

# BIODIVERSITY

*Nature's Variety, Our Heritage, Our Future*



*A guide to using and protecting Australia's Biodiversity*

# Australia's report card on biodiversity

*"What we are doing now to biodiversity is like burning Renaissance masterpieces to cook dinner."*

Professor EO Wilson,  
Scientist and writer

Biodiversity is the web of life – the thin skin of living things, including us, which inhabits the surface of planet Earth. Biodiversity includes humans, animals, plants, fungi and microbes - from dugongs to daisies, toadstools to termites. This variety of life has evolved over hundreds of millions of years. We don't know how many species live on Earth – scientists have described about 1.8 million. But that's just a drop in the ocean compared to the estimated 10 to 100 million which probably exist.

## More than a meteor

Yet what has taken millions of years to evolve is now being destroyed at a breathtaking rate. Professor Harry Recher, Edith Cowan University, estimated we could be losing eight species an hour, or

70,000 a year world-wide. That's a faster rate of extinction than at any time since the dinosaurs died out 65 million years ago. Yet plants and animals today are not dying out because of a maverick meteorite. Rather, it is the actions of our own species, clearing natural habitats, spreading pest plants and animals, and dumping pollutants into the rivers, oceans and atmosphere.

A group of independent Australian experts recently identified biodiversity loss as "perhaps the most serious environmental problem in Australia today" and "a cause for national concern". They said species in all major groups of plants and animals are at risk (*Australia: State of the Environment 1996*).

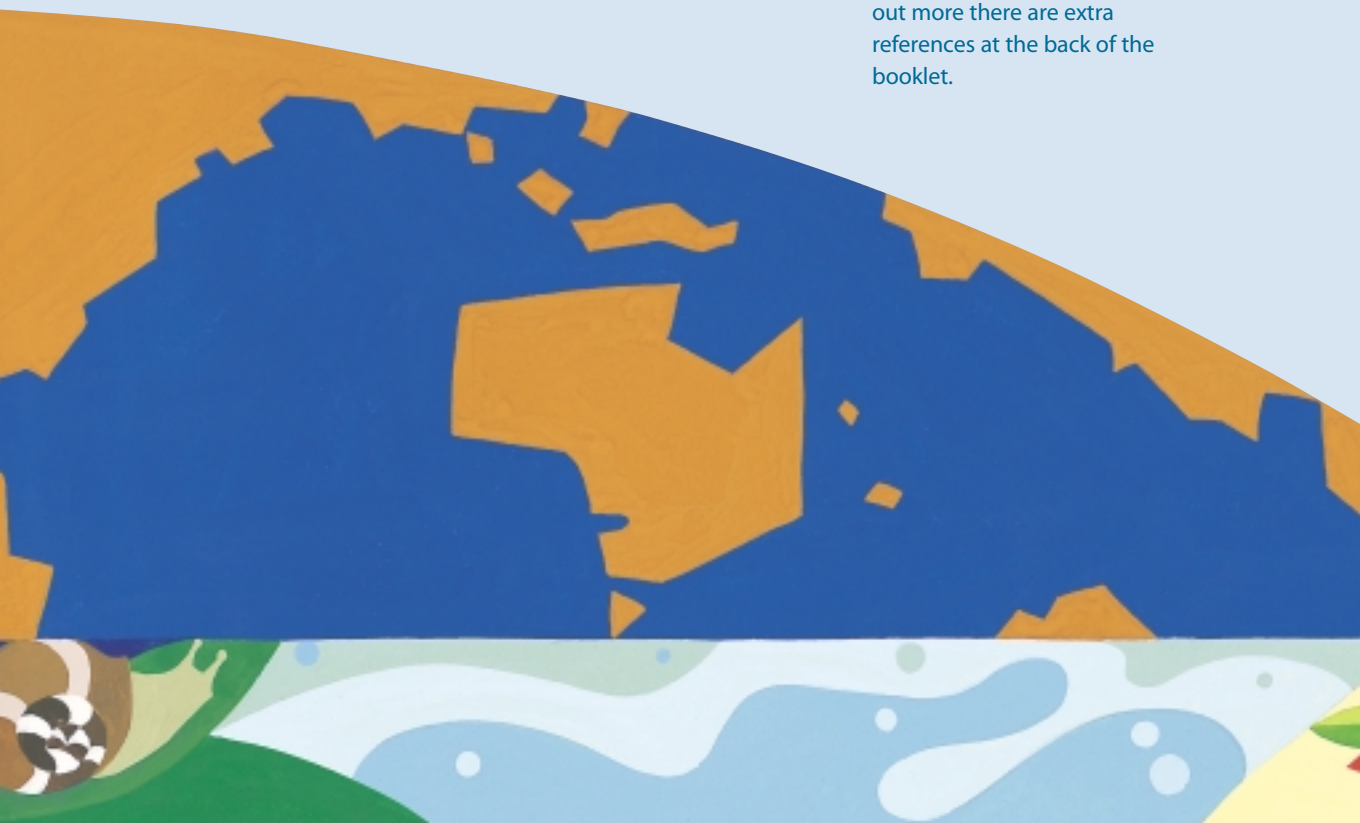
## Losses

Since European settlement in Australia, 10 out of 144 species of marsupials have become extinct with unknown numbers of invertebrates and lower order creatures. We have lost three species of emu - the King Island, Kangaroo Island and mainland Tasmanian emus are all extinct.

Today, more than 100 mammal species are endangered, vulnerable or potentially vulnerable. Forty per cent of Australia's forests are gone, including 75 per cent of our rainforests, leaving many forest ecosystems also endangered.

Biodiversity is our living heritage, providing us with food, clothing, housing, clean air and water, inspiration and spiritual renewal. It's an integral part of our lives, and it's easy to see that protecting biodiversity today will pay off for the future health of human society, our economy and all life on earth. Yet how can we benefit from it without destroying it? As we look around we know that biodiversity is under threat, yet often it seems there is little any individual can do. We can become frustrated and feel helpless that the problem is just too big to tackle.

This book describes the benefits which biodiversity brings to every part of our lives. The middle four pages provide some quick and simple things which all of us – even city dwellers – can do to help protect biodiversity for ourselves and for our children. For those interested in finding out more there are extra references at the back of the booklet.



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# Biodiversity

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*"The majority of economists have never been taught that ecosystems provide humanity with an absolutely indispensable array of services..."*

Professor Paul Ehrlich,  
Scientist and writer

Biodiversity - the variety of all living things on Earth - is all around us and looking after us. Even in cities biodiversity is still an integral part of life. We may not see it but biodiversity helps keep our water drinkable, our air breathable, our soils fertile for growing food, and our seas clean.

We used to think of plants and animals as just "out there somewhere", something to inspire us and renew our spirits on the occasional bushwalk or drive through the country. But we are now realising that we rely on biodiversity in every part of our lives:

- Our food and medicines come from biodiversity.
- Native birds, bats and insects pollinate our gardens.
- We breathe the oxygen produced by trees.
- Trees take up the carbon dioxide produced by our factories.
- Plants keep the air fresh in our offices.
- Tiny bugs break down our garbage into fertile soil.
- Our crops are protected from pests by foraging birds and insects.
- Marine organisms clean up the sewage we put into the oceans.





# We live in it

## Biodiversity cleans up Australia

Some ecosystems, such as wetlands, actually remove pollution from dirty water. As the water plants grow, they extract nutrients and heavy metals from sewage and produce oxygen for other living things to breathe. New housing estates have established artificial wetlands to break down sewage rather than discharging it to the sea.

Biodiversity also acts as a free, natural water purifier. For example, forests do a great job of trapping silt and keep salty water well below ground level. The high cost of building water purification plants has led some catchment planners to conclude that forests are more valuable left standing in catchments than sold off as timber.

## People making a difference

Extensive clearing in the Broughton Catchment, 180km north of Adelaide, has left a legacy of spreading salinity and soil erosion. Local water quality has suffered. Greening Australia together with the clothing company Esprit de Corps and local farmers created rural-urban links to establish a plant nursery. Here local wattles and other natives are grown for replanting in the catchment. Early results suggest that revegetation of the denuded catchment with 7,500 plants has reduced soil loss, slowed salinisation and increased habitat and biodiversity in the area.

**Greening Australia**  
[www.greeningaustralia.org.au](http://www.greeningaustralia.org.au)



# Biodiversity at

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*"If we forget that packaged eggs or hamburger came from animals, a cotton shirt from a plant, a wooden chair from a tree, then we have lost that connection with nature."*

Professor David Suzuki,  
Geneticist and writer

## Bushfood goes global

The fledgling Australian bushfoods industry is now exploring new ingredients based on Australia's native plant and animal biodiversity, gathered and prepared for thousands of years by Indigenous Australians.

Tangy quandongs and buttery macadamia nuts (excellent in icecream) come from the rainforests, aromatic lemon myrtle from our woodlands, pepperleaf and berries (great for flavouring fish and

kangaroo) from the Southern Highlands and spicy bush tomatoes from the desert, to mention just a few. Who knows what delicacies still wait to be discovered in the Australian landscape?

## Pest-busters

Everything we eat today is descended from a wild plant or animal. Most have long since left their wild past behind, including the ability to withstand pressure from diseases, frosts and drought. Global warming and other threatening processes, however, are putting more pressure on crops. Our food supplies will rely on a regular infusion of wild genes in future to keep crops hardy and disease-free.

Here in Australia, we are able to produce enough bread to feed ourselves, thanks to genes taken from wheat plants that still grow in the wild. Genes from the native Middle Eastern wheat plants *Agropyron elongatum* and *Aegilops unbellulata* were introduced into three Australian wheat varieties. This has given our wheat resistance to the devastating diseases caused by leaf and stem rust viruses. We can't make these genes



# the dinner table

in a laboratory – they are the result of millions of years of evolution and adaptation to the environment.

## Sweet rewards

Other genes taken from a wild grass native to South-East Asia called *Saccharum spontaneum* have been used to enhance sugarcane crops. In the 1920s a mystery disease almost wiped out sugarcane but the native genes gave the sugarcane resistance to the disease – and also doubled the amount of sugar that the plant could yield.

## Dollars from genes

One of the great benefits of protecting biodiversity is that it provides a pool of genes to improve our crops. Wild genes can provide resistance to disease, improve production and protect against long-term changes in temperatures and rainfall. In 1980 alone, the United States Department of Agriculture estimated that wild genes increased agricultural profits by US \$1 billion.

Everything we eat has a great genetic tradition. A typical roast lamb dinner is the pinnacle of thousands of years of careful breeding and selection to create a perfect meal.

## People making a difference

In Kempsey, in northern NSW, the Djigay Student Association has been working on a Traditional Food Tree Park where edible food plants from around Australia are being grown. A computer database is being put together which will include scientific and common names as well as the Aboriginal names for food plants and their traditional uses. Information will also describe processing and cultivation details and where possible, how the plant use is important to both past and present Aboriginal culture. The park is supported by local Aboriginal communities and is already achieving modest successes with local tour companies including it on their itineraries, and bushfood plants offered for sale.

**The National Association for Sustainable Agriculture Australia**  
[www.nasaa.com.au](http://www.nasaa.com.au)





# Biodiversity

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*"Ironically, it is often not the big and beautiful creatures but the ugly and less dramatic ones we need the most."*

Douglas Adams,  
Novelist

## Nature's drugs

A quick look in any bathroom cabinet will reveal many medicines that rely on biodiversity. Everything from aspirins to antibiotics to Eucalyptus oil were originally derived from living organisms.

Biodiversity not only keeps our ecosystems – and us – healthy, it also provides an extraordinary range of useful substances for fighting human diseases. Aspirin, for example, is based on a chemical from the willow tree. Morphine comes from opium poppies. Quinine, used for 300 years for treating malaria, is made from the bark of the yellow cinchona plant.

Over 21,000 plants around the world have reported medical uses. World-wide sales from drugs derived from plants are worth about US\$40 billion a year.

## The future of healing

Australian researchers are today working on a huge range of potential medicines based on native plants and animals. While the future market for some of Australia's traditional exports looks doubtful, there is great potential for a multi-million dollar industry based on our biodiversity:

- Anti-fungal and anti-bacterial drugs are among our most important and frequently used medicines. In an intriguing new lead, researchers at Macquarie University in Sydney have discovered that secretions from glands of a bulldog ant (*Myrmecia*) have the power to fight fungal and bacterial infections.
- Seasickness is another common ailment that could be treated with chemicals derived from two Australian species of corkwood (*Duboisia*).



# keeps vs healthy

- Lymphoid leukaemia once killed 90 per cent of its child victims within six months. Now the disease is being effectively treated with tylocrebrin. This drug is derived from an Australian native vine, *Tylophora*.
- Kangaroo apple (*Solanum aviculare* and *S. laciniatum*) found in Australia and New Zealand contains a remarkable chemical with healing properties. Salasodine, used to make steroids, helps the body adapt to stress and balance fluids. It also helps control inflammations and promotes tissue regeneration.
- Even the treatment of AIDS has been given a potential boost by an Australian plant. The Moreton Bay chestnut (also called black bean) contains chemicals useful in fighting the disease.

Sadly for some species it is probably too late. The remarkable gastric brooding frog is able to give birth through the mouth thanks to a chemical in its stomach which protects the young. This chemical, Prostaglandin E2, was found to be useful in treating gastric ulcers. However, the gastric brooding frog, like some others, has not been seen for over a decade.

## People making a difference

Who would have thought that millions of women can now control their family planning, thanks to a humble yam? In India, researchers who explored the pharmaceutical potential of the wild yam (*Dioscorea deltoidea*) several decades ago have caused no less than a social revolution. They found high concentrations of diosgenin, a cortico-steroid, in the tubers of the yam. Eventually this chemical was used to form the basis of contraceptive pills to control ovulation. However, overharvesting in recent years is threatening the future of wild populations of this useful plant and the gene bank they contain.



# Biodiversity in the

*"The threats to endangered species and the loss of habitats start in places close to human developments."*

Society for Growing Australian Plants

## Urban riches

Some of Australia's most biodiverse areas survive around urban centres. For example, there is rich biodiversity in the sandstone country and smooth barked apple (*Angophora*) forests north of Sydney, and in the rainforests of the Border Ranges near Brisbane.

It wasn't long ago that many councils saw urban bushland as a waste of good land. But as city dwellers see their communities become more built up, the urban equivalent of

Landcare has sprung up in the suburbs. One hundred bush regeneration groups now work in Sydney, with 12 in Brisbane and similar numbers in Canberra and Melbourne.

In Perth, volunteers at the Kings Park and Botanic Gardens have restored bushland nearby. Researchers at the Gardens have also provided information which has helped to restore native vegetation in the Mt Eliza escarpment and in the Jarrah and Tuart forests.

There are several major threats to urban biodiversity. Land clearing of course has a substantial impact. So too do nutrients. Australian plant life has adapted to our continent's ancient, low-nutrient soils. When urban bushland is invaded by detergents, sewage overflows and stormwater, these chemicals act as a fertiliser, encouraging weeds to run rampant and suffocate native plants.

## Make your garden a biodiversity haven

- Redesign your backyard to welcome back the birds, butterflies, possums and lizards. Plant local natives to attract birds and grow native ground covers such as prostrate *Grevillea* instead of lawn. Native gardens also need less watering, pesticides and fertilisers. Let your nature strip grow, and see the local wildflowers appear!
- Provide a refuge from cats and dogs for lizards and small marsupials by placing terracotta pipes around the





# backyard and beyond

- Create nesting sites for native birds. A useful guide is *The Nestbox Book*, published by the Gould League.
- “Don’t squash me ‘till you’ve read this!” Many insect predators such as lady beetles, wasps, mantises and spiders lurk in our gardens. Encourage these by avoiding or limiting use of pesticides.
- Make your own environmentally sound bushrock. Rocks in the bush are important habitats for hundreds of species, particularly lizards and should be left alone. Make your own by painting a clean piece of stone with milk – leave outside and within a few weeks moss starts to grow! Small stones piled in a heap also makes an ideal habitat for lizards and insects.

## If you don’t have a garden

- Join a bush regeneration group through the local council or National Trust. Councils need and appreciate this volunteer help and it’s a creative and stimulating way to meet like-minded people.
- Ask your children’s school to have an urban bush education day where they can discover biodiversity.
- Challenge proposed developments which would destroy urban bush or open spaces.
- If you live in a town or city, ensure the firewood you buy is not collected from threatened hardwood

## People making a difference

A co-operative run by Aboriginal people in the Richmond Valley, northern NSW, is harnessing the local community’s backyards to help save a spectacular rare butterfly. The Bulunyah nursery is propagating rainforest vines, which the birdwing butterfly relies on for feeding its larvae. Many of these vines were eradicated when large areas of the butterfly’s rainforest habitat were cleared early this century, endangering its survival. Once mature, the vines will be distributed to local schools and home gardens where they can be re-established for the butterflies to feed on.

**Association of Societies for Growing Australian Plants**

[www.ozemail.com.au/~sgap](http://www.ozemail.com.au/~sgap)

forests such as yellowbox or mallee.

- Use pine plantation residues, or even better, switch to gas heating. One of the biggest threats to rural bird populations is removal of dead trees for firewood, because old trees provide nesting hollows





# BIODIVER

Nature's Variety →

Our Heritage →

Our Future →

A T A G





# ERSITY

The number and variety of animal, plant, microbial and other species which inhabit the earth, the genetic variation within them as well as the differences in the places they live.

The evolutionary processes through which all species have arrived at their current shape, size, colour and form, as well as those changes engineered by us.

The manner in which we, the human species, interact with all other species and their habitats, will largely determine the future for all of us.

L A N C E





# Protecting Biodiver

## In the garden...

### At home...

- 1 Make sure pet cats are desexed (some vets offer special rates), keep them inside at night, and attach bells to warn wildlife. Cats (and dogs) in cities kill hundreds of native birds, possums and reptiles each year.

- 2 Use natural Australian plant disinfectants. Eucalyptus and Teatree oils both make excellent disinfectants as well as having medicinal properties.

- 3 Learn a new skill - look after injured wildlife. Many people, including ABC newscaster Richard Morecroft have learnt how to care for injured bats, possums and wallabies.

- 4 If you are buying furniture or building with wood, choose recycled (second-hand) timber, plantation timber, or laminated or composite timbers made of wood scraps.

- 5 Fix a leaky tap and save 30 litres of water per day. The more water we save, the fewer natural areas have to be flooded to create new dams.

- 6 Build a compost heap. Shred and compost garden weeds rather than dumping them in the bush or taking them to the tip. Weeds such as lantana, holly and privet crowd out the native plants which provide food & shelter for animals.

- 7 Make your own environmentally sound bushrock. Bushrock is important habitat for hundreds of species, particularly lizards, and should be left in the bush.

- 8 Make your garden a haven for biodiversity - avoid using chemicals, plant local natives to attract birds, grow native ground covers such as prostrate Grevilleas instead of lawn. Native gardens are also cheaper because they need less water, pesticides and fertilisers.

## In the neighbourhood...

- 9 Protect your open spaces. Biodiversity resides in many unexpected places, such as roadsides, railway easements, native strips, small parks, disused cemeteries and open spaces in your neighbourhood. Keep these places weed free and encourage local native plants to grow there.

- 10 Find out about planned local developments from the library or council. Land clearing and suburban sprawl is the single biggest cause of biodiversity loss in Australia. Developers must prepare an Environmental Impact Statement for many projects.

- 11 Grow local native species in your parks and gardens. Amenity plantings and beautification schemes are often undertaken by government authorities and councils to make your neighbourhood more attractive.



# sity 24 hours a day

## Shopping...

12 Shop to reduce resource use. Go for products with recyclable or no packaging.

Reducing resource use puts less pressure on the natural environment and the biodiversity it contains.

ORGANICALLY GROWN TOMATOES

13 Take your own bag shopping. Plastics, such as bags and beer can holders, can choke whales, seals and seabirds if they get into the oceans.

14 Buy organically grown food where possible. When crop pesticides flow into rivers and creeks, they can harm or kill native birds and fish.

## At work...

15 Recycle paper at the office, and at home. If all Australians recycled, we could save more than 40 million trees each year.

16 Create a worm farm at your place of work, especially if you work in the food or hospitality industry. Worm castings are an important source of organic fertilizer (and could be a source of additional income).

## On holidays...

17 Drive slowly at dawn and dusk, and where trees grow near the road. Many native animals get killed on the roads early in the morning and at the end of the day when they come out to feed by the roadside.

18 Take a tour with an Aboriginal company. Get a different perspective on biodiversity and how Australian plant and animal species have sustained a culture over thousands of years.

19 Visit a national park close to home and ask the ranger about the biodiversity there. Take only photographs, leave only footprints.

20 Get involved with a Bushcare or Greening Australia group and spend the weekend with friends restoring natural habitats on degraded land. (Environment Australia, phone 1800 803 772)

# Biodiversity

*"The creature was greyish in colour and large-tailed – which moved with the grace and speed of a greyhound, not on all fours but on its hind legs in gigantic leaps."*

Crew member on Captain Cook's first voyage to Australia, after seeing a kangaroo for the first time.

The first Europeans to visit Australia were immediately struck by its extraordinary wildlife. Even Sir Joseph Banks, who was a seasoned naturalist, was fascinated by kangaroos and wrote: "What to liken him to I could not tell. Nothing certainly that I have seen at all resembles him." Today people, both Australians and overseas visitors, still marvel at the strange wonder of kangaroos, koalas and platypuses.

## The rock - the reef - and the rainforest

When people think of the Australian environment they think of a clean and

beautiful – often spectacular – natural environment and unique plants and animals. It's little wonder with such superb natural features that Australia was one of the first countries in the world to ratify the World Heritage Convention in 1974. There are no less than 14 Australian areas on the World Heritage List, the most famous of which are the Rock, the Reef, and the Rainforest.

### The rock

Uluru-Kata Tjuta National Park is a spectacular area in the centre of Australia. Almost 10 km around the base and 340 metres high, Uluru has had great religious, economic, territorial and cultural significance for Aboriginal people for thousands of years.





# on holiday

## The reef

The Great Barrier Reef World Heritage Area is a 2000km long living treasure. With its rich biodiversity – among the greatest in the world – the reef is home to 1500 species of fish, 300 species of hard corals, more than 4000 mollusc species and more than 400 species of sponges.

## The rainforest

The Wet Tropics World Heritage Area includes the Daintree rainforest. Here grows the oldest rainforest in the world and the highest concentration of ancient flowering plants found anywhere. It is one of only a few places in the world where the rainforest grows down to meet the coral reef and is home to the rare giant Cassowary bird.

## How to protect biodiversity on holiday

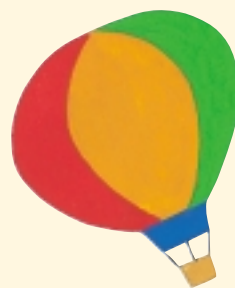
- Leave an area cleaner than you find it.
- Travel by your own muscle power where possible.
- Stay on the path, or if in a car, stick to the roads.
- Take only pictures to remember the places visited.

## People making a difference

Sometimes zoos can make an important contribution to protecting biodiversity. Healesville Sanctuary outside Melbourne features the largest collection of Australian wildlife in the world. More than 200 species of native birds, mammals and reptiles – some endangered – are kept and bred at the zoo. Healesville is now showing visitors the Australian orange bellied parrot, one of the rarest birds in the world with only 200 individuals left in the wild.

**Environmental Tourism Information**  
[www.aussie.net.au](http://www.aussie.net.au)

- Be careful not to introduce exotic plants, animals and diseases – take out all fruit peelings.
- Don't take pets into natural areas.
- Familiarise yourself with local regulations, especially when fishing.
- Don't use soaps or detergents in rivers and creeks and don't drop plastic bags overboard.
- Drive carefully at dusk to avoid hitting nocturnal animals such as kangaroos and



# Biodiversity

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*"I bought a run a while ago,  
on country rough and ridgy,  
Where wallaroos and  
wombats grow – the Upper  
Murrumbidgee..."*

A.B. "Banjo" Paterson,  
Poet

## Moving mountains

The grazing and agricultural lands which cover almost three-quarters of Australia aren't just important for our food and resource needs. They are also a living reservoir of biodiversity and need to be managed to protect it. Agriculture in turn is totally dependent on ecosystem processes and the biodiversity that drives them. Without the natural biodiversity which lives in rural ecosystems there would be less soil formation, nutrient cycling, natural water purification and pollination of crops.

Just one gram of soil – about the size of two aspirins – may contain up to 100 million bacteria and other micro-organisms. Labouring away in secret darkness, these tiny creatures literally move mountains. They are only about one-thousandth of a millimetre in size yet they are responsible for fixing nitrogen, preventing erosion by binding soil particles together and helping plant roots take up water and phosphorous. Farming practices which lead to increased acidity or salinity in the soil can kill this valuable micro-biodiversity, halting the important work it does.

## Noah's ark in a tree

Land clearing in rural areas is a major cause of biodiversity loss. While Australia has developed major initiatives to address revegetation, and incentives for the conservation of vegetation, through the Natural Heritage Trust, this is more than offset by the current rate of clearing in some States. Our national parks and reserves are not large enough to adequately protect all ecosystems.





# on the farm

Only 47 of the 209 species of endangered Australian plants live in protected areas – so there is much opportunity for biodiversity protection on farms. In one study Australian scientist Professor Harry Recher found a Noah's Ark of 1700 different insects and invertebrates living on just four species of gum trees on one farm. That's about as many as all of Australia's land-dwelling vertebrates put together.

## What can farmers do to protect biodiversity?

- Use integrated pest management to minimise pesticide use. Pesticides can disrupt natural ecological processes and impact on biodiversity.
- Leave dead trees standing as homes for birds and possums.
- Fence off the dams and rivers from stock to allow native plants to grow. These will provide habitat for useful insects, frogs and birds.
- Fence off bush corridors for wildlife so they can move between cleared areas.
- Control exotic plants and animals, such as goats, cats and pigs, which compete with natives.

- Increase organic material in soils to enhance microbial

## People making a difference

Brian and Lesley Mason own a 32ha orchard outside Adelaide. They have set aside two-thirds of the farm for native vegetation, growing apples, pears and raspberries on the rest. They used to use chemicals to control pests but found it worsened the mite problem and cost too much. Now they use no chemicals except codling moth spray every two years at half strength. Their costs have gone down significantly. They explain that the native vegetation provides a home for insects and insect-eating birds, which have become the pest control managers for the farm, controlling the mites naturally.

### National Landcare Program

[www.affa.gov.au/docs/nrm/landcare/landcare.html](http://www.affa.gov.au/docs/nrm/landcare/landcare.html)

biodiversity.

- Join a Landcare group or Farms for Wildlife scheme – many States offer economic incentives and expertise to help farmers





# Biodiversity

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*"The oceans are of great importance to biodiversity simply because they are so vast."*

Professor Andrew Beattie,  
Macquarie University

## Biodiversity bouillabaisse

Each time we go to the fish markets or enjoy a hot parcel of fish and chips sitting on a beach, it brings us a little bit closer to the staggering variety of life in our oceans. The seas are a vast soup of life – covering three-quarters of the surface of the earth and plunging to a depth of 11 km.

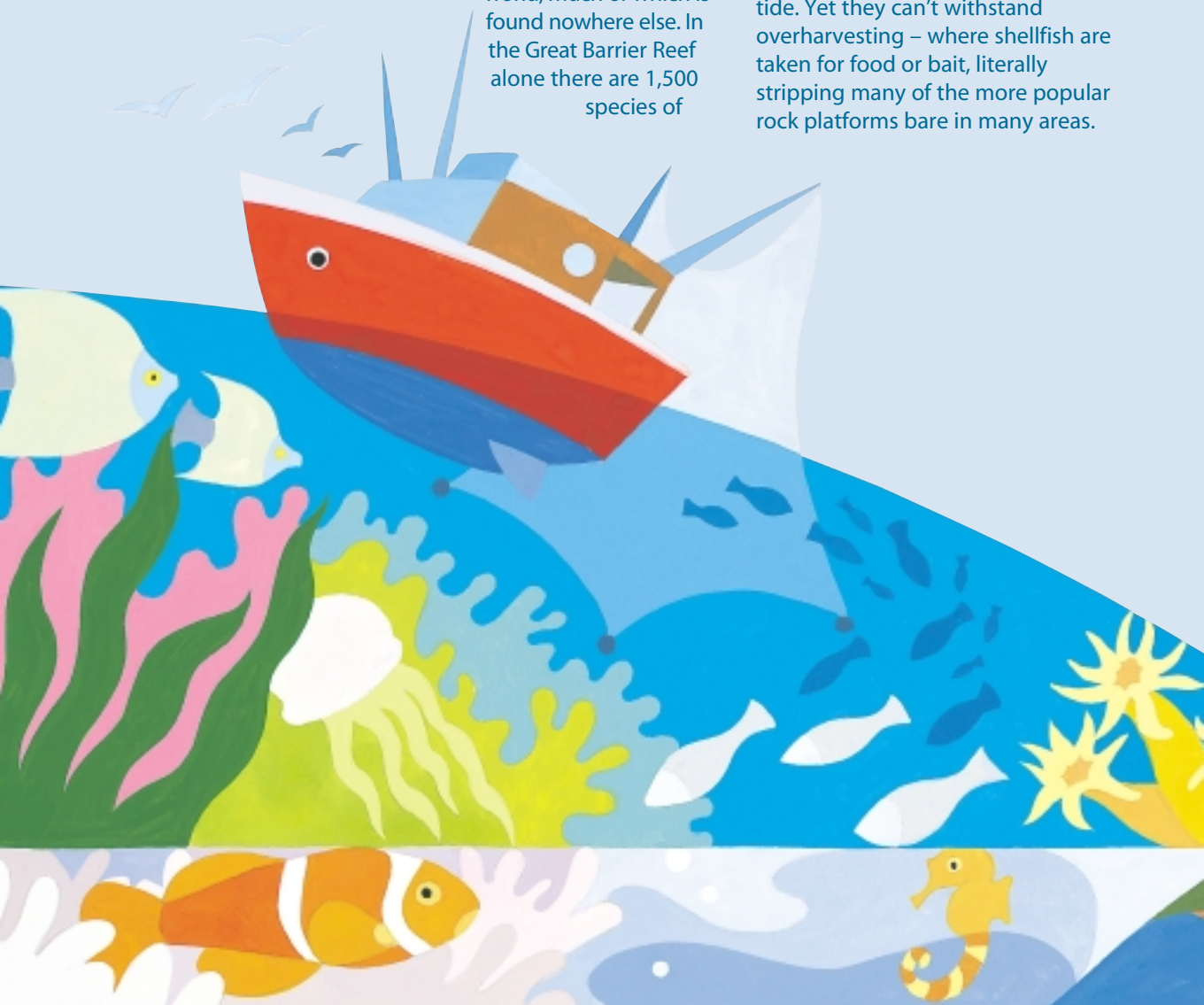
Australia has responsibility for 16 million square km of oceans, containing some of the richest biodiversity in the world, much of which is found nowhere else. In the Great Barrier Reef alone there are 1,500 species of

fish.

Overfishing and pollution are threatening our rich ocean resources. One of the hardest hit species is the southern bluefin tuna. After decades of unsustainable harvesting the breeding stock of the tuna today is a mere 10 per cent of what it once was.

## Rocky ripoffs

One of the great pleasures of visiting the beach is pottering among the rock pools searching for special colours and shapes. Here at the shoreline lives a wealth of biodiversity. The hardy animals and plants have adapted to the impact of pounding waves and can survive regardless of whether they are submerged or left high and dry at low tide. Yet they can't withstand overharvesting – where shellfish are taken for food or bait, literally stripping many of the more popular rock platforms bare in many areas.



# afloat

## The ones that got away

For many Australians there is nothing more relaxing than fishing on a river. In many country pubs we see the mounted heads of huge fish caught in days gone by from the local river. Yet many publicans will tell a sorry story that the fish are no longer there, especially species like silver perch and silver barramundi.

Most fish need free-flowing rivers with natural changes in depth, temperature and salinity over the seasons in order to live and reproduce. Recreational fishing, agriculture, irrigation and urban development have altered many of our rivers and depleted fish stocks. Rivers are suffering from over-extraction of water, increasing salinity, nutrients and chemicals, artificial dams, removal of riverside vegetation and introduction of exotic species such as European carp. These changes have left native fish species struggling to survive.

Freshwater environments are particularly special because many species are restricted to just one or two river systems. The black grunter fish, for example, is only found in the Prince Regent and Roe rivers which flow into the Timor Sea. If these rivers were substantially altered, the black grunter could become extinct.

## People making a difference

An organisation called Native Fish Australia represents people who are working actively to protect our native fish species. Although not a fishing club, many NFA members are anglers and NFA events often include fishing. NFA encourages the use of only ethical and sustainable angling in the wider community and promotes strategies for long-term protection of rivers and lakes.

**Native Fish Australia**  
[www.nativefish.asn.au](http://www.nativefish.asn.au)





# Warning Signs

*"Extinctions are happening today at a greater rate than any time in the past 65 million years."*

Professor Harry Recher,  
Edith Cowan University

It's hard to go shopping without feeling dazzled by the choice of products available. Never have we had so much to choose from, whether or not we can afford it. As our population increases and our demands become more complex, society has placed increasing pressure on the biodiversity that maintains our lifestyle.

## Going, going...

In no more than eight generations since European settlement, Australia has lost 19 out of a total of 282 species of mammals and 20 out of 770 species of birds. Seventy-six plant species have also become extinct.

Some of the casualties are:

- Thylacine (Tasmanian tiger) – last seen 1936.
- Lesser bilby – last seen alive 1931.
- Pig footed bandicoot – last seen early 1900s.
- Broad faced potoroo – last seen about 1875.
- Paradise parrot – last seen 1922.
- Robust white eye.
- *Acacia prismifolia*.
- *Diuris bracteata*.



# of change

## Decline and fall

The Australian biologist Professor Harry Recher has warned that many Australian bird species will probably be extinct within 50 years if rapid habitat loss continues. We have all heard reports of the disappearance of some frog species. Freshwater fish such as Murray cod are also suffering. Off the coast some eastern fisheries have virtually collapsed – all signs that our biodiversity is increasingly suffering from human disturbance.

Things are also turning sour for Australian honeyeaters, whose numbers have been dropping mysteriously for some years. These birds depend on coastal heathlands in winter but move inland to woodlands during the summer. Although coastal heathlands still flourish, the widespread clearing of inland woodlands is now threatening the honeyeater's survival. The warning signs are there that Australia's biodiversity is feeling the strain.

## People making a difference

Students at Woodbridge District High School in Tasmania are helping re-establish habitat for the threatened swift parrot with the help of Greening Australia and Tasmanian Parks and Wildlife. The parrot relies on Tasmanian blue gums which were disappearing from the area. Students are now growing tree seedlings to plant around the school in the hope of establishing future habitat for the parrot.

**Threatened Species Network**  
[www.nccnsw.org.au/member/tsn](http://www.nccnsw.org.au/member/tsn)





# World record breakers

*"In the Guinness Book of Records-style list, the entry for Australian biota would be impressive."*

Professor Andrew Beattie,  
Macquarie University

## Oldest

Researchers have found fossils in the Pilbara, in Western Australia, which represent some of the earliest life forms known on the planet. They are stromatolites, large hard clumps of photosynthetic bacteria which date back three and a half billion years. They represent the earliest life form known on the planet. Remarkably, living examples of stromatolites still flourish today in shallow seas just off the coast of Shark Bay, Western Australia, practically identical to their fossil ancestors.

## Largest

The Great Barrier Reef – one of the wonders of the world – the largest structure ever built by living things, is 207,000 square km of living coral polyps (300 species), fish and sea life.

## Tallest

Deep in the groves of Victoria's high mountain forests, the mountain ash in East Gippsland grows up to 100 metres high and is the world's tallest flowering plant.

# Find out more!

*"There is a growing consciousness among Australians of a requirement to leave the land in a better state than we found it..."*

Dr Brian Roberts,  
Queensland academic and lay preacher

The future is certainly not all doom and gloom and we have already made much progress. The fur trade no longer threatens koalas. Egrets are no longer killed for their feathers. Almost extinct, the Lord Howe Island woodhen was carefully bred up in captivity and now flourishes back in its native habitat.

We are slowly finding a new vision to help us protect our world for future generations. We are beginning to work together to live sustainably in order to protect the biodiversity on which we all depend. We can all do something to help, whether we work in government, private industry or at home, to pass this rich heritage on to future generations.

## GENERAL BIODIVERSITY INFORMATION

*Biodiversity: Australia's Living Wealth*  
Professor Andrew Beattie,  
Reed Books, Sydney 1995

*State of the World 2001: Report on Progress Towards a Sustainable Society*  
Worldwatch Institute, Washington 2001

*Australia: State of the Environment 1996*  
CSIRO Publishing, Melbourne 1996

## CONSUMER GUIDES

*Earthlink: Australia's Environmental Directory*  
[www.earthlink.com.au](http://www.earthlink.com.au)

*Choice: Australian Consumers' Association*  
[www.choice.com.au](http://www.choice.com.au)

## COMMUNITY ACTION

*Australian Conservation Foundation*  
[www.acfonline.org.au](http://www.acfonline.org.au)

## GARDENS

*Making Your Garden Bush Friendly*  
L McLoughlin and J Rawling  
McLoughlin-Rawling Publishers,  
Sydney 1990

*Attracting Wildlife to Your Garden*  
Roger Elliot  
Lothian, Port Melbourne 1997

*Grow Your Own Wildlife:*  
*How to Improve Your Local Environment*  
PJM Johnston & AR Don  
Greening Australia, Canberra 1990

## ORGANISATIONS

*Environment Australia*  
Tel 1800 803 772, [www.environment.gov.au](http://www.environment.gov.au)

*Biodiversity Clearing House Mechanism*  
<http://chm.environment.gov.au>

*Community Biodiversity Network*  
Tel 02 9262 4743, [www.cbn.org.au](http://www.cbn.org.au)



# Top 10 reasons to care about biodiversity

"Nature never did betray the heart that loved her."  
William Wordsworth, Poet

- 1 Biodiversity feeds and clothes us
- 2 Biodiversity keeps our world clean
- 3 Biodiversity keeps us healthy
- 4 Biodiversity keeps us in touch with our origins
- 5 Biodiversity renews our spirit
- 6 Biodiversity inspires our artists
- 7 Biodiversity will look after our children
- 8 Biodiversity boosts our economy
- 9 Biodiversity teaches us to wonder
- 10 Biodiversity protects our planet



Department of the Environment and Heritage



Natural Heritage Trust

Helping Communities Helping Australia

This booklet complements the biodiversity conservation activities of the Natural Heritage Trust.