To Save Some Species, Zoos Must Let Others Die

ST. LOUIS — With fluorescent yellow eyes and tufts of hair sticking straight up behind their ears, Bonner and Etienne look like slightly crazed old men.

These riotous and chatty lemurs — known for elaborate rituals that include grooming and braying — once ranged across eastern Madagascar.

Now scores of these black-and-white ruffed lemurs are being bred here at the St. Louis Zoo and at other zoos across the United States as part of a broader effort to prevent their extinction.

But Ozzie, a lion-tailed macaque, will never father children. Lion-tails once flourished in the tops of rain forests in India, using their naturally dark coloring to disappear into the height of the jungle. Though there are only about 4,000 remaining in the wild, not one among Ozzie's group here in St. Louis will be bred. American zoos are on the verge of giving up on trying to save them.

As the number of species at risk of extinction soars, zoos are increasingly being called upon to rescue and sustain animals, and not just for marquee breeds like pandas and rhinos but also for all manner of mammals, frogs, birds and insects whose populations are suddenly crashing.

To conserve animals effectively, however, zoo officials have concluded that they must winnow species in their care and devote more resources to a chosen few. The result is that zookeepers, usually animal lovers to the core, are increasingly being pressed into making cold calculations about which animals are the most crucial to save. Some days, the burden feels less like Noah building an ark and more like Schindler making a list.

The lemurs at this zoo are being saved in part because of a well-financed program to rescue rare fauna of the island nation of Madagascar. By contrast, although St. Louis has kept lion-tailed macaques since 1958, other zoos started getting rid of them in

the 1990s because they can carry a form of herpes deadly to people. With only an aging population left in captivity in the United States, a species advisory group to North American zoos is expected to put the animals on a phaseout list soon.

If there are criticisms, they are that zoos are not transforming their mission quickly enough from entertainment to conservation.

"We as a society have to decide if it is going to be ethically and morally appropriate to simply display animals for entertainment purposes," said Dr. Steven L. Monfort, the director of the Smithsonian Conservation Biology Institute, part of the National Zoo in Washington. "In my opinion, that model is broken. There needs to be an explicit role for zoos to champion species."

Dr. Monfort wants zoos to raise more money for the conservation of animals in the wild and to make that effort as important as erecting fancier accommodations for their captive collections. Zoos, he said, should build facilities — not necessarily open to the public — that are large enough to handle whole herds of animals so that more natural reproductive behavior can occur. And less emphasis should be placed on animals that are popular attractions but are doing fine in the wild, like African elephants and California sea lions, Dr. Monfort said, adding that they should be replaced with animals in desperate need of rescuing.

Many zoo directors say that such a radical reordering is not called for and that each zoo does valuable work even if conserving just a few species.

But Dr. Monfort is not satisfied. He wants all zoos within the Association of Zoos & Aquariums to aim higher on conservation efforts. "I am comfortable with raising the standards for zoos so that eventually it will be harder and harder to be accredited unless you are doing that," he said in an interview. "If you can't keep up, then you probably need to be dropped off the bottom."

Established in 1910 and built on 90 acres, the St. Louis Zoo is in many ways archetypal of institutions struggling to adapt from

a late-19th-century concept to a 21st-century crisis management center.

In their first century, American zoos plucked exotic animals from the wild and exploited them mainly for entertainment value, throwing in some wildlife education and a touch of preservation. When wilderness began disappearing, causing animals to fail at an accelerating pace, zoo officials became rescuers and protectors. Since the 1980s, zoos have developed coordinated breeding programs that have brought dozens of animals, like the golden lion tamarin of Brazil, back from the brink.

The increasingly difficult challenge is to be a force for conservation while continuing to put on a show.

Under Pressure

Jeffrey P. Bonner, president and chief executive of the St. Louis Zoo, said he felt that pressure.

In 2006, Dr. Bonner assembled his senior curators — each in charge of a different class of animal — along with donors and city planners to help make painful choices.

Sea lions are doing fine in the wild for now, but the zoo, which is taxpayer subsidized, decided to spend $18 million on a new pool, expected to be completed next year, that will be filtered and ozonated for clarity. Why? Because sea lions are one of the most popular attractions and their home was decrepit. Money also had to be spent on new restrooms and extra parking, meaning that stated priorities like breeding space for endangered animals and a frozen pool for walruses were shelved.

"We are always balancing the public experiencing with conservation needs," Dr. Bonner said. "If you ask me why I have camels, I would say that we need something interesting for people to see at the back of the zoo in winter, and they are always outside."

Currently, there are 214 accredited zoos in the United States, from tiny eight-acre attractions to world-renowned destinations like the San Diego Zoo, whose annual budget approaches $200 million. The main organization binding these zoos is the Asso-

ciation of Zoos & Aquariums. Since 1985, it has been setting higher standards, raising the bar for animal care, conservation in the field and cooperative breeding programs.

Less Room for Animals

But while the association can remove accreditation, which it does from time to time, it has few other enforcement powers. So decisions on just how conservation-oriented to be — from how many imperiled animals to save to how much money will be spent on species still in the wild — are largely made zoo by zoo.

As standards for animal care rise and zoos install larger, more natural-looking exhibits, there is room for fewer animals. In the 1970s, the primate house in St. Louis held 36 species of monkeys and apes. Now it has 13.

And that narrowing of the species list is likely to continue for another reason. Zoos have come to understand that for animals to reproduce successfully for the long term without inbreeding, they need to maintain much wider gene pools for each animal. There are 64 polar bears in captivity in American zoos, far short of the 200 considered optimal for maintaining the population over 100 years. So zoos have been adding to the numbers of some species while culling others at the same time. St. Louis says it houses 400 more animals but 65 fewer species or subspecies than it did in 2002.

How the shrinking slots are allocated is becoming more considered and scientific. As conservation pressures mounted in the 1990s, the association began putting together advisory groups of zookeepers that look across entire families of species and advise on which ones should be made priorities and which ones should be phased out.

All sorts of criteria are considered, including uniqueness, level of endangerment in the wild, importance of the animal's ecological role, and whether there is an adequate population in captivity for effective breeding.

Zoos are essentially given a menu of endangered species that the association is trying to maintain and can then choose according to their particular needs. But final decisions are often as much about heart as logic.

St. Louis, for example, has committed $20 million — or the equivalent of 40 percent of its annual operating budget — to building an enormous exhibit for polar bears — complete with a fake ice floe — even though its last polar bear died in 2009 and the Marine Mammal Protection Act makes it illegal to remove or rescue the bears from the wild. The zoo hopes that in the five years needed to open the exhibit, it can argue for an exemption, import orphaned bears from Canada or perhaps secure the cubs of captive bears.

Dr. Bonner acknowledges that the polar bear project runs counter to many of his more practical convictions on the role of the modern zoo. He has insisted that his keepers spend what limited field conservation dollars they raise on threatened animals that are most likely to make a comeback in the wild. With sea ice disappearing at an alarming rate, polar bears do not fit the profile.

But he justifies the exemption as a lesson for zoo visitors: "I want people to see this beautiful creature and ask, 'How could we have let this happen?' "

In a utility closet at the back of the Insectarium in St. Louis is evidence of the growing pressure on zoos. Bob Merz, the zoo's manager for invertebrates, pulls out a clear kitchen container that could be used for the previous night's leftovers. Instead, it contains layers of moist paper towel covered in snails, each no bigger than a pinkie nail.

"This is their habitat now," he said.

The partula snail was once native to Pacific islands around Tahiti, but a larger carnivorous snail, introduced to attack other pests destroying crops, has decimated the partula as well. The nooks and crannies of this zoo are filled with similar cases, many of which were begun when a conservation group, scientist or government regulatory agency noticed that the animals were disappearing, and had nowhere else to drop them off. Many are not exhibited and are believed to be among the only members of their species left in the world.

The International Union for Conservation of Nature estimates that nearly one-fourth of all mammals are at risk of becoming

extinct, roughly in the course of the next three generations. The situation is even more dire for amphibians and seabirds. The organization, for example, has declared the disappearance of the Australian gastric brooding frog, which ingested its eggs, gestating them in its stomach and eventually spitting out tadpoles.

The problem for zoos is that even small animals require more of a commitment than a plastic container if a return to the wild is to be realized.

Several large buckets of dirt are now home to the threatened American burying beetle, so named because it buries the corpses of small animals, like birds and squirrels, and lays its eggs around them. Once, the beetles, with their brilliant red markings, ranged over 35 states. By the time the United States Fish and Wildlife Service listed them as endangered in 1989, there was one known population left, in Rhode Island.

At the government's behest, the St. Louis Zoo, in conjunction with a zoo in Rhode Island, has been successfully breeding them and returning them to the wild.

Mr. Merz says the effort was worthwhile because the beetle might play an irreplaceable role in the ecological web. He considers picking species worth saving akin to life-or-death gambling. "It is like looking out the window of an airplane and seeing the rivets in the wing," he said. "You can probably lose a few, but you don't know how many, and you really don't want to find out."

In 1989, scientists realized that the world's frogs were dying in alarming numbers. They deduced that about a third of all 6,000-plus amphibian species were threatened with extinction, many being felled by a fast-moving fungus that has probably been spread in large part by trade and pet sales.

After that, scientists developed a protocol for determining which species should be rescued first. At this point, only 42 percent of the world's amphibians have been assessed. But zoos and aquariums have taken note and are following the protocol's recommendations.

So far, only about 10 percent of the amphibian species requiring immediate rescue have been given homes. Still, many scientists, like Robert C. Lacy, a conservation breeding specialist, believe the frog mobilization will become a model. Yes, he said, there are endless moral and ethical debates. For example, should priority be given to animals that cannot survive outside zoos or to those in need of temporary shelter to restock their numbers?

Brutal Consequences

When those decisions are made, the consequences can feel brutal. For 20 years, keepers at the St. Louis Zoo worked to understand the habits of endangered Mhorr gazelles, the delicate, red-coated subspecies in their care. The animals have been squeezed out of the grasslands that border the Sahara by increased cattle ranching. Eighteen babies were born at the zoo during that time, a healthy rate. But with fewer than 50 Mhorrs left in zoos in North America, there was not enough genetic diversity to reproduce without a risk of inbreeding.

So, in 2008, a North American advisory group on the viability of hoofed species recommended that the animals be phased out of North American zoos and space given to another subspecies of endangered gazelle with more promising prospects.

Martha Fischer was head of that advisory group, but she is also in charge of all animals with hooves at St. Louis, and she knew that she would have to ship animals that had become precious to her to other zoos. If they cannot be bred in Europe, where the largest captive population remains, the Mhorrs will most likely become extinct.

Even though Ms. Fischer accepted her own panel's conclusion, "I dragged my feet," she said about getting rid of her Mhorrs — in part because she is so concerned about their future in the wild.

"It's great to be helping another animal, but I still miss them," Ms. Fischer said, sighing. "We had expertise and we were good with them, and they were spectacular."