

# Dynamic diversity

Sandra Knapp

In the aftermath of the Earth Summits in Rio de Janeiro in 1992 and in Johannesburg in 2002, conservation has become inextricably linked with sustainability. The United Nations Convention on Biological Diversity (CBD) enshrines this linkage in its objectives: the conservation of biological diversity; the sustainable use of its components; and the fair and equitable sharing of its benefits. The CBD defines sustainable use as the “use of the components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations”. Interestingly, however, conservation itself — the central plank of the convention — is left undefined. Perhaps this is because we all feel that we know what conservation means, and that its definition is superfluous. But do we really know what we are talking about?

According to the *Oxford English Dictionary*, conservation is “the action of conserving; preservation from destructive influences, natural decay or waste; preservation in being, life, health, perfection, etc. or preservation of existing conditions, institutions, rights, peace, order, etc.”. All quite

straightforward until one looks a little bit closer at just what this concept means for us as just one of many millions of species, most of which are still unknown, that share the planet Earth. *Homo sapiens* left Africa less than 100,000 years ago, colonizing all habitable continents and causing the extinction, directly or indirectly, of other hominid species such as the Neanderthals. Our species was (and still is!) an invasive mammalian weed, monopolizing and changing forever the habitats in which it becomes established.

So just what do we want to conserve? Conservation seems to imply stasis — in conserving a species, habitat or lifestyle, we expect it to remain the same. But we all know that conditions change — our world today bears little resemblance to that inhabited by *Tyrannosaurus rex* or the woolly mammoth. So what should we conserve? The situation as it was yesterday, last week, a decade ago? A world in which the rich stay rich and the poor stay poor? Even the conservation of biological diversity is fraught with questions — do we want to preserve species, such as the panda, that appear to be headed for extinction unaided by humans, or is it more important to conserve habitats, in which species are left to flourish or perish naturally?

None of these questions has an easy answer; this is partly why conservation, and particularly the conservation of biological diversity, is such an emotive issue. But it is emotive for another reason too: humans, like members of other species, are astoundingly egocentric. We see everything in terms of ourselves — what can biodiversity do for me? What benefits can we obtain from its use and, by extension, its conservation? But humans have gone even further; our alienation from nature is so complete that many of us do not think of ourselves as dependent upon the world around us, nor even as biological entities, despite abundant evidence of our increasingly devastating impact on the planet: deforestation, wildfires, falling water tables and catastrophic air pollution.

This apparent duality — wanting to conserve biological diversity, while continuing to increase our consumption of the Earth's resources — cannot continue. William Rees has said that the average human ‘ecological footprint’ — the area of productive land and water needed to support that human — measures 2.3 hectares, whereas the world contains only 1.9 hectares per person. Yet the human population is still growing. If these calculations are correct, our use of our planet is clearly not sustainable and we certainly do not want to conserve the situation in which we find ourselves today.

## Conservation

*Preserving nature is not about stasis, but about maintaining the exciting, ever-evolving variety of life on Earth.*

In defining sustainable use and linking it to conservation, the CBD has set an almost impossible task — how do we know if we are consuming resources too rapidly? How can we tell if the potential for the as-yet-unknown aspirations of future generations will be met? The economist Herman Daly has suggested that sustainability is better defined as throughput from and back to nature, and thus a non-declining throughput can provide a measurable standard for conservation. But how should throughput be measured?

Nature is not a machine — always punching out metal parts of the same size and shape. The natural world has some great advantages over machines, such as resilience and interconnectivity. The natural world is a dynamic, ever-changing place, even in the absence of human intervention. The challenge is to preserve the dynamism of a natural world in which humans are relative newcomers.

Effective conservation of both resilience and interconnectivity will require the input of science. Without an understanding of which species live in which habitats, how they interact, their relationships through both ecological and evolutionary time and how they are affected by human activities, how can we possibly do anything other than fence off great portions of the globe and hope for the best? Conservation of a dynamic, resilient natural world will require a great deal of cooperation and an immense synthesis of existing information.

The choice is stark: we can work hard to conserve a dynamic natural world of which we are an integral part, or we can fail and be faced with the equivalent of a white room wallpapered with photographs of the species and habitats with which we used to share our planet.

*Sandra Knapp is in the Department of Botany, Natural History Museum, Cromwell Road, London SW7 5BD, UK.*

### FURTHER READING

- Raven, P. H. *Science* 297, 954–958 (2002).
- Rees, W. E. *Nature* 421, 898 (2002).
- Daly, H. E. *World Bank Annu. Rev.* 2002 15–17 (2002).
- Orr, D. W. *Conserv. Biol.* 16, 1457–1460 (2002).
- O’Riordan, T. & Stoll-Kleeman, S. (eds) *Biodiversity, Sustainability and Human Communities* (Cambridge Univ. Press, 2002).
- Royal Society Working Group Report: Measuring Biodiversity* (R. Soc., London, 2003).

HISTORICAL PICTURE ARCHIVE/CORBIS



Life's rich tapestry: but nature doesn't paint a static picture, so we shouldn't try to preserve one.