

Creating Gardens of Ecology

An essay by

David Hancocks (2003)

There have been welcome improvements in many zoos in the past couple of decades, especially in Australasia and North America. Some have created quite large and densely planted exhibit areas. Zookeepers often engage creative energy in environmental enrichment techniques to improve the quality of life for the animals in their care. Veterinary health care, hygiene, and nutrition standards have made impressive strides.

All these enhancements, however, have not helped to resolve the fundamental problems. We are faced with an urgent need to do more than just fix and tinker with an outdated concept. It is now time to plan entirely new types of natural history institutions.

Trying to change zoos, however, is difficult. They are strapped into straitjackets of tradition. Zoo collections, for example, have from their beginnings always comprised an inadequate and narrow view of the animal world, focused on charismatic mega-fauna. I know from personal experience, however, that trying to remove such animals as elephants, jaguars, lions, and polar bears from a zoo collection can generate a lot of political heat, and even hate mail from schoolkids. Isn't every zoo supposed to have elephants? And giraffes? And zebras, monkeys, hippos -- and lions and tigers and bears? Oh my! Zoo collections typically feature but a small and repetitive slice of animal life. Worse, the way these animals are presented in zoos gives no sense of the functional roles they play in their ecosystems.

Until recent times, zoo visitors did not anticipate learning little more than the name, size, shape, and color of the exotic animal species they saw. That may have been sufficient in the past; it is not enough for today. There are vital lessons that zoos can offer, and our modern world is sorely in need of them.

Humankind has been engaged in battle with nature ever since we devastated the Pleistocene mega-fauna in most parts of the world. The conflict accelerated when the agricultural revolution began. It quite suddenly became more serious, however, about 200 years ago, with the advent of the industrial revolution. In the past fifty years we have so intensified the rate and scale of destruction that one might be excused for thinking we were officially at war with nature, determined to wipe it out.

Less than twenty generations ago my ancestors lived in huts of sticks and mud, with no warmth, no ventilation, no light. It is inarguable that we have gained much since then. But the world of those ancestors also gave them daily contact with important things we've lost: a world of birdsong, starry skies, long walks over the hills, and intimate contact with little animals in the hedgerows; a detailed consciousness of the way things grow, and of all those subtle complexities in nature that can only be perceived in close and perpetual observation; a world where they took apples from trees and potatoes from the ground and fish from wild streams. To be aware of these

losses is not just nostalgic romanticism. As we have moved to distance ourselves from nature we have deluded ourselves that we are no longer a part of nature.

We seem now to think we can do what we please and take what we want with impunity. We cover fertile valleys with factories, and drain wetlands for shopping malls. We reduce great forests to dust, dam wild rivers to a standstill, and plough savannas out of existence. We exterminate plants and animals with no knowledge of their medicinal or food values, no sense of their place in ecology, and, most times, we send them into the abyss of extinction unnamed.

Today, according to Peter Vitousek, an ecologist at Stanford University, one animal species, Homo sapiens, uses forty percent of the terrestrial primary productivity of the planet. He says this figure could double in the next thirty years. E. O. Wilson, the Harvard biologist, tells us that we are likely eliminating species at the rate of three an hour. These are statistics beyond comprehension.

Small and specialized areas of the planet give us clear warnings. More than half the different freshwater fishes in peninsular Malaysia, for example, are gone. All the tree snails on the island of Moorea have disappeared. Hawaii is on the edge of a precipitous drop in native birds and insects, with plants left without pollinators in the process. Bigger areas are probably responding in the same way, only more slowly. Humankind is facing a calamity.

Zoos have responded to all this by loudly and persistently claiming to be the modern Noah's Ark. This simplistic imagery is ludicrous. There is no doubt that zoos will save some species; but these will be the species important to zoos, not necessarily those important to nature.

More than ninety-five percent of all animals are smaller than a hen's egg, and are unknown in zoos. Yet these little animals often have behaviors and lifestyles more interesting and more illuminating than those species that characterize typical zoo collections. Also, they are invariably more critical to their habitat, because they usually have more biomass and thus greater influence, as well as more vital and direct links to the functions of their ecosystems.

It is more than just unfortunate that zoos ignore these small life forms. Without these species the interpretations that zoos can give about the wild are crippled, and the stories zoos could tell about maintenance and management of habitats are severely compromised. It is, as E. O. Wilson has said, the little things that run the world.

The loss of even one species of bird or mammal can be heartbreaking, but if, say, insects were wiped out (and we seem to be doing our damndest to ensure that), or some other group of tiny organisms, the disruption to the planet's ecosystems would be so massive that it could mean the end of almost all other life forms, including humans. Even more likely, the eradication of just a few critical species of pollinating insects would have such an impact on agriculture that it could lead to the collapse of our civilization. It sounds paradoxical, but closer attention by zoos to interpreting the inconspicuous mega-fauna and their world could help develop a bigger, broader view of the whole world of nature.

Loss of biological diversity is at present recognized as a problem only by scientists. Many of them consider it the greatest of all environmental threats. Sustaining diversity in nature is essential to our own economic, cultural, and psychological wellbeing, yet is virtually unknown by the general public. There is much concern about air pollution, spilling oil on the beaches, clear-cutting the forests, and thinning of the ozone layer. These environmental issues can make dramatic headlines. They affect us personally. But the insidious loss of biodiversity? How do we relate to that? In a recent poll sponsored by Defenders of Wildlife not one person in 1500 recognized biodiversity loss as a problem. Indeed, only one in five Americans say they have even heard of it.

Millions of people visit zoos each year. Many come with open minds, hungry for contact with the "other world" of nature. There is enormous potential for zoos to help these visitors understand the richness and complexity of nature. But this potential lies largely untouched. To reach it, zoos must dramatically broaden their scope. If they do not, they will be inadequate for the next century. They will thus fail, and disappear like dinosaurs.

What evolutionary changes, then, could zoos begin to make? First, it would benefit them greatly to take a very close look at their goals and philosophies, especially by asking themselves the fundamental question: What are zoos for? If their answer emerged, as it probably would, that zoos are "for the conservation of rare and endangered species," then I would urge them to rethink the question. For surely, if one wanted to create a facility whose central purpose was breeding rare or endangered species, you would not design it to be a public zoo? Zoos are essentially places for exhibition, and, consequently, for interpretation. Their very best purpose, and one beyond value, is public education.

If interpretation of nature is the justification for zoos, and if the focus of Zoological Gardens is too narrow to achieve this, then it would seem logical to expand their scope and content, and for them to become Gardens of Ecology.

In ecology gardens, visitors could make strategically important contacts with nature. They would discover the connections between plants, soils, microorganisms and characteristic animals within a natural habitat, and thereby gain important new insights. Here they could explore the dynamics of ecosystems. Gardens of Ecology could present holistic views of nature and reveal the interconnectedness between all living things. Their visitors would have greater opportunity to develop respect for the astonishingly diverse world of nature, and thereby a new concern for its health and wellbeing.

In our present system, if you visit a zoo the chances are you will learn nothing about plants; they are typically provided only as a backdrop. A visit to the Botanical Gardens will just as likely fail to reveal any information about animals. Almost every botanical garden in temperate climates seems to have a tropical conservatory, but you will never see any pollinators therein. The birds (and maybe also a few giant or social insects) are only to be found in the Zoo. No natural history institution is explaining to the public even such a basic phenomenon as the co-evolution of plants and pollinators. How, then, are people to develop an understanding of why such inter-relationships are so critical?

The tyranny of tradition often prevents us from making changes, and may stop zoological gardens and botanical gardens from expanding their roles. Yet, within their present limits, these institutions cannot fulfill their potential. Promoting biological diversity is probably the most important message they can give to their public, and the most valuable contribution they can make to conservation. They cannot achieve this, however, within the constraints of their present focus.

Coupled with the need for a change in their perspective, zoos must also shift away from exhibiting just individual species; there should be no more “elephant” exhibits, “gorilla” exhibits, “panda” exhibits, or the like. At the same time, zoo plans based on the tidiness of taxonomic groupings must be discarded; thus, no more “feline houses”, “bird halls”, “reptile pavilions”, and so on.

Instead of concentrating on species, zoos should move towards interpreting ecosystems. In their efforts to do this they will find much more intellectually stimulating challenges, greater power and meaning to their missions, and the opportunity to help develop a more fully informed citizenry with a deeper understanding of the natural world.

Individuals of vision and optimism created the early zoological gardens. Today's zoo leaders need to emulate that zeal and foresight. Certainly, those pioneers would not be grateful for anyone clinging to their old ideas. Worse, neither will unborn generations.

It could not have been easy to establish the new public zoological gardens of the 1900s. It must, though, have been great fun, and exciting. We can do the same in the 2000s. We can conceive and develop gardens of ecology: new institutions that present and interpret wild habitats and their complete biotic communities. We can test our ingenuity, and learn how to tell the stories of nature.

Zoos in their present form cannot begin to tell the full story of nature. They restrict themselves to just a small portion of one chapter that is itself restricted only to the animal world. That is one reason they should change their name: the bonds of nomenclature prevent new beginnings and new ways of thinking. Conforming to old ways blocks the mind from new opportunities. The inadequacies of zoos have perpetuated false images in the past, and still convey wrong perspectives for the present generation. Clearly, we are failing to teach even the basics about what our planet is and how it works.

We cannot hope to achieve what is needed in the twenty-first century with our fragmented mix of disparate natural history institutions inherited from a past era. No matter how good our zoos might become, they are, by themselves and in their present form, inadequate to the tasks ahead.

Some zoos have shown how effectively they can reveal the beauty and wonder of animals. The bars have come down -- now there are new barriers to overcome.

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