

Student Factsheets

1. Plant layers and trees
2. Shrubs and ground covers
3. Leaf litter and rocks
4. Logs and tree hollows
5. Flowering plants and water

Habitat Facts: Plant layers and trees



Plant Layers

Layers of trees, shrubs and groundcovers are important because:

- Some animals only like to live in one layer.
- Some animals live in one layer while they feed in another.
- They allow animals to move from one layer to another layer safely.
- They can provide different kinds of food all year round such as flowers, seeds and leaves.
- They provide safer nesting environments.
- They help to keep each other healthy.

Did you know that Australian animals prefer to eat and live in Australian plants?



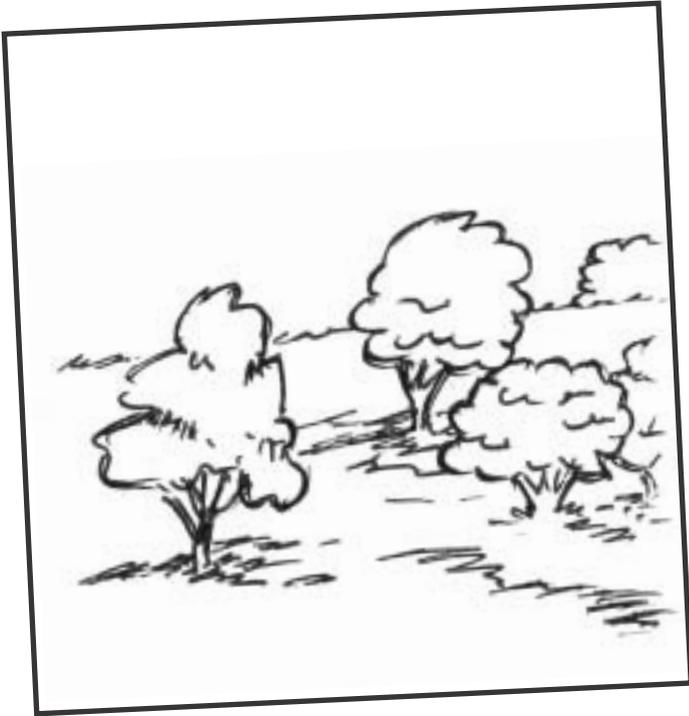
Tree Layer

Trees are important because they:

- Provide nest sites for mammals, birds, reptiles and frogs.
- Provide homes for invertebrates. Some birds, reptiles and mammals eat invertebrates for food.
- Grow flowers containing nectar. Some birds, invertebrates and mammals need nectar for food.
- Produce seeds, which provide food for birds.
- Provide safe places to hide from predators.
- Allow birds to check the ground for food.
- Provide hollows, which are used by many animals.

Did you know that most of the species of flowering plants in Australia are found nowhere else in the world?

Habitat Facts: Shrubs and ground covers



Shrub Layer

Shrubs are important because they:

- Provide nest sites for small mammals, birds, reptiles and frogs.
- Provide homes for invertebrates. Some birds, reptiles and mammals eat invertebrates for food.
- Grow flowers containing nectar. Some birds, invertebrates and mammals need nectar for food.
- Produce seeds, which are food for many animals.
- Provide safe places to hide from predators.
- Increase the health of trees.

Did you know that groups of shrubs growing closely together provide safer nesting sites than shrubs that are growing alone? Can you guess why?



Groundcover Layer

Groundcovers are important because they:

- Provide nest sites for invertebrates, small mammals, ground feeding birds, reptiles and frogs.
- Provide homes for invertebrates. Some birds, reptiles and mammals eat invertebrates for food.
- Produce seeds that provide food for many small birds.
- Provide safe places to hide from predators.
- Help to keep the ground moist.
- Increase the health of trees and shrubs.

Did you know that some types of ground cover plants such as native grasses are endangered in NSW?

Habitat Facts: Leaf litter and rocks



Leaf litter or mulch

Leaf litter or mulch is important because it:

- Provides nest sites for invertebrates, reptiles and frogs
- Provides homes for invertebrates. Some birds, reptiles and mammals eat invertebrates for food.
- Stops the soil from drying out.
- Stops the soil from washing away or being blown away in storms.

Did you know that as the leaf litter and mulch rots, it helps to feed the surrounding plants?



Rocks

Rocks are important because they:

- Provide nest sites for small mammals, reptiles and frogs.
- Provide homes for invertebrates. Some birds, reptiles and mammals eat invertebrates for food.
- Provide safe places to hide from predators.
- Protect animals from bad weather and fire.
- Reduce moisture loss from the soil.
- Stop soil from washing away or being blown away in storms.
- Create moist places for young plants to grow.

Did you know that some animals are endangered by the removal of rocks from the bush?

Habitat Facts: Logs and tree hollows

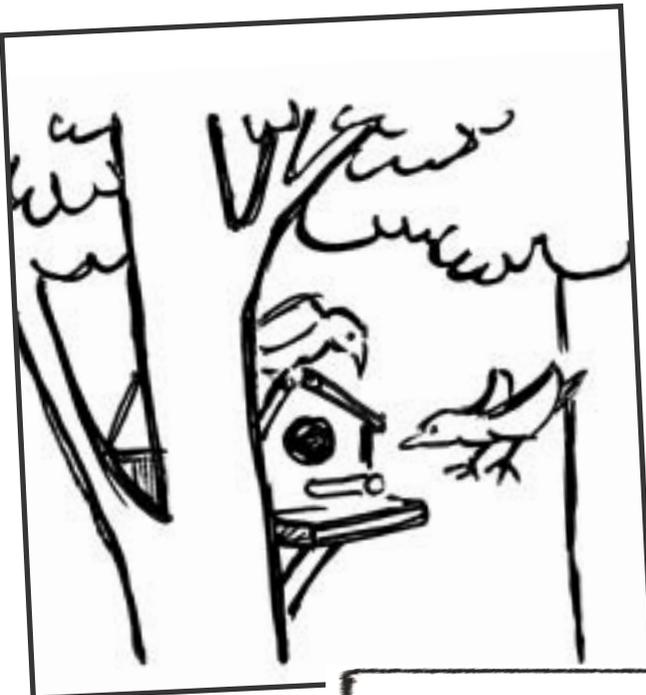


Logs

Logs are important because they:

- Provide nest sites for small mammals, ground feeding birds, reptiles and frogs.
- Provide homes for invertebrates. Some birds, reptiles and mammals eat invertebrates for food.
- Provide a perch from which birds and reptiles can hunt.
- Provide safe places to hide from predators.
- Protect animals from bad weather.
- Provide moist places for young plants to grow.

Did you know 20% of our native mammals need logs to nest in?



Tree hollows or nest boxes

Tree hollows or nest boxes are important because they:

- Provide nest sites for mammals, birds and reptiles.
- Provide homes for invertebrates. Some birds, reptiles and mammals eat invertebrates for food.
- Provide nest sites for different animals at different times of the year.
- Provide safe places to hide from predators.
- Protect animals from bad weather.

Did you know that it takes from 70 to 300 years for a tree to grow a tree hollow?

Habitat Facts: Flowering plants and water

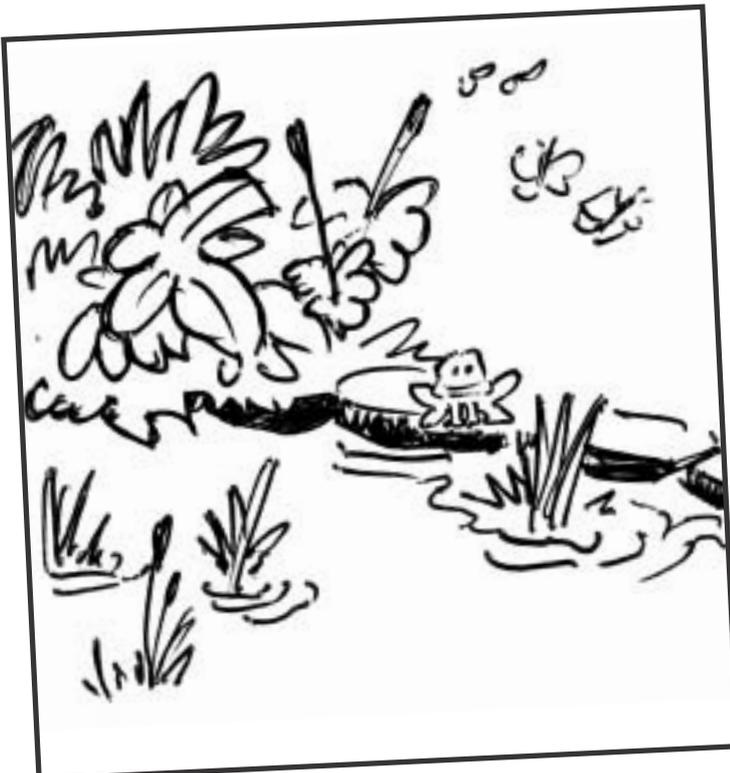


Flowering plants

Flowering plants are important because they:

- Provide nectar and pollen for invertebrates, small mammals and birds to eat.
- Develop seeds that are food for many invertebrates, mammals and birds.

Did you know it's best to have a garden with plants that flower at different times throughout the year? This helps to ensure there is always nectar and pollen available for the animals that need it?



Ponds, Creeks and Water

Ponds, creeks and water are important because they:

- Provide nest sites for invertebrates, frogs, and fish.
- Provide water for animals to drink.
- Provide moisture to keep plants alive.
- Provide moist places for young plants to grow.

T e a c h e r ' s N o t e s

Answers to *Web of Life* worksheet

Types of ecosystems

Invertebrate survey methods

Food chains and food webs

Contacts and Websites

Answers to Web of Life worksheet

[This sheet should be a copy of the cutting out one with the answers written in..]

Q1. Apart from animals Montague Island National Park also protects...?

A. *A beautiful lighthouse made of granite.*

2. What is the most important thing about Montague Island?

The abundance and diversity of wildlife.

3. What birds are you likely to find on Montague island?

Sea birds, especially shearwaters and crested-terns

4. What is so special about the penguins on Montague Island?

It is the second largest colony of little penguins in the world

5. What country do some of the birds on Montague Island come from?

Siberia. A round trip of 20,000 kms

6. What does 'web of life' mean?

The way in which all living things depend on one another for survival.

7. Where are the humpback whales heading?

Antarctica

8. Biodiversity is short for?

Biological diversity

9. What does biodiversity mean?

The variety of plant and animal species.

10. How many species of plants and animals can you find in Australia?

More than one million

11. Why is Australia called 'mega-diverse'?

Because there are so many different species

12. What is special about our mammals and frogs?

They are found nowhere else on the planet.

13. Why is Australian biodiversity unique?

Because most of our frogs and mammals are found nowhere else on Earth.

14. Why is biodiversity important?

It provides us with all the things we need to survive clean water, healthy soils, food, medicine, clothing and building materials.

15. What types of clothing does biodiversity provide?

Wool, from sheep, cotton and linen from plants

(NB not specifically stated on video)

16. What kinds of food does biodiversity provide?

All food comes from biodiversity
(NB not specifically stated on video)

17. What are some of the building materials we get from biodiversity?

Timber and wood products, rubber, some types of paint
(NB not specifically stated on video)

18. Why is biodiversity important to Aboriginal people?

Plays a role in their spiritual beliefs and it has influenced the way they manage the land.

19. How can we keep our environment healthy?

One way is through a network of national parks

20. What kinds of environments do national parks protect?

Deserts mountains, rainforests, the coast and everything in between

21. What is not allowed in protected natural environments?

Activities that harm native plants, animals and their homes such as building towns, hunting, collecting plants, cutting down trees and dumping pollution.

22. What are some of the things that people do in natural environments?

Picnics, walking, relaxing, appreciating and studying nature

23. Why do students visit natural environments?

To study landforms and biodiversity

24. What lives in natural environments?

Plants and animals such as the corroboree frog, pygmy-possum, glossy black cockatoo

25. Where can you find biodiversity?

National parks, backyard, school yard, on a farm, in a creek, just about anywhere

26. How has our biodiversity been threatened?

Clearing of land; feral pests and weeds, overgrazing by farm animals

27. How many animals have we lost in the past 200 years?

40 mammal species

28. How many plants have we lost in the past 200 years?

100 species

29. How can people help biodiversity?

Careful use of land, rivers and the sea; planting trees

Types of ecosystems

This unit deals with seven general types of natural ecosystems.

Semi-arid

These ecosystems are found in western NSW and are characterised by low rainfall and high daytime temperatures that can drop substantially overnight. The plant species in these areas, including saltbush, mulga and river redgums, are drought tolerant and have adapted to poor soil and drainage.

Grassland

Grassy ecosystems are dominated by native grasses, often interspersed with native wildflowers. They may contain widely spaced tree cover or shrubs, creating a grassy woodland.

Wetland

Wetlands are found on land that is temporarily or permanently covered by fresh, brackish or saline water. Wetlands include rivers, streams, creeks, lakes, dams and ponds, billabong, swamps, marshes, bogs, fens, lagoons, floodplains, estuaries and mangrove swamps.

Woodland & Forest

Woodlands and forests are areas with trees, shrubs and grassy areas. Trees in woodlands and forests grow far enough apart to allow light to enter through the canopy to support a diverse shrub and groundcover layer. Woodlands and forests can be divided into dry sclerophyll and wet sclerophyll. The latter grows on moister soil and has taller and more closely spaced trees, and a less obvious shrub layer.

Alpine

Alpine ecosystems occur in NSW at altitudes over 1800 metres where snow covers the ground for a substantial part of the year and it is too cold for trees to grow. The sub-alpine area immediately below this is distinguished by the predominance of snow gums.

Rainforest

Rainforest ecosystems grow where there is high rainfall and high soil moisture content. They have a closed canopy in which the interlocking branches and leaves at the top of tall trees completely shade the forest floor.

Coastal

Coastal ecosystems are found where the sea meets the land. They may involve rugged eroded headlands, sand dunes, sandy beaches, saltmarsh, mangrove mud flats, coastal heath, seagrass beds, rocky shores, beaches and estuaries. They are influenced by the tides, waves, and wind.

Invertebrate survey methods

Listed below are examples of invertebrate survey methods. Pick and choose the ones you are comfortable with or have equipment for. You may even consider devoting entire lessons to one or two survey techniques. All collected invertebrates must be returned to area they were found upon completion of the activity.

Terrestrial Animals

Looking for Leaf Litter Animals

This method is great for collecting invertebrates that can be found among sticks and leaves on the ground (leaf litter). You will need a tote tray, a colander, a trowel and a paintbrush and some sort of collection container.

1. Students scrape leaf litter into the colander.
2. Hold the colander over the tote tray and shake. Dirt and small invertebrates will fall out of the holes in the colander and will be deposited into the tote tray for collection. Collect the invertebrates by brushing into collection containers.
3. Empty the tote tray.
4. Gently tip some of the remaining leaf litter into the tote tray, move leaves around with the paint brush looking for invertebrates, collect and then repeat until all the leaves have been used.

Hoop Search

Hoops help focus attention on one particular spot, which is particularly useful when examining the ground cover layer. Using a paint brush students can carefully examine plants and leaf litter in the hoop for the presence of invertebrates. Collect any animals found using a paint brush and collection container.

Sweep Nets

Sweep nets are used to capture invertebrates that are airborne or live in or near the ground cover layer of plants. They can also be used in shrubs and trees if the foliage and branches are soft. Captured animals are transferred from the net into a collection container.

Finding Animals Hidden in Trees

To dislodge hidden invertebrates from a branch conduct a tree shake. This requires students to hold a sheet/tarp/plastic under a branch while another person shakes the branch. Any invertebrates on the branch should be dislodged and fall onto the sheet. These can be collected by brushing the animals into a collection container.

Aquatic Animals

Dip nets

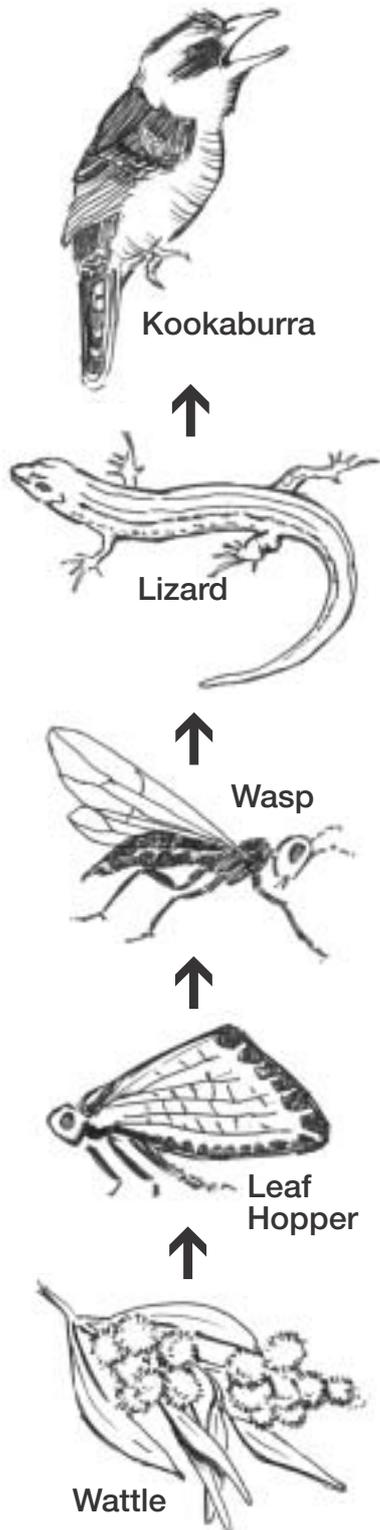
Aquatic animals live in many different parts of a creek or pond. Some live on the surface, some live on the bottom while others live in vegetation at the side of a waterway. When looking for aquatic animals it's important to check in as many of these different areas as possible. Use a dip net to sample in these different environments. Transfer any animals found from the net to an icecream container using a paintbrush.

The 'bugasaurus explorus' website can assist with aquatic animal identification www.bugsurvey.nsw.gov.au.

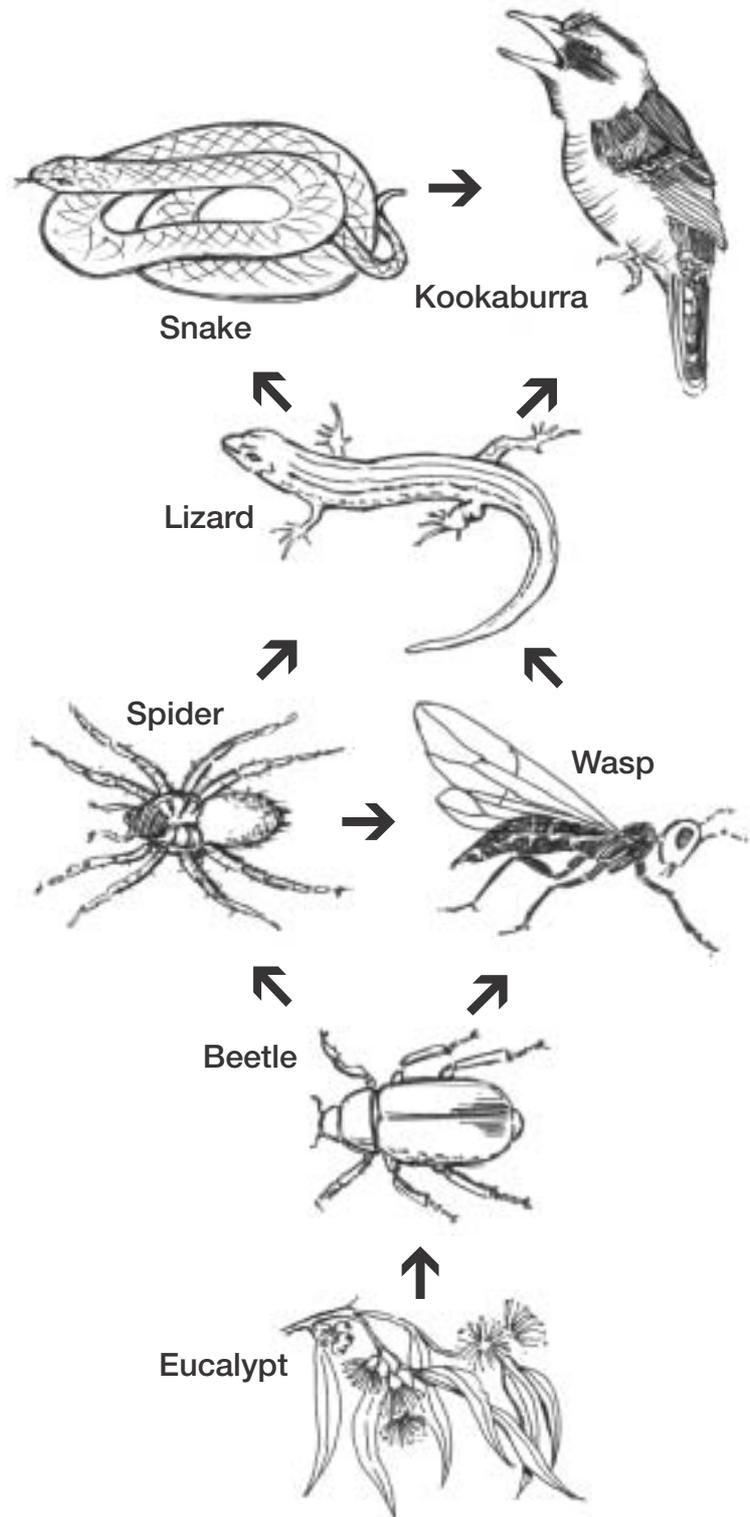
The presence or absence of certain types of aquatic animals will provide information on the health of the creek as well. The Department of Land and water conservation conducts the NSW waterbug survey twice a year in October and March. You can participate in this survey at any of these times. Sydney Water Streamwatch can also assist you with water bug surveys.

Food Chains and Webs

FOOD CHAIN



FOOD WEB



CONTACT DETAILS FOR VARIOUS ORGANISATIONS

NSW National Parks and Wildlife Service

A variety of guide books, posters and maps are available through the National Parks and Wildlife Service Information Centre, Hurstville, or your local National Parks and Wildlife office.

For information on national parks contact the National Parks Centre
102 George Street, The Rocks, Ph 1300 361 967
email: info@npws.nsw.gov.au
website: www.nationalparks.nsw.gov.au

NSW Department of Land and Water Conservation

Ph: 02 9228 6111
email: infocentre@dlwc.nsw.gov.au
website: www.dlwc.nsw.gov.au

Sydney Water Streamwatch

Ph: 02 9952 0358
website: www.streamwatch.org.au

State Parks

website: www.stateparks.nsw.gov.au

State Forests of NSW

Cumberland State Forest Studies Centre
Ph: 02 9871 0050
email: cumberland@sf.nsw.gov.au
website: www.forest.nsw.gov.au

NSW Aboriginal Land Council

contact details for regional land councils can be found at: www.alc.org.au/about/organisation/RALCS/RALCS.html

Environmental Education Centres, NSW

Department of Education and Training
Information on each environmental education and zoo education centre can be found at:
www.curriculumsupport.nsw.edu.au/enviroed/index.cfm or in DET directories.

Environment Australia

(manages commonwealth national parks)
www.ea.gov.au/parks/commonwealth/index.html

Royal Botanic Gardens

Ph: 02 9231 8134
website: www.rbgsyd.nsw.gov.au

WEBSITES

General resources:

NSW Board of Studies

resources list for 'State and national parks' unit
www.bosnswk6.nsw.edu.au/hsie/resourcelist/k6hsie_s2_nparks.html

Gould League

www.gould.edu.au

Animal factsheets:

Australian Museum – Wildlife of Sydney
wildlife.faunanet.gov.au/index.html

Australian Museum general factsheets

www.amonline.net.au/factsheets/index.htm

Bugasaurus explorus

www.bugsurvey.nsw.gov.au

NPWS – wildlife fact sheets

www.npws.nsw.gov.au/wildlife/factsheets/index.html

Department of Land and Water Conservation - wetlands

www.dlwc.nsw.gov.au/care/wetlands/facts/paa.html

Backyard Buddies

www.npws.nsw.gov.au/backyardbuddies/meet_your_buddies.html

Threatened species information

Community Biodiversity Network

www.nccnsw.org.au/member/cbn/projects/education-centre/index.html

Environment Australia –

threatened species fact sheets

www.ea.gov.au/biodiversity/threatened/information/factsheets/index.html

NPWS – threatened species profiles

www.npws.nsw.gov.au/wildlife/threatened.htm#profiles

Threatened Species Network – factsheets

www.wwf.org.au/default.asp?p=../tsn/index.htm

Biodiversity

NSW Environment Protection Authority –

biodiversity page

www.epa.nsw.gov.au/envirom/biodiversity.htm

Australian Museum – biodiversity page

www.austmus.gov.au/biodiversity/

GLOSSARY

amphibian – an animal that belongs to the class of vertebrates that includes frogs and salamanders. They lay eggs in water have a larval tadpole stage then metamorphose into a four-legged adult.

aquatic – living or growing in water.

arboreal – living in or among trees.

biodiversity – the variety of all living things on earth.

Biodiversity Strategy – the NSW Biodiversity Strategy is a framework for coordinating and integrating the efforts of the Government and the community to protect and conserve the biodiversity of NSW.

bird – a warm-blooded animal with feathers and forelimbs modified to form wings.

conservation – the preservation of culturally and scientifically significant natural areas.

diurnal – active during the day.

ecosystem – a community of plants and animals interacting with one another and the surrounding environment.

ecosystem diversity – the many different kinds of environment, including the many different species adapted to live in them.

endangered – at risk of becoming extinct.

environment – the combination of all the conditions that influence the life of an individual or population: the natural environment; the built environment; and, the social cultural environment.

erosion – the cracking and wearing away of rock and soil by the weather.

evolution – continuous genetic change of species adapting to their environment.

exoskeleton – an external protective covering of an animal, as in a shell.

extinct – a species with no living representative.

fauna – animals

feral – a plant or animal that is a pest.

fish – a cold blooded aquatic vertebrate animal that breathes through its gills.

flora – plants

food chain – a ‘chain’ of organisms which depend on each other in their feeding habits (plants are eaten by animals and then other animals eat them).

food web – a series of interrelated food chains.

genetic diversity – the diversity of genes within and across all species.

habitat – the place where a plant or animal naturally lives or grows.

invertebrate – an animal that doesn’t have a backbone.

landforms – the features that make up the surface of the earth, such as mountains, valleys, plains, rivers, canyons.

mammal – a warm blooded animal with fur or hair, that suckles its young on milk produced in its mammary glands.

megadiverse – having relatively high biodiversity.

native – environments, plants and animals that are original inhabitants in an area.

nocturnal – active during the night.

pest – a plant or animal that is troublesome, destructive and a nuisance.

population – the total number of people, or animals, or plants living in a particular area.

predation – the hunting, or preying, of one animal upon another.

remnant vegetation – clumps of native vegetation that remain standing after land clearing for agriculture and urbanisation.

reptiles – cold blooded vertebrate animals including lizards, snakes, turtles and crocodiles.

species – a distinct sort or kind of plant or animal, having a unique set of common characteristics.

species diversity – the variety of species.

terrestrial – of or belonging to the land.

threatened species – a plant or animal that is at risk of becoming extinct.

Threatened Species Conservation Act – a law that protects biodiversity and aims to prevent extinction of threatened species by protecting them and controlling processes that threaten them.

urban – of or related to living environments of a town or city.

vulnerable species – a threatened species that is at lower risk of extinction than an endangered species.

weeds – a plant that grows in the wrong place and is a nuisance.



