awareness and gain monetary support for vanishing animals. Zoologists established breeding programs to maintain and increase numbers of endangered animals in captivity. They endeavoured to keep the animals as wild as possible so they could be reintroduced to their habitats. To realise this goal, however, would require vast amounts of information.

Researchers concentrated on numerous areas of interest, including intensive study of animal behaviour, dietary requirements and habitat conditions that would optimise healthy births. Genetic material such as sperm was being collected, analysed and cryopreserved. The concept of the "frozen zoo" became popular. Schaffer had her first experiences with this type of work in her final year at veterinary school. She collected and studied the semen of gorillas at several zoos which were having difficulty in reproducing.

With the new information gained, the results of her efforts foreshadowed other discoveries. Schaffer observed in the

male gorilla that, similar to humans, high numbers of sperm abnormalities were common. Some of these individual male gorillas needed access to highly fertile females to be productive, but the cause of the males' problems remained unknown. Research efforts produced a great deal of new information, but such discoveries were just pieces of an enormous time-consuming puzzle. New information might be gathered at great cost, often without tactical reproductive solutions to show for it.

The era also offered Schaffer some life-changing opportunities, including the chance to befriend Rudy. In an effort to preserve the genetic material of their Indian rhino, the Milwaukee County Zoo in 1982 invited Schaffer to work with Rudy. "He didn't have a mate," Schaffer explains. "His feet were bad and they didn't think he'd be able to breed. They expected me to walk right into the cage and get semen from him to preserve it." This was not an unusual request for Schaffer, since she had been exposed to the practical aspects of animal breeding at home on a Texas dairy farm. She had, however, previously witnessed the rambunctious, sometimes violent breeding display of the rhinoceros during her fellowship at the Bronx Zoo. The idea of intentionally exciting a 3000-pound (1360 kg) rhino made working with Rudy a perilous prospect.

"Rudy was big for his species," Schaffer recalls. "I pecked through a small opening in his cage – all I could see was this massive animal. There was no way I would get in this animal's cage. But they said that he was quite agreeable





Baby Rudy,  
born in Wichita  
zoo in 1993

and cooperative. And he really did let me come right into the cage.”

Week after week, Schaffer visited Rudy, manually collecting seminal fluid, which, unfortunately, was clear. “He was very patient with the various techniques we tried on him, but he just couldn’t comprehend what all the fuss was about.” Schaffer spent more than 18 months visiting Rudy weekly, before collecting a windfall of preservable material. “Billions and billions of sperm. It was a highly concentrated sample. From then on, he regularly produced preservable samples. It was like a light finally went on. He was completely conditioned.”

Many samples from Rudy were cryopreserved before he finally succumbed to his physical ailments. These samples appeared viable for artificial insemination, but practically no information was available on female anatomy or physiology. As for many species, the lack

of information about rhinos was a significant obstacle to their preservation in captivity.

Understanding reproduction in the female rhinoceros became Schaffer’s challenge in the early 1990s. Bibi, an older female rhino at the Sedgwick County Zoo in Wichita, Kansas, would be the subject. Bibi was a black rhino that had given birth to healthy offspring twice in her earlier years. But by the age of 31, she had spontaneously aborted her last three pregnancies. Clearly, Bibi could become pregnant, but it was Schaffer’s challenge to help her to carry to full term and deliver a healthy calf.

Schaffer designed and used a restraining chute for Bibi. With rectal ultrasound examination, she determined that Bibi’s reproductive anatomy was normal. Other factors were presumably involved. Over the next year, Bibi’s health needs were carefully observed and responded to, including bad teeth,

an abscessed toe, occasional vaginal infections, and ulcerated skin sores. “The zoo’s vet, Bill Bryant, treated all of her symptoms as necessary,” Schaffer recalls. “We ground her food, rubbed oil on her skin and treated her toe. We started supplementing her diet with oral progesterone (the hormone responsible for maintaining pregnancy), and we gave her molasses twice a day to raise her glucose levels. Through this intensive management, she finally maintained her pregnancy.” On 16 August 1993, Bibi delivered a male calf in excellent health. Schaffer takes pride in her part of the work. “I have helped to bring at least one rhino into the world,” she says. The zoo staff chose to name the newborn Rudy, short for *Ruwdesia* in Swahili.

Schaffer and the progressive group of professionals with whom she has worked have made great strides in gathering valuable information about rhino reproduction. She has come very close to a successful rhino impregnation through artificial insemination, and continues to work towards this goal. But at the rate at which rhinos are diminishing from the Earth, Schaffer’s joy over past successes is tempered. “We must now broaden our approach. We don’t have enough of everything we need to preserve the rhinos principally in captivity. Not enough time. Not enough money. Not enough space.”

Captivity supports field efforts with information and provides a separate gene pool, she explains, as she stresses the importance of allowing the rhinos to live and breed where they do these things best – in the wild. “Rhinos have the best chance for reproducing in their natural habitats.” It’s a straightforward conclusion. However, it’s also a very complicated endeavour. Political and socio-economic factors, including land overuse, are just a few of the issues that add to Schaffer’s concern for the rhinos’ future. “Several countries have had their populations of rhinos exterminated with the outbreak of civil war. Rhino horn is a lucrative incentive for poachers. This factor increases the cost of preserving this species many-fold.”

That's one of the reasons Schaffer began laying the groundwork in 1983 for a philanthropic rhino support network. During her work with the Rhino Reproductive Program at the Milwaukee Zoo, Schaffer envisaged an awareness program that could deliver this message of need. She wanted to give the rhinos a voice.

SOS Rhino, a non-profit organisation, was officially established in 1997. Its activities include raising funds to support rhino conservation and research, and partnerships with other organisations, such as the Black Rhino Foundation, to further the causes of all breeds of rhinos. SOS Rhino participated in the Rockin' for Rhinos concert tour.

"The support for these animals is a very worthy cause," Schaffer says, "but the lack of general awareness is sobering. Most people aren't even clear on what a rhino is. They're often confused with the hippo. We have a lot of work to do."

Schaffer believes sanctuaries and nature preserves are an important part of the overall conservation effort. By saving a rhino in its natural habitat all the associated flora and fauna are saved as well, she explains. As a large, charismatic animal, the rhino acts as an ambassador for its ecosystem.

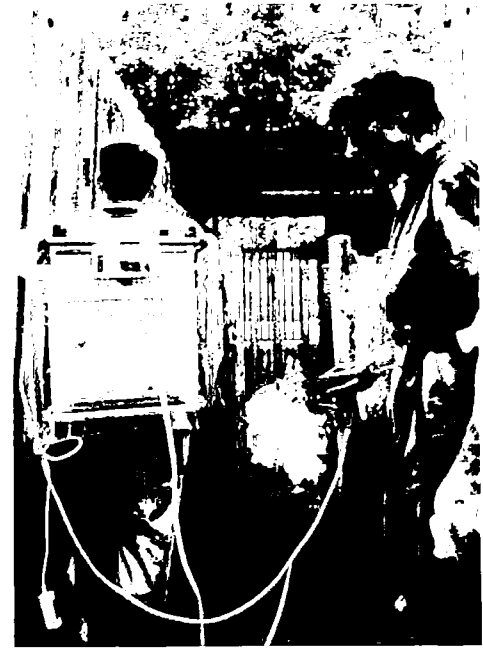
One way to support this ecosystem is through ecotourism, a form of tourism that helps support ecology, and has helped some animals in Africa by raising awareness and securing funds through

safari trips. SOS Rhino is supporting sanctuaries in Africa, India and South-East Asia. They have supported sanctuaries in Malaysia and Indonesia for the Sumatran rhino. "Visitors will be able to see the natural habitat of the Sumatran rhino and have a chance to see one of the most elusive animals on Earth," Schaffer says. "Sumatran rhinos usually die when placed in a zoo environment and have never bred successfully in captivity. The sanctuary may be our only chance of experiencing this amazing creature. Ultimately, the goal is to help bring these unusual rhinos, which have hair and can climb rocky terrain, back from the edge of extinction."

Schaffer's current work at the sanctuary involves ultrasonographic analysis of female reproduction. Intensive studies of the Sumatran rhino are revealing a distinctly different reproductive physiology from other rhinos. Researchers hope to be able to help optimise the conditions for pregnancy to occur.

For Nan Schaffer, baby Sumatran rhinos born in the wild would be the culmination of work well done.

"I have spent 18 years doing this," she declares. "I don't have another 18 years. Neither do the rhinos."



**Top: The conservation team prepares to work with Sumatran rhino**

**Above: Dr Schaffer beginning a sonic scan with a female rhino**







**Black rhino - 2500**

# The rhino at risk



**Indian rhino -  
1900**



**Sumatran rhino  
- 300**



**White rhino - 6500**

# **Javan rhino - 70**



JOHN WILSON/COURTESY OF THE IUCN

# The rhino's favorite vet

Nan Schaffer, DVM, is one of the leading authorities on rhinoceros reproductive physiology, and the founder of SOS Rhino. Based in Chicago, she has worked with rhinos worldwide for more than 18 years. She is quiet and unassuming, so that people are often surprised to discover that she works with rhinos for a living. Her staff reports that an unofficial rhino poll has named her the rhinos' favorite veterinarian.

Because of her willingness to fly at a moment's notice when contacted for help by zoos, American Airlines has designated Dr Schaffer as its favourite frequent flyer. She is the person seen in commercials running with her black veterinarian's bag to catch a plane.

Fellow veterinarians and researchers consider her the person "most likely to have a baby rhino named after them". For our first issue of *Endangered Species* magazine, we are pleased to present a recent interview with Dr Schaffer.

## Q: How did you get started with rhinos?

That's a question my parents always asked me. When I graduated from Texas A&M Vet school, I specialised in fertility evaluation of male animals. The zoos I subsequently worked for were interested in learning about the fertility of their animals, which led me to my first rhino.

## Q: How long have you been working with rhinos?

A: My first job was at the Bronx Zoo in 1981 with a post-doctoral fellowship in reproduction. One of my projects was to collect urine from a female Indian rhino to see if she was cycling. The pair at the zoo was not breeding. I then went to the Midwest, where I worked with three zoos in reproductive research – Lincoln Park Zoo in Chicago, Brookfield (Illinois Zoo), and Milwaukee County Zoo. Milwaukee County Zoo



was the one where I focused my work on rhinos. Actually, one particular rhino: Rudy.

## Q: Do rhinos have personalities?

A: They all display what appears to be fear, anger, frustration, patience, impatience, curiosity, and happiness to varying degrees which make up all their different personalities. Happiness is a hard one since there is no specific action for happiness. I'd say happiness for a rhino is falling down in ecstasy from a good scratch on their stomach or back, enjoying fruit or vegetable treats, or blissfully wallowing in mud.

## Q: What are the other animals you have worked with?

A: In reproductive work, I've worked with orangutans, camels, gorillas, wanderoos [lion-tailed macaques], and Indian lions. As a clinical vet, I've dealt with medical problems of Gila monsters, Indian lions,

proboscis monkeys, seals, dolphins, buffalo, cranes, bears ... it runs the gamut.

## Q: How are the species of rhinos different from each other?

A: African rhinos are savannah (plains) animals, seeming wary, flight-prone, nervous. The Asian rhinos are grassland (marsh) animals and are slower, calmer, and shy, but Sumatran rhinos have the most personality. It may be because the ones I've met are not used to captivity – they still have an "untamed" curiosity. The Sumatrans are more vocal, meaning they make more sounds, than the other species. They're the smallest, have hairier bodies, bulbous noses and small horns. They're made up of so many incongruous parts, it gives meaning to the statement that they're so ugly, they're cute.

## Q: What was different about Rudy?

A: He was a very big boy and I was able to work with him without any kind of restraint. Although he could squash me, he always moved carefully. He never threatened me by throwing his head, like a horse. One time he did almost step on me. If you can picture a 3000 pound (1400 kg) rhino stepping on your foot you can imagine how that can crush it. Well, he ended up just resting his foot on mine. He wouldn't move his foot, I couldn't move mine, and I couldn't go anywhere until he let me go. I couldn't tell if he got a kick out of it, or if it was just a friendly reminder about who was really in charge. The saddest day was when he had to be euthanised because of a debilitating illness. I came into his exhibit area to spend some time with him and he got up slowly because he was feeling so sick. He came over to me and proceeded to nudge me around his pen until I was out the door. It was as if he was saying, "Go on now, there are other rhinos that need attention". Rudy started me on the

road to working with rhinos. He was one of a kind.

**Q: What was your most "interesting" time with a rhino?**

A: When I was at the Bronx I had the chance to watch the courtship of a pair of Indian rhinos. The male would chase the female and throw her, this two-ton animal, into the air! That was all I had to go by when I was called in by the Milwaukee County Zoo to work on the reproductive problems of Rudy, their male Indian rhino. I remember sticking my head into his cage. Here was the biggest rhino I had ever seen, and I was supposed to work out his reproductive problem?

**Q: What is required of a researcher to work with rhinos?**

A: Patience, patience, patience; an interest in the animal, a willingness to battle the odds; a perseverance to work around the politics; and certainly an ability to savour the small victories.

**Q: Why did you start SOS Rhino?**

A: We started it as a means of stimulating awareness of and funding for research. I thought more work needed to be done in certain research areas that were more immediate and necessary to maintain and manage the animals we currently have.

**Q: What is necessary to save the rhinos?**

A: To be in the mind-set that our natural resources are vital to the world's existence. To make people realise that nature – the wild, open spaces – is as valuable to us as oil. Will we ever get to the point of calling out the military to protect our wild spaces and animals as we do to protect our oil interests?

**Q: Do you believe a legal trade can save the animals?**

A: Few animals in the world have as great an economic importance as the "good as gold" natural resource of the rhino. This should have been the easiest animal in the world to save. It's one of the top five animals that tourists want to see when they go to Africa. The black market is entrenched, well-financed, well-supported, and has been obviously unaffected by legalities. A well-organised and well-financed legal source of rhino horn can undercut the competition from the black market and drive down the price. Right now a horn is worth thousands of dollars on the Asian market. Now, the black market gets all the money. A legal trade could monitor the traffic, protect its own "rhino investment", and rhinos would not have to be killed. Others believe that a legal trade would only help the black market survive by creating an easily accessible trade route. The pros and cons are an on-going debate in the international community.

**Q: What can people do to help the rhinos?**

A: You can adopt a rhino or a rhino researcher. You can boycott Chinese and Taiwanese goods, as those markets have the greatest traffic in illegal horn. Another problem area not as well known is the one in the United States, on both East and West Coasts. Write Congress, write the Senate, write the President. We need more severe penalties for those trafficking in this illegal trade. We need the laws to be enforced, in the US and in China. My Chinese friends say that the demand for rhino products "is a cultural thing". My response: "So was slavery". What are they going to do for their aches and pains and imagined sexual prowess when all the rhinos have gone?

**Q: Do you believe in a rhino Jurassic Park for the future?**

A: Sure, we can freeze the semen,

freeze the embryos, but that's not the only answer. No pun intended, but putting all our eggs in one basket never works and is a major gamble with endangered species. We need to save their habitat, or what wild, genetically diverse rhinos will be left to be impregnated with this frozen, genetic material? Are we going to just try to build a rhino we can keep in a zoo, or will we bring them back into a world in which they can survive?

**Q: Why are you so dedicated to your work for rhinos?**

A: One of the great tragedies of the twenty-first century will be humanity's homogeneity. Everywhere, everything will be the same. That which we could not tame or imitate will be gone. No matter how hard we try, we cannot "build" nature. We can build another bridge, paint another picture, but we cannot make another rhino. Look into a really wild animal's eyes. When the wild things have gone, we will lose our place, our way; for whose eyes will we look into to find our humility, our humanity?

**Q: Where do you see the rhinos 10, 25, 50 years from now?**

A: In big, natural, nature preserves, protected by an international army, then everything in the whole nature preserve will be protected. However, in order to achieve this, it would mean the world would have to overcome some huge obstacles; that a lot of people would finally agree to act together, that the Asian and Yemeni markets would finally realise the value of what they have destroyed, and the black market middlemen and higher-ups are arrested for their stockpiles of rhino horn. I want our children's children to have the experience of understanding and knowing a rhino. That they will get to see it, hear it, and maybe if they're lucky enough, to touch it and have it change their lives as it did mine.