

# Healthy biodiversity is no luxury - it's the foundation of all life on earth

## Exploring biodiversity and conservation in Early Childhood Practice

A project by Early Childhood Australia Sustainability Interest Group, Victorian Branch, 2010, in the United Nations International year of Biodiversity. This poster and fact sheet provides support for early childhood services to explore plant and animal diversity and actively implement strategies to improve biodiversity in playspaces, in addition to increasing children's ecological literacy.

*"This abundance of species is not an accident or a waste. Like air, water, soil and energy from the sun, it seems that biodiversity is necessary for life. All of nature is interconnected. Like the water cycle and the yearly return of the seasons, the lives of animals and plants are connected in a circular pattern." (Suzuki & Vanderlinden, 2000, p. 68)*

### The Australian Context

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 semiarid, woodland, grassland and forest landscapes (DEC, 2004).

Natural habitats are amazingly complex and multilayered. To describe the dry interior of Australia as 'featureless' or 'empty', is to see only the surface. When we look beyond our stereotypes of the nature aesthetic it becomes apparent that even a desert or dry bushland is full of change and complexity. Another term for that complexity is biodiversity. In essence, mimicking nature and natural habitats will help protect the biodiversity of the local area (Grant, 2003).

### What is Biodiversity?

In simple terms the word biodiversity can be described as the variety of plants and animals (species) and the way in which they interrelate (ecosystems). An important aspect of biodiversity that is not always apparent is the interconnectedness between all species, in other words the way in which they depend on one another for survival. One way in which this can be presented is by food chains and webs. The word biodiversity is relatively new. It is made up from the term 'biological diversity'. This diversity is the astounding array of plant and animal species that perform a vital role in the web of life. Biodiversity therefore describes the variety of living things, including plants, animals, micro-organisms and their interrelationships. Biodiversity also includes people! (National Parks and Wildlife Service, 2003).

**If children understand they are part of an interconnected big picture within the natural world, they will be more likely to want to conserve elements of this world in the future.**

Two terms that also link with biodiversity are habitat and ecosystem.

- **A habitat** is the type of place where an organism or population naturally occurs.
- **An ecosystem** describes a community of plants and animals, the interactions between these and the physical environment in which they live.

**Three considerations for biodiversity are genetic diversity, species diversity and ecosystem diversity.**



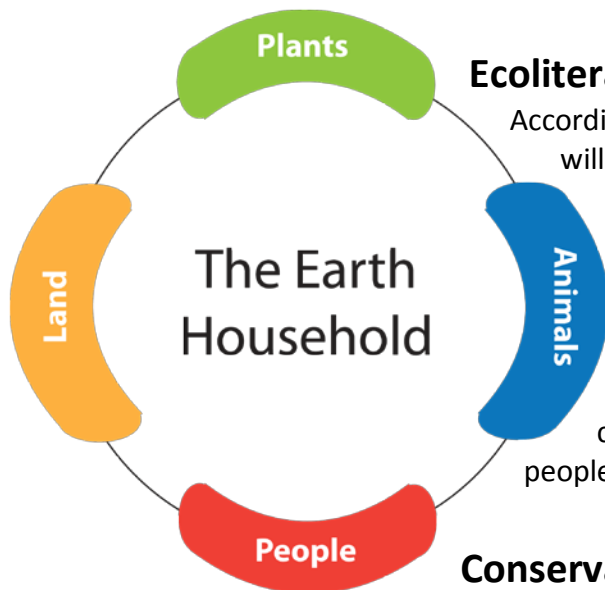
## Why we need Biodiversity

By encouraging and fostering biodiversity within our local environment we are helping to promote and nurture a balance between the natural systems of life. One way to consider biodiversity is to look at the land from the ground up. Layers become the key factor - The soil, soil covering, mulch, leaf litter, other ground features such as rocks, logs, places that hold water, ground covering plants, shrubs and under storey plants and trees ( Grant , 2003, p.6).

## Why is biodiversity essential in early childhood?

Research shows that children are more likely to care about the environment later in life if they have direct interaction with nature as part of their learning experience (Chawla, 2006). Linking land, water and biodiversity education programs with community projects and other outdoor experiences can give children firsthand experience of a variety of species, habitats and ecosystems. Children are also highly interested in plants and animals and enjoy finding out more about them. Some of children's first words relate to animals and family pets.

**Awareness of the natural environment should begin during the most important developmental stage – in the years before children start school... Learning about land, water and biodiversity throughout a child's education will help embed sustainable behaviours DSE, 2009. p.58 .**



## Ecoliteracy and Young Children

According to Capra 2008, "In the coming decades, the survival of humanity will depend on our ecological literacy – our ability to understand the basic principles of ecology and to live accordingly". This means that ecoliteracy must become a critical skill and part of education systems for everyone -politicians, professionals, and children. Ecology is derived from the Greek word *oikos* ("household") it is the science of relationships among the various members of the Earth Household. Ecological literacy creates an understanding of connections and interconnections between the earth household of people, animals, plants and the land.

## Conservation

The conservation of plants and animals is a key part of biodiversity and habitat destruction and feral animals are two of the many threats for flora and fauna in Australia. The tiny Honey Possum in the photo below is indigenous to Western Australia and introduced species such as cats or foxes would very quickly destroy this tiny marsupial. Understanding this connection enables children to appreciate that all human actions have an impact on other species and that they can also take action to protect plants and animals.



## Biodiversity concepts to explore

- Decay, scavenging, conservation, protection, hibernation, habitats and many more
- Making compost
- Germination of seeds and plant propagation
- Animal and plant categories
- Life and food cycles
- Prey, predators and camouflage
- Sensory exploration.

## Plants

- **Gardening with children** – Children can choose seeds or seedlings to plant.
- **Conduct a biodiversity audit** of the playspace. (Refer to Yarra Ranges web site).
- **Plant a diverse range of plants** including indigenous, sensory, large trees and dense shrubs. Consider native grasses in contrast to rubber matting and artificial grass?
- **Discuss plant and animal conservation** at staff and management meetings and include conservation into a sustainable education policy.
- **Use a flower press** to dry flowers and catalogue the different species.
- **Use a digital microscope** to examine plants, small minibeasts and pond creatures. Ensure they are returned to their habitats.



## Animals

- **Create a frog bog** like the one in this photo with a pot filled with rocks and water or use an old bath with a security door cover. (Note: a secure, protective cover is usually needed to adhere to regulations regarding bodies of water in early childhood services. However, this does not inhibit the creation of these important habitats for local frogs which are highly endangered and need particular attention).
- **Sponsor an endangered or local species** through wildlife organisations.
- **Join programs** like the Jane Goodall Institute,

Roots and Shoots organisation.

- **Branch shake** – shake a branch onto a white sheet and count how many different insects you can identify under a magnifying glass.
- **Environmental games** – eg: Bat, bat (from the Gould League book) representing sonar seeking of prey.
- **Habitat creations** – including making nesting boxes, planting indigenous gardens and using large flat rocks for lizard lounges.
- **Bird baths** are not only vital to birds but also a range of indigenous animals and insects.
- **Animal identification charts** are available from the Gould League and other wildlife organisations.

## People

- **Playspace design discussions** with the children to appreciate who they are sharing their space with eg: lizard lounges; minibeast mulch; small bird hideouts – needs and requirements of these wildlife species such as flowers for butterflies.
- **Explore KinderGardens for Wildlife** (Knox Council, Sustainability department, see website link below)
- **Composting, worm farms and veggie patches** – caps and badges for responsible people in charge of depositing scraps; planting and watering and weeding carefully watching for earthworms.
- Use **intentional teaching** (see Belonging, Becoming and Being Australian curriculum framework) to assist in children's ecoliteracy and knowledge.

- **Discovery Packs:** provide a set of back packs for children to become 'intrepid explorers'. In each pack, have a magnifying glass, binoculars, a clipboard with paper and pens for recording what they have discovered; a reference book on insects and another on bird watching; a small clear plastic container with magnified lid and a pastry brush for gently brushing an insect into the container for a short time of close observation; a laminated sheet of local insects, flora and other possible wildlife.
- Create and use **Social stories** to assist in teaching children how to conserve their local wildlife. For example, using photos of your own centre's outdoor playspace to make a book about how to respect and care for any potential wildlife you may have in your garden.

### The land

- **Sense of place** - Important to children in terms of their identity and sense of place attachment. Explore the landmarks of the local environment through excursions and/or photographic – both natural and man made.
- **Discuss conservation strategies** and ask questions about why children think we need to protect land, plants and animals.
- **Land diversity** – examine range of homes and habitats for people plants and animals. Play a matching game of - Who lives Where?



## Resources and Web Sites

**Backyard Buddies**- Foundation for National Parks and Wildlife. <http://www.backyardbuddies.net.au/index.html>

**Center for ecoliteracy** - <http://www.ecoliteracy.org/essays/new-facts-life>

Fact sheets and teacher's notes

<http://www.environment.nsw.gov.au/resources/education/BiodiversityTeachersGuide.pdf>

**Gould Group** – range of books and information about biodiversity. <http://www.gould.edu.au/>

**Honey possum information**, video clip and children's picture book. Felicity Bradshaw.

<http://www.honeypossum.com.au/>

**International Union for Conservation of Nature (IUCN)**. <http://www.iucn.org/>

**KinderGardens for Wildlife** program with useful early childhood information.

[http://www.knox.vic.gov.au/Page/Page.asp?Page\\_Id=2133&h=0](http://www.knox.vic.gov.au/Page/Page.asp?Page_Id=2133&h=0)

**Playspace audits** - Very helpful factsheets for school settings and early childhood services.

[http://www.yarraranges.vic.gov.au/Residents/Greener\\_Living/Learning\\_for\\_Sustainability/HabitAT\\_School\\_Census/Dry\\_Forest](http://www.yarraranges.vic.gov.au/Residents/Greener_Living/Learning_for_Sustainability/HabitAT_School_Census/Dry_Forest)

## References

Capra, F. (2008) *The New Facts of Life*. Center for Ecoliteracy. <http://www.ecoliteracy.org/essays/new-facts-life>

Chawla, L (2006) *Learning to Love the Natural World Enough to Protect it*. Barn nr. 2 2006:57-78.

Goleman, D. ( 2009) *Ecological Intelligence: Knowing the Hidden Impacts of What We Buy*. Allen Lane. Penguin group. Camberwell.

Grant, P. (2003) *Habitat Garden - attracting wildlife to your garden*. ABC Publisher: NSW, Australia

Miller, J. R. (2005) Biodiversity conservation and the extinction of experience. *TRENDS in Ecology and Evolution*. Vol. 20, No. 8. August, 2005

Suzuki, D & Vanderlinden, K. (2000) *You are the Earth*. St Leonards NSW. Allen & Unwin.

Tonkin, R. (2006) *Leaf litter. Exploring the mysteries of a hidden world*. HarperCollins Publishers: NSW, Australia

Department of Environment and conservation.(DEC) (2004) Biodiversity: It's everyone's business. [www.environment.nsw.gov.au](http://www.environment.nsw.gov.au)

Department of Primary Industries. Landlearn. (2008) Biodiversity Up Close. An audit of biodiversity in the school ground. Victoria.

Department of Sustainability and Environment ( 2009) *Securing Our Natural Future*. A white paper for land and biodiversity at a time of climate change. The State of Victoria. East Melbourne

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