Species in danger

Every living thing depends on other species of living things in one way or another. Humans, for example, depend on plants and animals for food, shelter and medicines. Humans even need bacteria in their bodies to stay healthy. In fact, every organism is needed to keep the Earth's ecosystems healthy. This means we need to look after all organisms. Without healthy ecosystems, no organisms would be able to survive.

Living on the edge

Over 140 native Australian species have become extinct in the last 200 years. Many more are endangered. An organism is an **endangered species** when only a very small population is left alive. This means that there is a risk that the organism will become extinct. **Extinction** occurs when the last organism of a species dies. The Tasmanian tiger is extinct. The powerful owl, bilby, humpback whale and the corroboree frog are examples of endangered species.

Animals become endangered or extinct for many reasons, including:

- loss of **habitat** and land clearing
- **pollution**
- competition against other introduced species, such as sheep
- being **prey** to introduced species, like foxes and cats
- natural disasters such as large volcanic eruptions or asteroid impact with Earth.

Conservation

Conservation is the protection and responsible use of our natural resources and ecosystems. It involves the following actions:

- reducing damage to the environment by making less **waste** and pollution
- setting aside areas to protect animals and plants. These include national parks, state forests, and even an area in your own backyard.
- helping animals and plants that are in danger of extinction. This often occurs in zoos but also occurs in the wild (see 'How it Works' at right).
- fixing up damage done in the past
- raising awareness about the importance of healthy ecosystems.

The bilby has become endangered due to **predators** like foxes and cats.

HOW IT WORKS

Conservation in action — the southern corroboree frog

The southern corroboree frog is found only in the Snowy Mountains in New South Wales. There is just a small number of the frogs left, which means that it is an endangered species. It is not known exactly what has caused this decline in frog numbers. Possible reasons are disease, drought and loss of habitat due to construction of roads, ski resorts and other development, hydro-electric dams, pollution and four-wheel driving. The southern corroboree frog relies on cold temperatures to survive and, thus, may be affected by global warming and climate change.

Go to worksheet 8.4:
Friend or foe?

Finding the habitat

The boggy, treeless areas on the high plains are the habitat of the southern corroboree frog. A conservation team can search these areas for the frog by listening for its call. The call sounds like the noise made when a finger is run over a wet balloon.

Finding the frogs

Once a breeding site has been found, the conservation team members listen carefully and mark the exact spot from where the frogs are calling. This is the place where the eggs will be found. The team members then install a small enclosure around the site.

Collecting the eggs

The frogs lay eggs in a special mossy nest. The male frog stays with the eggs as they develop. The conservation team members remove some of the eggs from the nest and take them to the Amphibian Research Centre in Melbourne to be cared for. Special water tanks are set up to help keep the remaining eggs moist, in case of drought. The conservation team's efforts in caring for the eggs are to help ensure the survival of this species.

Increasing survival

The eggs have a much better chance of survival in captivity. They are hatched and the tadpoles are cared for until they are ready to change into frogs.

Release

The tadpoles are released back into the habitat at the same spot that they were taken from. It is hoped that more frogs will survive to be adults.

Activities

REMEMBER

1. What is an endangered species?
2. What does extinction mean?
3. Give an example of an endangered species and an extinct species.
4. What does conservation mean?
5. List three things that conservation involves.
6. How do zoos help in conservation?
7. What has caused the southern corroboree frog to become endangered?

THINK

8. How does the breeding program aim to help the southern corroboree frog?
9. As well as caring for the eggs, how does the team help the southern corroboree frogs?
10. If the southern corroboree frog were to become extinct, what effect might this have on the ecosystem that it lives in?
11. Frogs are often called 'environmental indicators'. What do you think this means?

ACT: CITIZENSHIP

12. Design a conservation project in your school. It could be planting trees or a garden to create a habitat, building nest boxes, making a frog pond or reducing litter and pollution.

learning

I CAN:

- ☐ explain what causes species to become endangered or extinct
- ☐ explain why conservation is important
- ☐ describe what practising conservation involves.

Ecological footprint

How many Earths would it take to support everyone in the world if they all lived wastefully? Think of all the things you use — food, paper, plastic, metals and energy. Don't forget about all the **waste** that you produce. Waste must be cleaned up, recycled or disposed of. If everyone lived a wasteful lifestyle, we would need many Earths.

What is an ecological footprint?

The amount of space that is needed to keep living the way we do is called our **ecological footprint** (or eco-footprint). The more resources we use and the more waste we produce, the more space we need. It is calculated that every person in Australia needs about 17 acres of space. That is about the same space that would be needed for 112 Olympic-sized swimming pools. But don't forget that we also need to leave space for other animals and plants to live. This means that in Australia, we use many resources and make a large amount of waste. Our eco-footprint is large.

Take control

Begin thinking about simple ways to reduce your impact on the Earth. If you changed some of your habits you could reduce the size of your eco-footprint. Each of us can make a difference. A small change in behaviour can reduce our eco-footprint. This leaves more space for other animals and plants.

A personal environmental-impact assessment

Everything we do impacts on the environment in some way. Complete the following survey to see how your impact on the environment compares with that of other people in your class.

Circle the response that most closely represents your lifestyle.

R = rarely S = sometimes U = usually

Food consumption and packaging

When shopping, I take my own bags.	U S R
My family grows some of its own food.	U S R
I compost food waste.	U S R
My family buys organic foods.	U S R
I avoid snacks that have a lot of packaging.	U S R
I eat at fast-food restaurants that use a lot of packaging.	R S U

Household energy and supplies

I turn off electric lights and appliances when no-one is in the room.	U S R
I decide what I want from the refrigerator before opening it.	U S R
I keep windows and doors closed while heating or cooling my house.	U S R
I avoid using a clothes dryer.	U S R
In my home we have energy-saving light bulbs.	U S R
I use airconditioning in summer.	R S U
I use facial tissues.	R S U

Transport

I regularly walk or ride a bicycle to school.	U S R

Recycling and reusing

I recycle aluminium, paper, glass, plastic bottles and steel cans.	U	S	R
I use both sides of a sheet of paper.	U	S	R
If I am out somewhere and purchase a drink, I carry the container home to recycle it if there is no recycling bin available.	U	S	R
I have a reusable lunch box.	U	S	R
I use plastic shopping bags.	R	S	U

Water

I limit my showers to five minutes or less.	U	S	R
I have a water-saving shower head.	U	S	R
I have the tap turned off when brushing my teeth.	U	S	R
I water the garden after dark.	U	S	R
My house has access to a rainwater tank.	U	S	R
I use scented, coloured or pictured toilet paper.	R	S	U

The environment

I treat living things with respect.	U	S	R
I discuss environmental issues with my friends.	U	S	R
I plant some trees every year.	U	S	R
I make an effort to improve my environmental habits.	U	S	R

Scoring

Add up the number of points for each section. Circles in the left column are worth 0, in the middle column are worth 2 and in the right column are worth 5.

Personal environmental-impact score: _____

A high score means you use more resources, produce more waste and have a greater impact on the Earth. Your eco-footprint would be large. Compare your score with other class members and attempt to work out why your score is higher or lower than other people's scores.

Activities

REMEMBER

1. In your own words, describe an ecological footprint.

THINK

2. Consider the following activities: driving a car, mulching the garden, walking to school, installing a solar hot-water heater, growing vegetables, flying to a holiday and leaving the heating on when going out.
   (a) Divide the list into activities that would increase or decrease your eco-footprint.
   (b) Explain why those activities in the decrease group reduce your eco-footprint.
3. Do Australians use too many resources, while some other people do not get enough? Give an example.
4. Look at the cartoon on the facing page.
   (a) Make a list of things in the picture that would increase an eco-footprint.
   (b) Which things would decrease an eco-footprint?
   (c) Explain why the things you have listed in part (a) increase the eco-footprint.

ACT: CITIZENSHIP

5. Choose a simple change that you can make to reduce your environmental impact. For example, starting a compost heap, walking to school, reusing plastic bags at the supermarket, or using a reuseable lunchbox. Write a contract to say what you will do. Get a friend to sign it as a witness. Try to make the change part of your life. After a week, answer the following questions.
   (a) Was the change successful? Why?
   (b) Do you feel good about the change you have made? Why?

ICT

6. Calculate your ecological footprint and see exactly how many Earths it would take to support your lifestyle. Go to www.jaconline.com.au/sciencealivevic/salevel5 and click on the Ecological Footprint link for help with this.

learning

I CAN:

- ☐ describe an ecological footprint
- ☐ decide what activities have less impact on the environment
- ☐ describe activities that would increase or decrease an ecological footprint.