

What's Our Zoo Got to Do With It?

Conservation is the watchword for zoos worldwide. Our Minnesota Zoo is trying to protect wild animals and their wild homes.

By Greg Breining. Copyright 2002 by Minnesota Conservation Volunteer. Posted with permission.

In Way Kambas National Park, on the southeastern coast of the Indonesian island of Sumatra, tidal rivers wind to the sea. Monitor lizards sun on the banks as bright green kingfishers chatter and swoop low to the water. Tigers prowl the lowland forest.

The tigers are so secretive and the forest so thick they are rarely seen. But we know they are here. We know how many (about 40), and we can even recognize each cat by its stripes.

We also know that this park is home to a small population of one of the most elusive and endangered animals on the planet: the Sumatran rhinoceros.

And we know that local poachers kill tigers and an occasional rhino. As a result, anti-poaching patrols hike the trails of Way Kambas to deter and arrest illegal hunters.

And partly because we know these things about Way Kambas, we even have a fair understanding of the number of endangered tigers and rhinos in the rest of Sumatra.

All this knowledge is important to protecting wildlife on the world's sixth-largest island, a bastion of biodiversity threatened by logging, settlement, and unrestrained hunting.

We owe this knowledge in large part to a zoo half a world away—in Minnesota.

The Minnesota Zoo's conservation program reaches around the world to help protect animals, not in cages, but in the wild. The beneficiaries are as varied as trumpeter swans and Javan rhinos.

"Zoos are often viewed as a museum or a cultural institution," said Lee Ehmke, Minnesota Zoo director. "But unlike any other museum or cultural institution, the subject matter of our exhibition is disappearing and is not replaceable. We therefore have the obligation to actively



Ron Tilson, right, and his field assistant, Jeff Muntifer, examine steel traps at an open-air market in China's Jiangxi Province, where the two biologists are looking for evidence of the South China subspecies of tiger. Loss of habitat and poorly regulated killing of prey and predators have pushed the tiger toward extinction in its Chinese homeland.

work to conserve our subject matter, our reason for being—wildlife—and to do it not just in the ark concept of the zoo, but to be involved in saving wild places."

Minnesota is not unique. Conservation programs exist at many large metropolitan zoos. Some, such as the Minnesota Zoo and the Wildlife Conservation Society (which runs New York City zoos), have international reach. Some aim closer to home. The 201 accredited members of the American Zoo and Aquarium Association now run 1,300 projects in more than 80 countries.

Conservation is the watchword of the zoo world, said Ron Tilson, Minnesota Zoo conservation director and the founder of the Sumatran Tiger Project. "That, I think, is what gave zoos credibility in the conservation world. It's our moral high ground."

RETURN OF A NATIVE.

Some Minnesota Zoo conservation efforts occur close to home. Tilson looks out his Apple Valley office window to a small pond where, since 1980, pairs of trumpeter swans have nested and raised cygnets. In all, six breeding pairs have produced 228 cygnets. Of those, 160 survived and were released in cooperation with Hennepin Parks (now the Three Rivers Park District) and the Minnesota Department of Natural Resources to restore a native species missing from Minnesota from the mid-1880s until the 1960s.

The Minnesota Zoo was one source of birds for the reintroduction; others were hatched from eggs obtained in Alaska by the DNR Nongame Wildlife Program; and others came from a flock established by Hennepin Parks in the 1960s. Yet others came from other zoos and private sources. Today more than 120 pairs of wild trumpeter swans breed in Minnesota. Said Jimmy Pichner, avian zoologist at the zoo, "We really did bring the birds back from the brink of extinction in the state."

STUDBOOKS ABROAD.

One important conservation program at the Minnesota Zoo involves no fieldwork at all—the development of so-called species survival plans for selected endangered species. The American Zoo and Aquarium Association bills the plans as "scientifically controlled managed breeding programs for selected wildlife as a hedge against extinction."

Each plan has a "studbook," a record of captive animals of each species and their breeding history. The studbook is used as a worldwide matchmaker, to mate suitable pairs in the world's zoos and prevent breeding between close relatives or genetically similar animals. The goal: to protect against inbreeding and maintain genetic diversity and vigor.

Zoo biologists around the world devise the plans and maintain the studbooks. Tilson, for example, coordinates the survival plan for the Amur (or Siberian) tiger, of which the Minnesota Zoo has five. Other zoo employees manage studbooks for a half-dozen other animals, including the Nilgiri tahr (an Asian wild goat), Canada lynx, goral (an Asian goat antelope), Indochinese tiger, takin (a Himalayan goatlike cow), and Asian brown and impressed tortoises.

INSURANCE POLICY.

Species survival plans imply that a time may come when an endangered species goes extinct in the wild. At some later time, lost habitat could be restored, the threats to endangered animals eliminated, and captive animals returned to the wild. Tilson calls maintaining a healthy captive population of an endangered species a "genetic insurance policy."

Zoos have come to be known as "arks" for protecting breeding populations of endangered animals in zoos, just as Noah herded animals two by two aboard the ark to weather the Biblical flood. Indeed, in a handful of cases, captive populations have been used to restore extinct wild populations.

In 1987 biologists determined that the wild population of fewer than two dozen California condors was headed rapidly toward extinction. They rounded up all wild condors to serve as captive breeding pairs for a restoration attempt. Young from the captive adults were released to the wild beginning in the 1990s. So far, so good: Nearly 60 birds now fly free, and more than 120 birds live in captive breeding facilities, producing additional chicks for release.

Also in the 1980s, the wild population of black-footed ferrets in the western states was spiraling toward extinction. In 1985 the U.S. Fish and Wildlife Service and the Wyoming Game and Fish Department began capturing all the wild black-footed ferrets they could find—only 18. A captive-breeding program began turning out young ferrets. Reintroduction began in 1991 in central Wyoming and, later, several other sites. The following year, released ferrets began to reproduce. Today, captive breeding continues, and, despite threats of epidemics of the plague, wild ferrets number about 600.

HOME PLACES.

Unfortunately, the species saved through captive breeding and reintroduction can be counted on your fingers—and that number will always be very small.

"Ten or 15 years ago when zoos talked about zoos and conservation, they were talking about zoos as endangered species arks or breeding centers," Ehmke noted. "There is a very defined limit to how far that kind of effort can go." In a world where the number of species threatened with extinction is uncountable, the need is great and space is tight, he noted. "Which species do you select to be on the ark?"

Indeed, even the lucky ones can't stay on the ark forever. When and where do you put them ashore? "I think the real question is 'so you've got a captive breeding population of species X. So what?' That's really a holding pattern at best," Ehmke said. "The real issue is saving habitat."

Hence, zoos have given greater emphasis—or at least have given greater lip service—to protecting animals where they live.

Good examples are Tilson's surveys and anti-poaching efforts in Indonesia.

After several years as the zoo's research director, Tilson "felt like I wasn't really going anywhere with my life and with my research skills." He persuaded the former zoo director to let him set up a conservation program. As he cast about for ways to protect wildlife in the field, he looked naturally to Indonesia, where he had conducted post-graduate research on Mentawai Island gibbons. He had learned to speak the language many years earlier in the Peace Corps.

In 1990 Tilson launched Adopt-a-Park to provide aid to Ujungkulon National Park, on the western tip of Java, another large island of Indonesia. The park is home to fewer than 50 Javan rhinos, nearly the total number in existence. Tilson helped raise more than \$50,000 to buy radios, field bikes, marine engines, and a 40-foot oceangoing patrol boat (christened the Minnesota) to enable park rangers and law enforcement officers to prevent poaching of rhinos. (See "Java Jungle Patrol," Field Notes, July-August 1994 Volunteer.)

TIGER TRAIL.

Re-established in Indonesia, Tilson yearned to continue the kind of field research he did in college. "I said, 'Jeez, why not do tigers? I know how to go into the forest. I know how to do a lot of these things because I was involved with tigers at the zoo.'" Indeed, the Minnesota Zoo had one of the largest collections of Amur tigers in captivity.

In Way Kambas National Park, Tilson found the ideal setting for his research: 320,000 acres of lush forest with abundant tiger food, such as deer and wild pigs. But estimates that 20 of Sumatra's perhaps 500 wild tigers lived there were little more than guesses. Tilson realized that before the cats could be saved, they had to be counted. But how to locate such furtive animals in thick tropical forests?

Tilson decided to use a new technology—flash-equipped cameras rigged to infrared "triggers." Late in 1995 Tilson and his team set a "trap line" of cameras at points where the pattern of water and wetlands funneled animals onto a single trail. Soon a parade of tigers appeared on film, each distinguished by a pattern of stripes as unique as a fingerprint. Over time Tilson's team identified 40 tigers in Way Kambas—double the original estimate—including newborn cubs. Unexpected images also appeared on the film: lumbering Sumatran rhinos, whose presence had been suspected but, until then, not documented.

Studying the tigers has revealed the constant threat of poaching. To combat the problem, Tilson has raised funds to hire patrols that comb Way Kambas for poachers.

A similar survey in Java produced less positive results. Tilson's tiger project helped train staff in Meru Betiri National Park in eastern Java to camera-trap the Javan tiger subspecies, long suspected extinct. Despite a year of work, Tilson later wrote, they photographed "no tigers, few prey, and lots of poachers."

During the past year, Tilson and field worker Jeff Muntiferer have logged thousands of miles driving and walking the rugged and remote mountains of China, helping foresters there evaluate evidence of the last few cats of a subspecies known as the South China tiger. It is the tiger so familiar in Chinese art and literature; yet recent estimates have put its number at fewer than 30. The Chinese government has made finding and protecting remnant populations of the South China tiger one of its highest conservation priorities.

Through camera trapping and fieldwork in China's most vaunted tiger reserves, Tilson and crew are coming to the conclusion that the South China tiger may be even rarer than estimated. In fact, wild tigers may be extinct, in which case the only future the subspecies has would depend on reintroduction by first securing and improving natural habitat, then restoring populations of prey such as wild pigs and deer, and releasing the offspring of captive South China tigers from Chinese zoos.

SPECTACULARLY DIFFICULT.

Such an effort, if successful, would be a spectacular achievement for the zoo world. The tiger, as magnificent a predator as can be found on the planet, has never been reintroduced to an area from which it has vanished. The magnitude of such an accomplishment would be the exception to prove the rule—that zoos are limited in their ability to aid conservation.

At the Minnesota Zoo and many other large zoos, only about 1 to 3 percent of the budget is dedicated specifically to conservation.

It's also hard to justify to the Legislature and taxpayers spending large sums of money on foreign projects. Except for his salary, Tilson's current work in Indonesia, China, and elsewhere is funded through private foundations, federal grants for overseas conservation, and other nonstate sources.

"I think most zoos want to do the right thing, but conservation becomes an expendable part of their mission," said Richard Reading, director of conservation biology at the Denver Zoological Foundation, which runs that city's zoo. Denver, like Minnesota and many other large metro zoos, has only two full-time staff members devoted to conservation. Reading compared most zoos to petroleum giant Exxon, which likewise contributes a tiny fraction of its budget to conservation. "I think we're conservation organizations," Reading said, "but just barely. I think we can do more."

In the end, observed Reading, zoos' greatest contribution to wildlife may come through a combination of their work in the field and the education they conduct within their gates. "I think education can tell such a much stronger story if it is linked to what we do in the field," he said.

"Is a zoo summer camp session, where endangered species are the topic, conservation?" Ehmke asked. "Is the cost of an interpretive graphic discussing Ron's Sumatran work conservation? I would argue both are. That said, I think it would be easy to make the case that the time devoted by our staff (other than Ron and his group) to endangered species breeding programs or *in situ* [in the field] work would equal or exceed 3 to 5 percent of the total zoo budget. I guess my real point is that the overarching mission of our organization is conservation, whether it takes the form of education, animal care, or even marketing and promotion."

In Minnesota new exhibits will emphasize the importance of habitat to the survival of wildlife, said Ehmke. Even displays of exotic species, such as tigers, will draw a connection to home and stress the importance of reducing conflicts between humans and ferocious carnivores—be they tigers or gray wolves.

"I think the zoos' strongest and most important role is as an environmental educator," said Ehmke, "to make that connection between habitat and wildlife, to help people understand that you have to have one to have the other."