

By CLAUDIA DREIFUS

A CONVERSATION WITH

TERRI ROTH

Birth of Rare Rhino Is a Bright Spot For Species' Future

CINCINNATI — When an 11-year-old Sumatran rhinoceros named Emi gave birth to a pudgy, slob-eyed calf at the Cincinnati Zoo and Botanical Garden on Sept. 13, biological scientists worldwide cheered.

The calf, a male, was named Andalas, after the original name of the island of Sumatra, the largest island of Indonesia.

About 300 Sumatran rhinoceroses still live in the forests there and in Malaysia; 16 more are scattered in zoos and refuges.

But until scientists at the Cincinnati Zoo bred Emi to Ipuh here, the future of this rare and ancient species seemed bleak. Andalas was the first Sumatran rhino to be born and bred in captivity in more than 100 years, and soon after his birth, news agencies were distributing his baby pictures around the world.

Several weeks after his birth, Dr. Terri Roth, the vice president for animal sciences at the Cincinnati Zoo who has made a career of breeding endangered creatures, sat in her office on the zoo grounds and discussed Andalas's significance to science.

Dr. Roth had supervised the mating of Emi and Ipuh and had managed the scientific aspects of the baby's birth. "There are no how-to books on how to breed an endangered species," Dr. Roth, 37, said. "It was a lot of experimentation and a lot of trial and error."

Q. We both spent some time watching Andalas and his mom canter around their living area. When you see these two creatures playing together, what do you feel?

A. It's a little hard to believe he's here. I've been working on this for years and years. We had all these disappointments. Before Andalas, Emi lost five pregnancies.

This past summer was so stressful. Emi was coming closer and closer to term, but many things could have gone wrong. The biggest relief for me was when we were watching Emi give birth. I could see, even before he was fully out of her, that the calf was moving. It was a tremendous relief.

In fact, everything about the birth, which happened two days after the World Trade Center bombing, has been a gift. Emi's been an excellent mother. She might have not known what to do. She could have had not enough milk. It's a little hard to believe that the calf is thriving and jumping around and is perfect.

Q. Why are Sumatran rhinos in such grave danger?

A. Habitat destruction. Poaching. The two small horns of the Sumatran rhino are considered to have medicinal properties in some cultures. There's a black market for them.

Q. What are the Sumatran rhinos like in the wild?

A. Very solitary. They spend most of their day keeping themselves cool in mud wallows, and the rest, browsing for twigs and fruits. Their solitary nature is part of what has made breeding them in captivity so difficult. Except for the moments when they breed, they don't spend time together. If you put them together at the wrong time, they can get aggressive and injure each other.

Q. Tell us a little about the rhino parents.

A. Emi's a very happy-go-lucky individual. She's very tolerant, curious, playful. She seems like she's having a good time. Ipuh is temperamental. He has his moods. Emi likes company. Ipuh couldn't care less. Both of them are wild born. They were cap-



Dr. Terri Roth of the Cincinnati Zoo watches Emi, a Sumatran rhino, and her calf, Andalas, born on Sept. 13. Dr. Roth spent over three years working with Emi in the hopes that she would have a successful pregnancy.

Tom Uhlman for The New York Times

tured in an area that was about to be logged. So these are animals that would have been doomed.

Q. So how did you get Emi and Ipuh to actually breed?

A. The key was in discovering a previously unknown fact: that Sumatran rhinos are induced ovulators, which means that the females only ovulate after they've bred. Most animals breed before or near the time of ovulation.

It took me eight months to figure

An 'Idiot's Guide to Breeding Rhinos'? It's not out yet.

this out. I kept trying to track Emi's reproductive cycle and introduce her to Ipuh at a time that I thought they'd mate. I was always wrong.

Finally, we tried something else. We introduced the animals on a daily basis, but just for a short period of time, and under constant surveillance. By doing that, we came to a time when they did mate. And after that, I examined her and she had ovulated. It was the first time I'd seen her ovulate. So then we could look at her hormone levels. By this method, we figured out when she'd be receptive and get her together with Ipuh at the best moment.

Q. With five failed pregnancies, it seems fortunate that Emi and Ipuh have had an offspring for each other.

A. I wouldn't say that's true. I'd say they have an affinity for each other if they are put together at the right

moment.

Q. Emi got pregnant after her second mating with Ipuh, but she miscarried. Did that and her four later miscarriages frustrate you?

A. I felt sick to my stomach each time. We detect the pregnancy through ultrasound. I'm the one who detects it. And after each miscarriage, I'd have to tell people who'd invested decades in trying to save this species what had happened. They'd want answers, and often I didn't have them.

Q. You gave Emi regular sonograms. How does one give a 1,700-pound creature a sonogram? Are you going to say, "Very carefully?"

A. We actually condition the animals to walk into a chute, and then we close the door behind them. It's a rectal exam. You put a long glove on, and you take a probe and you slide it right along the bottom of the rectum. She gets fed the whole time and she loves her food — apples and bananas. Most rhinos are very tolerant of it.

Q. In the five failed pregnancies, how far into her 16-month term did Emi get?

A. Never more than three months. With this last pregnancy, we changed the regimen by giving her the hormone progesterone. We knew that progesterone had been used to sustain pregnancy in mares and that it had even been used with some black rhinos. We still have no proof that this is what made the difference.

In working with some of these relatively unknown species, you really have to be a comparative biologist. The data isn't out there. You have to think, Well, the rhino might not be quite like a horse or a cow, but maybe it's more like a camel. You have to

pull information together from all these different species.

Q. How did you get into this work?

A. I've always loved animals. As a young girl, I never wanted to play with dolls. I grew up on a small farm in California, and I came home with snakes, toads, lizards and whatever I could catch. I always said, "I'm going to work in a zoo." I went to the University of California at Davis and started to major in genetics and didn't like it. I wanted to breed animals. I realized reproductive physiology was what I enjoyed. I love the challenge of research for a noble cause. Everything I do has an application for helping the various species survive.

Q. With only about 300 Sumatran rhinos left, is it possible to bring them back from the brink of extinction?

A. Absolutely. And there are examples of other species that dwindled down to close to 20 animals and they were brought back. If you look at the bison, the black footed ferret, the Arabian oryx, even the Wyoming toad, they've come back. People sometimes ask, "When do you give up?" I don't think you ever do until they're gone.

Zoos can play a big role. We are always breeding animals with the idea of returning them to their natural environment. With the Sumatran rhino, there is land in Malaysia where they could go, if the numbers get high enough. For our part here, we will continue to monitor Emi, find out when her reproductive cycle begins again and start thinking about breeding her as soon as possible. She's young and healthy and she should be able to produce numerous calves.