Biodiversity
It's everyone's business

What is biodiversity?

Biological diversity, or biodiversity is the variety of all living organisms, including all species. It can be defined as *'the variety of life forms, the different plants, animals and micro-organisms, the genes they contain, and the ecosystems they form'*. The concept emphasises the dynamic interrelationships occurring in the biological world in which humans now play an integral management role and is usually considered at three levels.

Genetic diversity is the variety of genetic information contained in all individual plants, animals and micro-organisms.

Species diversity is the variety of species on earth. Species diversity is usually a measure of the number of species (richness) and their relative abundances for a given area at a given point in time.

Ecosystem diversity is the variety of habitats, biotic communities and ecological processes. An ecosystem consists of plant, animal, fungal and micro-organism communities and the associated non-living environment interacting as an ecological unit. Ecosystem diversity has two inter-related components: the diversity of communities of species and the diversity of interactions between community members (called processes).

Why is biodiversity important?

Biodiversity values are important because:

- At the most fundamental level, biodiversity provides the basis for all life on earth, ensuring clean air and water, fertile soils and healthy, functioning ecosystems necessary to maintain essential ecosystem services such as soil formation and nutrient storage and cycling.

- Biodiversity provides all of our food and the raw materials for a wide range of products, for example clothing and medicinal goods.

- Biodiversity provides opportunities for recreation, tourism, scientific research and education.

- Biodiversity is a source of cultural identity for many Australians, particularly for Aboriginal and Torres Strait Islander people.

- There is a growing community recognition of the intrinsic values of biodiversity, such as the right of all species to exist regardless of their value to humans.

Financial benefits of the value of biodiversity are difficult to estimate, but can be described both as the economic benefits of biodiversity, and the costs of not protecting biodiversity.

At the broadest scale, the short term economic benefits of ecosystem services have been calculated at US$22 trillion annually. This is almost twice the global gross national product. Closer to home, examples of financial estimates include:

- The contribution of koalas to the tourism industry is estimated at $1.1 billion per year, or around 9,000 jobs,

- Whale-watching is a $50 million a year industry in Australia, and

- The annual economic value of Dorrigo National Park is $5.4 million, contributing 8.4% of regional employment.

The cost of not protecting biodiversity is likely to be substantial, and in many cases the loss of biodiversity will be irreversible. The impacts of failing to maintain healthy, functioning ecosystems are already obvious in many areas, for example:

- Approximately 72% of NSW is affected by some form of land degradation;

- Soil structure decline is costing Australian farmers around $200 million annually;

our environment *it's a living thing*

- The cost to Australia of lost agricultural production, decreased water quality and control measures due to weeds is estimated at $3.3 billion per annum;

- 20,000 farms and 2 million hectares of land are affected by salinity in Australia; and

- Between 1993 and 2003 the number of animals in Australia listed as threatened rose by 40%.

What biodiversity do we have?

Australia is one of only 12 'megadiverse' countries and its native biodiversity is of global significance. It is estimated that there are more than one million species of plants and animals in Australia. Of particular significance is the high percentage of Australian species found only in Australia (45% of birds, 84% of mammals and 89% of reptiles).

Australia also has a great diversity of ecosystem types, ranging from alpine to coastal, estuarine, wetland, arid and semi-arid, woodland, grassland and forest landscapes.

Biodiversity on the north coast of NSW is amongst the highest of any areas in Australia, with a very high diversity of woody vegetation types, including rainforests, wetlands and old growth forests. The area also contains the largest number of rare, endangered and over-cleared forest ecosystems and a very high richness of plant and animal species. It also has the largest number of threatened plant and animal species in NSW.

Threats to biodiversity

Land clearing and degradation are the single biggest threat to biodiversity. Vegetation clearing destroys, fragments or otherwise modifies habitats. Such activities contribute to further loss of biodiversity through accelerated land and water degradation. Over the past 200 years of European settlement, the natural environment of Australia has been modified dramatically. In NSW the scale of biodiversity loss has been substantial. Over 80 species of plants and animals are extinct in this State, and more than 800 species are considered either endangered or vulnerable.

The loss of biodiversity can be directly linked to the extent of clearing and modification of native vegetation and accelerates at a sliding scale as vegetation loss and frequency of disturbance increases. Conserving biodiversity, therefore, relies heavily on the protection of native vegetation across the whole landscape. This includes protection of all vegetation types across all landforms (i.e. flood plains to the mountains) as well as protecting vegetation corridors.

Biodiversity is therefore a responsibility of us all.

References and Further Reading

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- DEC website: www.environment.nsw.gov.au

Further Information

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August 2004

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Infrastructure, Planning and Natural Resources

Northern Rivers
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