

Zoos Forging New Role in Science

The day is coming when zoos will be the preserver of endangered species

The Smithsonian Institution has selected Michael T. Robinson, former head of its Tropical Research Institute in Panama, as the new director of Washington's National Zoo. Robinson succeeds Theodore Reed, who has presided over expansion and modernization of the zoo for the past 23 years. Robinson, an animal ethologist, is generally seen as a fine choice. Cornell biologist Thomas Eisner calls him a "superb field biologist." The National Zoological Park, intended as a model for the nation, has pioneered various changes over the last generation, from being the first zoo to use capture guns to immobilize animals, to its present research on embryo transfers. It is unique in having the vast scientific resources of the Smithsonian to draw on, and it runs one of the largest farms for propagation of rare and endangered species in the country.

The appointment of Robinson, who has been at the Panama Institute for the past 18 years, reflects the increasing international importance of zoos as well as their growing scientific orientation. Zoos have changed radically in the last 30 years from the days when Reed remembers a zoo owner who found it cheaper to get new animals rather than invest in a veterinarian. Zoos have turned from consumers to producers of animals—75 percent of those at the National Zoo are captive-bred—and are playing an increasing role in the preservation of endangered genetic stocks.

Robinson, who is "mad on animals," was born in England, and studied at Oxford under the Dutch zoologist Nikolaas Tinbergen. He has a feel for the tropics that can only come from long exposure there. "The first time a north temperate human being goes into a tropical forest it's overwhelming—biological culture shock," says Robinson. He compares it to a Breughel painting, impossible to take in all at once. His particular interest is in predators, and he long ago settled on spiders as his guide in the "evolutionary arms race between predator and prey."

Robinson is intensely concerned about depletion in the tropics. But he also is offended by the "sheer arrogance and elitism" of those who say, in effect, to impoverished natives: "You shouldn't cut down resources because you must save them for posterity. . . ."

"We have to provide a viable alterna-

tive," says Robinson—"one which enables people to use their resources without destroying them." The Tropical Research Institute has recently obtained some foundation money for several experiments along these lines. One involves building up the iguana population in a small area by manipulating the food supply and providing protected nesting sites. The meat and eggs can then be harvested and sold. Another is a carefully designed combination of forest and garden. Robinson says these types of projects have great possibilities because they require knowledge and ingenuity rather than new inputs of energy or technology. Yet, their potential has been largely ignored by development experts.



Père David's deer

Robinson is taking over the zoo at a point where renovation of its physical plant is nearly complete. He hopes to broaden the range of species there by installing a new \$12 million aquatic exhibit that Reed has been seeking, as well as an exhibit on invertebrates—the infrastructure of the animal kingdom.

The zoo's long-term projects are going on behind the scenes at its Conservation and Research Center in Front Royal, Virginia, a 4200-acre animal propagation facility that opened in 1975. Most of the animals there, like the cassowaries, the wisents (European bison), the tree kangaroos, and the scimitar-horned oryxes are rare or endangered.

The center has lately been engaged in breeding golden lion tamarins (marmosets) from Brazil, and Bali mynas from Indonesia for reintroduction into the wild. The transfers, made possible by the

establishment of protected game parks, are being effected only after extensive surveys of habitat and studies of the animals' eating, breeding, and activity patterns. The tamarins are being fed the kind of insects and fruits they will find in the wild. Their fortunes will be followed by means of attached radio transmitters.

Christen Wemmer, director of the facility, points out that "zoos and wilderness are becoming more and more alike." Zoos are striving to emulate aspects of natural habitats and foster the conditions for natural behaviors, while wildernesses are being divided up and turned into islands where increasingly sophisticated management practices are required. Since animals can neither migrate out of nor into many wilderness areas, both zoos and jungles are running the danger of losing their genetic diversity. Wemmer says there is a danger of unintentionally domesticating animals, so "The more we know about the wild, the more we know what traits we want to preserve in captivity."

In addition to serving as a middleman for mating animals on loan from other zoos, the facility has its own fertility research program. Reed says that for years, the only animals saved from extinction by captive breeding were Père David's deer (extinct for 2000 years except in Chinese imperial game parks), and Przewalski's horse, a Mongolian wild pony. Now zoos are starting to emulate commercial animal breeders, who have long been in the artificial insemination and sperm-trading business, and have lately gotten into embryo transfers—so that, as recently occurred at Cornell a mule gave birth to a horse. But much reproductive research must be done before such practices can be applied to produce viable populations of species on the brink of extinction. The Front Royal facility is currently using hormones to try to achieve multiple ovulation in an Eld's deer (a rare South Asian animal), inseminating her, flushing out the embryos and implanting them in ten white-tailed deer.

Unless political and environmental conditions stabilize in the developing world, there will be few opportunities to breed animals so they can be restored to their original habitats. The day is coming, says Reed, when "zoos will be the preserver of endangered species."

—CONSTANCE HOLDEN