

CHAPTER XI

THE RHINO GETS AN ULTRASOUND

Dicerorhinus sumatrensis

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THE FIRST VIEW I GOT OF SUCI WAS HER PRODIGIOUS BACKSIDE. It was about three feet wide and stippled with coarse, reddish hair. Her ruddy brown skin had the texture of pebbled linoleum. Suci, a Sumatran rhino, lives at the Cincinnati Zoo, where she was born in 2004. The afternoon of my visit, several other people were also arrayed around her formidable rump. They were patting it affectionately, so I reached over and gave it a rub. It felt like petting a tree trunk.

Dr. Terri Roth, director of the zoo's Center for Conservation and Research of Endangered Wildlife, had arrived at the rhino's stall wearing scrubs. Roth is tall and thin, with long brown hair that she had pinned up in a bun. She pulled on a clear plastic glove that stretched over her right forearm, past the elbow, almost to her shoulder. One of Suci's keepers wrapped the rhino's tail in what looked like Saran Wrap and held it off to the side. Another keeper grabbed a pail and stationed himself by Suci's mouth. It was hard for me to see over Suci's bottom, but I was told he was feeding the

rhino slices of apples, and I could hear her chomping away at them. While Suci was thus distracted, Roth pulled a second glove over the first and grabbed what looked like a video game remote. Then she stuck her arm into the rhino's anus.

Of the five species of rhinoceros that still exist, the Sumatran rhino—*Dicerorhinus sumatrensis*—is the smallest and, in a manner of speaking, the oldest. The genus *Dicerorhinus* arose some twenty million years ago, meaning that the Sumatran rhino's lineage goes back, relatively unchanged, to the Miocene. Genetic analysis has shown that the Sumatran is the closest living relative of the woolly rhino, which, during the last ice age, ranged from Scotland to South Korea. E. O. Wilson, who once spent an evening at the Cincinnati Zoo with Suci's mother and keeps a tuft of her hair on his desk, has described the Sumatran rhino as a "living fossil."

Sumatrans are shy, solitary creatures that in the wild seek out dense undergrowth. They have two horns—a large one at the tip of their snouts and a smaller one behind it—and pointy upper lips, which they use to grasp leaves and tree limbs. The animals' sex life is, from a human perspective at least, highly unpredictable. Females are what are known as induced ovulators; they won't release an egg unless they sense there's an eligible male around. In Suci's case, the nearest eligible male is ten thousand miles away, which is why Roth was standing there, with her arm up the rhino's rectum.

About a week earlier, Suci had been given a hormone injection designed to stimulate her ovaries. A few days after that, Roth had tried to artificially inseminate the rhino, a process that had involved threading a long, skinny tube through the folds of Suci's cervix, then pumping into it a vial of thawed semen. According to notes Roth had taken at the time, Suci had "behaved very well" during the procedure. Now it was time for a follow-up ultrasound. Grainy images appeared on a computer screen propped up near Roth's elbow. Roth located the rhino's bladder, which appeared on the screen as a dark bubble, then continued on. Her hope was that

an egg in Suci's right ovary, which had been visible at the time of the insemination, had since been released. If it had, there was a chance Suci could become pregnant. But the egg was right where Roth had last seen it, a black circle in a cloud of gray.

"Suci did not ovulate," Roth announced to the half-dozen zoo-keepers who had gathered around to help. By this point, her entire arm had disappeared inside the rhino. The group let out a collective sigh. "Oh, no," someone said. Roth pulled out her arm and removed her gloves. Though clearly disappointed by the outcome, she didn't seem surprised by it.

THE Sumatran rhino was once found from the foothills of the Himalayas, in what's now Bhutan and northeastern India, down through Myanmar, Thailand, Cambodia, and the Malay Peninsula, and on the islands of Sumatra and Borneo. In the nineteenth century, it was still common enough that it was considered an agricultural pest. As southeast Asia's forests were felled, the rhino's habitat shrank and became fragmented. By the early nineteen-eighties, its population had been reduced to just a few hundred animals, most in isolated reserves on Sumatra and the rest in Malaysia. The animal seemed to be heading inexorably toward extinction when, in 1984, a group of conservationists gathered in Singapore to try to work out a rescue strategy. The plan they came up with called for, among other things, establishing a captive breeding program to insure against the species' total loss. Forty rhinos were caught, seven of which were sent to zoos in the U.S.

The captive breeding program got off to a disastrous start. Over a span of less than three weeks, five rhinos at a breeding facility in Peninsular Malaysia succumbed to trypanosomiasis, a disease caused by parasites spread by flies. Ten animals were caught in Sabah, a Malaysian state on the eastern tip of Borneo. Two of these died from injuries sustained during capture. A third was killed by tetanus. A fourth expired for unknown reasons, and,

by the end of the decade, none had produced any offspring. In the U.S., the mortality rate was even higher. The zoos were feeding the animals hay, but, it turns out, Sumatran rhinos cannot live off hay; they require fresh leaves and branches. By the time anyone figured this out, only three of the seven animals that had been sent to America were still living, each in a different city. In 1995, the journal *Conservation Biology* published a paper on the captive breeding program. It was titled “Helping a Species Go Extinct.”

That year, in a last-ditch effort, the Bronx and the Los Angeles Zoos sent their remaining rhinos—both females—to Cincinnati, which had the only surviving male, a bull named Ipuh. Roth was hired to figure out what to do with them. Being solitary, the animals couldn’t be kept in the same enclosure, but obviously unless they were brought together, they couldn’t mate. Roth threw herself into the study of rhino physiology, collecting blood samples, analyzing urine, and measuring hormone levels. The more she learned, the more the challenges multiplied.

“It’s a very complicated species,” she told me once we were back in her office, which is decorated with shelves full of wooden, clay, and plush rhinos. Rapunzel, the female from the Bronx, turned out to be too old to reproduce. Emi, the female from Los Angeles, seemed to be the right age but never seemed to ovulate, a puzzle that took Roth nearly a year to solve. Once she realized what the problem was—that the rhino needed to sense a male around—she began to arrange brief, carefully monitored “dates” between Emi and Ipuh. After a few months of fooling around, Emi got pregnant. Then she lost the pregnancy. She got pregnant again, and the same thing happened. This pattern kept repeating, for a total of five miscarriages. Both Emi and Ipuh developed eye problems, which Roth eventually determined were the result of too much time in the sun. (In the wild, Sumatran rhinos live in the shade of the forest canopy.) The Cincinnati Zoo invested a half a million dollars in custom-made awnings.

Emi got pregnant again in the fall of 2000. This time, Roth put



Suci at the Cincinnati Zoo.

her on liquid hormone supplements, which the rhino ingested in progesterone-soaked slices of bread. Finally, after a sixteen-month gestation, Emi gave birth to Andalas, a male. He was followed by Suci—the name means “sacred” in Indonesian—and then by another male, Harapan. In 2007, Andalas was shipped back to Sumatra, to a captive breeding facility in Way Kambas National Park. There, in 2012, he fathered a calf named Andatu—Emi and Ipuh’s grandson.

The three captive-bred rhinos born in Cincinnati and the fourth in Way Kambas clearly don’t make up for the many animals who died along the way. But they have turned out to be pretty much the only Sumatran rhinos born anywhere over the past three decades. Since the mid-nineteen-eighties, the number of Sumatran rhinos in the wild has declined precipitously, to the point that there are now believed to be fewer than a hundred left in the world. In an ironic twist, humans have brought the species so low that it seems only heroic human efforts can save it. If *Dicerorhinus sumatrensis* has a future, it’s owing to Roth and the handful of others like her

who know how to perform an ultrasound with one arm up a rhino's rectum.

And what's true of *Dicerorhinus sumatrensis* is, to one degree or another, true of all rhinos. The Javan rhino, which once ranged across most of southeast Asia, is now among the rarest animals on earth, with probably fewer than fifty individuals left, all in a single Javanese reserve. (The last known animal to exist somewhere else—in Vietnam—was killed by a poacher in the winter of 2010.) The Indian rhino, which is the largest of the five species and appears to be wearing a wrinkled coat, as in the Rudyard Kipling story, is down to around three thousand individuals, most living in four parks in the state of Assam. A hundred years ago, in Africa, the population of black rhinos approached a million; it has since been reduced to around five thousand animals. The white rhino, also from Africa, is the only rhino species not currently classified as threatened. It was hunted nearly to oblivion in the nineteenth century, made a remarkable comeback in the twentieth, and now, in the twenty-first, has come under renewed pressure from poachers, who can sell rhino horns on the black market for more than twenty thousand dollars a pound. (Rhino horns, which are made of keratin, like your fingernails, have long been used in traditional Chinese medicine but in recent years have become even more sought-after as a high-end party "drug"; at clubs in southeast Asia, powdered horn is snorted like cocaine.)

Meanwhile, of course, rhinos have plenty of company. People feel a deep, almost mystical sense of connection to big "charismatic" mammals, even if they're behind bars, which is why zoos devote so many resources to exhibiting rhinos and pandas and gorillas. (Wilson has described the evening he spent in Cincinnati with Emi as "one of the most memorable events" of his life.) But almost everywhere they're not locked up, big charismatic mammals are in trouble. Of the world's eight species of bears, six are categorized either as "vulnerable" to extinction or "endangered." Asian elephants have declined by fifty percent over the last three

generations. African elephants are doing better, but, like rhinos, they're increasingly threatened by poaching. (A recent study concluded that the population of African forest elephants, which many consider to be a separate species from savanna elephants, has fallen by more than sixty percent just in the last ten years.) Most large cats—lions, tigers, cheetahs, jaguars—are in decline. A century from now, pandas and tigers and rhinos may well persist only in zoos or, as Tom Lovejoy has put it, in wildlife areas so small and heavily guarded they qualify as “quasi zoos.”

THE day after Suci's ultrasound, I went to visit her again. It was a cold winter morning, and so Suci was confined to what is euphemistically referred to as her “barn”—a low-slung building made out of cinderblocks and filled with what look like prison cells. When I arrived, at around 7:30 AM, it was feeding time, and Suci was munching on some ficus leaves in one of the stalls. On an average day, the head rhino-keeper, Paul Reinhart, told me, she goes through about a hundred pounds of ficus, which has to be specially flown in from San Diego. (The total cost of the shipments comes to nearly a hundred thousand dollars a year.) She also consumes several gift baskets' worth of fruit; on this particular morning, the selection included apples, grapes, and bananas. Suci ate with what seemed to me to be lugubrious determination. Once the ficus leaves were gone, she started in on the branches. These were an inch or two thick, but she crunched through them easily, the way a person might bite through a pretzel.

Reinhart described Suci to me as a “good mix” between her mother, Emi, who died in 2009, and her father, Ipuh, who still lives at the Cincinnati Zoo. “Emi, if there was trouble to get into, she'd get into it,” he recalled. “Suci, she's very playful. But she's also more hard-headed, like her dad.” Another keeper walked by, pushing a large wheelbarrow full of steaming reddish-brown manure—Suci and Ipuh's output from the previous night.