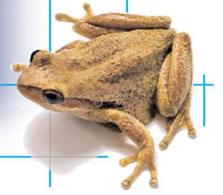




NRM Education

water biodiversity climate change food air waste transport purchasing



Biodiversity - Teachers' Notes plus Activities

Biodiversity is one of those words which have crept into our consciousness since the 1980s. Biodiversity is short for “biological diversity.”

Biodiversity is “***the variety of all living things, and the systems which connect them.***” This includes all the planet’s different plants, animals and micro organisms, plus the genetic information they contain and the ecosystems of which they are a part. It is the result of millions of years of evolution.

So why is biodiversity so important?

Everything in the natural world is connected. This means that everything we do as humans affects biodiversity, and biodiversity affects us. In the world of which we are a part, the more variety the better. This provides protection against things going wrong. Diverse ecosystems, and therefore diverse species and genes, make for a healthier, more resilient planet.

Biodiversity enhances an ecosystem’s ability to do these essential ecological processes:

- oxygen production
- form and build healthy soils
- filter water on its way to the sea
- pollinate crops and plants generally
- store and recycle nutrients
- resist feral invasion

A lessening of biodiversity in an ecosystem weakens the ability of that system to survive and perform the ecosystem services that we as humans benefit so much from.

Basically, there are three types of biodiversity: *species, ecosystem and genetic diversity.*

Species Diversity

Suggested student activity: **Unit of Work on “Birds”** Yr ¾ upwards.
Download this game/unit of work on www.nrmeducation.net.au

This includes every organism great and small – from amoebas to elephants – that currently exist, or have ever existed on our planet. This includes plants, fungi, insects, fish, reptiles & amphibians, birds and mammals, plus molluscs, worms, spiders, algae and other micro organisms. So far scientists have



identified more than 1.4 million living species, with millions more yet to be discovered!

Note: species' diversity also refers to the differences *within* species as well as the variety (total number) of species. For instance, ...

Ecosystem Diversity

Suggested student activity: outdoor game "**Ecosystems Rule, ok!**" Yr 3/4 upwards. Download this game at www.nrmeducation.net.au

An ecosystem is a community of organisms (living things) which depend upon each other for their existence. For example, you might expect to find kangaroos, or emus, or echidnas, in grassy woodland, but not in Antarctica, because these animals need the plants or bugs in the woodland, and conversely the plants need them: plants are tip-pruned by kangaroos, emus disperse and help germinate seed in their scats, and echidnas till the soil which also aids in germination of some seeds.

Examples of some local SA ecosystems are: woodland of the Mt Lofty Ranges, grasslands of the mid-North, mallee scrub, Port Adelaide mangroves, the Port Noarlunga reef, Murray River system, ponds, caves. On a more global scale, some examples are: oceans, the polar and Antarctic ice sheets, rainforests and deserts.

Genetic Diversity

Suggested student activity: "**The Brush-tailed Possum Game**" Yr 6/7
Download this game on www.nrmeducation.net.au

Genes are simply traits that we inherit from our parents and can pass on to our children, for example, traits such as hair colour, eye colour, curly or straight hair and whether you can curl your tongue and so on.

Genes are the basic units of life on Earth. They are responsible for both the similarities and the differences between organisms, eg the changes in colour and markings of birds within a particular species.

"Genetic diversity is the variety of genes within a species. Each species is made up of individuals that have their own particular genetic composition. This means a species may have different populations, each having different genetic compositions. To conserve genetic diversity, different populations of a species must be conserved."

Because our environment is constantly changing, we need a diverse range of genes to be able to adapt. Preserving variety within populations of species is essential for preserving the ability of that species to cope with environmental change. An organism's ability to adapt to environmental change will determine how well it survives in the long run. The greater the diversity of genes in a population, the greater the chances that some individuals will possess the genes needed to survive under conditions of environmental stress (such as climate change, drought, fire, famine, introduction of a new predator etc).

References for teachers

Notes on biodiversity, plus the Brush-tailed possum Game are available on the NRM Education website www.nrmeducation.net.au or alternatively on www.waterwatchadelaide.net.au

Nb the Brush-tailed possum game is adapted from an American website www.fieldmuseum.org and may only be used for educational purposes.

The Unit of Work on “Birds” is also available on www.nrmeducation.net.au or alternatively on www.waterwatchadelaide.net.au