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Biodiversity – everyone needs it

The United Nations celebrates 2010 as the International Year of Biodiversity (IYB). This recognises that the diversity of life forms in our terrestrial, marine, and aquatic ecosystems underpins our food supplies, our clean air and water and provides protection against weeds, pests and diseases.

However, the UN has also challenged the world to finally take action to safeguard these ecological treasures. In October 2010, Japan will host a major meeting of the UN's Convention on Biological Diversity (CBD) to address major global threats to biodiversity and the ecosystem services it provides.

At this meeting, Australia, as with all other signatories will be accountable for their efforts toward implementing a Strategic Plan set out in 2002 by the Conference of Parties (CoP), the governing body of the CBD. This plan aimed (by 2010) to achieve 'a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on earth'.

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Many issues will have to be addressed, with the most pressing being the lack of understanding, throughout society, of what biodiversity means and why it is relevant. We need an agreed definition of biodiversity that everyone can understand and that scientists can monitor to determine the health of our planet's life support system.

We also need to find ways to measure the value of ecosystem services such as pollination and pest control that biodiversity provides for free. This will open up markets for biodiversity and allow planners to make judgements about the value of biodiversity as opposed to the value of development.

Having separated from other continents more than 40 million years ago, Australia has almost 10 per cent of the world's known species and is the most megadiverse of developed countries. However, we also have 10 per cent of the world's threatened species and the dubious honour of having the highest mammal extinction record of any country on the planet.

image: Kate Leith, The Canberra Times

We also don't know what we have: around 75% of our native species are undiscovered or undescribed by western science, which limits our ability to decide where to focus our attention when protecting species and ecosystems.

This sorry state could improve as new tools such as genomics and phenomics help taxonomists to speed up the traditionally time consuming business of identifying new species. While genomics provides a potential tool for the large scale screening of samples based on genetic differences, phenomics looks at the outcome of genetic differences, and will allow scientists to use computer-based image and sound analysis to rapidly categorise species.

Newly generated data on biodiversity data also has to become more accessible to scientists, land managers, policy makers and the general public.

An important project currently addressing this is the Atlas of Living Australia (ALA) which will ultimately provide web-based access to all the information held in Australian biological collections databases. The end result will increase the availability of the information necessary to underpin decision making on issues such as biosecurity, conservation and national environmental accounting.

It is essential, yet not enough to just describe biodiversity. It must be protected where it lives; or, given climate change, where it might live in the future.

In Australia, we have established national parks and reserves, but while these are important in securing the future of biodiversity, they cover only around 7.5% of the continent's surface and not all of the biomes are represented. This means that areas outside parks such as farmland, forests and even cities must be included in any biodiversity conservation plans. Consequently, management agreements will have to be formed between land managers to ensure biodiversity stewardship in the landscapes they look after.

Until now, there has been an emphasis on what we have lost, but in considering biodiversity we need to refocus on identifying opportunities that assist and support what we have. Carbon markets, as one example, could in Australia encourage the planting of native trees and globally save many forests, and the biodiversity in them, by providing an alternative to logging. However, it is important that any decisions on such issues be underpinned by good science if perverse outcomes are to be avoided.

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We also need to restore biodiversity in areas that have been degraded by human activity such as European agricultural systems, deforestation, overfishing and urbanisation. This will require the right data, tools and knowledge to support decision making. The scientific community does not have all the answers to what is needed but it can provide guidance as to what actions may help restore biodiversity. By implementing 'to the best of our knowledge' guidelines within an adaptive management framework we can learn from outcomes of management interventions and use these insights to hone and guide future actions.

The CoP meeting will hopefully have the vision and courage to emphasise the importance of managers and policy makers working with researchers to develop evidence-based decision making that will address the challenges facing biodiversity. Globally, the message has to be spread that biodiversity is for life not just for 2010. Here in Australia, we will need collaboration between our scientific skills, indigenous environmental knowledge and the broader community to save our unique landscapes.

ARDR OPINION