

## 14

## Biodiversity



## Introduced Species



## Introduced species issues



Plant and animal species have been introduced into Australia for many different reasons. These include garden

plants, domestic animals, pasture grasses or aquarium species. Other species arrived accidentally, such as in shipments of imported grain, or in ballast water.

Introduced plants, or weeds, invade areas and compete with native plant species for space, light, water and nutrients. Weeds have higher reproductive rates and tend to grow faster than native plants so they often can establish populations quickly and smother native plants. Eventually these weeds can become the major species in an area and lead to declines in biodiversity.

A number of native plants and animals can also become pests if they are introduced into areas where they do not come from. For example, the Cootamundra wattle comes from the eastern states of Australia, but is invading and damaging bushland in South Australia.

It is important to remember that some weed species have been existent in the ecosystem for a long time, and some native animals have come to depend on them for habitat and food when the native plants have been lost. For example, the blackberry plant provides an ideal habitat for the threatened Southern Brown bandicoot. Therefore, weed management needs to happen over time and must also include some habitat regeneration.

Introduced animals compete with native animals for habitat and food sources. Often the introduced animals have higher rates of

## TRENDS



Rabbit numbers are **declining** in most parts of the state.



Fox numbers are **down** in areas where they have been baited, but are **still a problem** in other parts of the state.



Feral camel and deer numbers are **up**.



Feral goat numbers are **declining**.



Feral pig numbers are **unknown**.



Mundulla yellows and *Phytophthora cinnamomi* are **spreading**.



Numbers of **terrestrial plants** are **increasing**.

breeding, so their populations can grow rapidly. Many of the animals introduced to Australia have hard hooves that cause damage to the fragile soils and vegetation in our landscapes. Introduced fish have created major environmental problems for inland rivers and streams. Many were introduced for recreational fishing and have spread into inland waterways. Here they compete with native fish for food and habitat and reduce water quality.



## What is the current introduced species situation?

### Pressure indicators

#### Distribution of key terrestrial pest animals

- The **European rabbit** is still Australia's most widespread and destructive pest. Rabbit Haemorrhagic Disease (RHD) was developed to reduce the rabbit population and numbers have decreased by more than 70% since its introduction, although rabbits are still found throughout most of South Australia.
- The **European red fox** is found in most regions of the state. In some conservation areas, such as the northern Flinders Ranges, there have been large-scale baiting programs that have seen a decline in numbers over the last 10 years. In areas where rabbit populations have declined, fox populations have also reduced. Elsewhere in the state, foxes remain a problem.

## Introduced Species

- **Feral goats** are found in the central regions of the state, particularly the Gawler and Flinders Ranges areas. Declining numbers of goats and foxes in these areas, due to baiting programs, have led to an increase in the Yellow-footed Rock-wallaby population.
- **Feral deer** numbers have increased due to escapes and deliberate releasing from deer farms. They are found in areas of native vegetation, including conservation areas.
- Numbers of **feral camels** in the far north of the state are believed to have doubled in the last 8 years.
- **Feral cats** are common in all regions of the state. Numbers have fallen since the introduction of RHD as rabbits are a main source of prey; however, feral cats still remain a problem.
- **Feral pigs** can be found in the far north of the state; however there is no information about their numbers or the impact they have on the environment. Feral pigs are an environmental concern as they are capable of spreading diseases such as foot-and-mouth disease.

#### Distribution of terrestrial pest plants (weeds)

There are 20 weeds of national significance considered to be a major threat to biodiversity. Of these, 11 have been identified in South Australia. The following weeds pose the biggest threat to biodiversity in South Australia:

- **Bridal creeper and bridal veil** are climbers that smother native vegetation and compete for space, light, water and nutrients. Bridal creeper is common in all areas of the state and control is extremely difficult; the plant is virtually impossible to eradicate.





## Introduced Species

### What is the current introduced species situation?

#### Pressure indicators (continued)

Bridal veil produces berries that birds eat and spread.

- **Blackberry** is an extremely aggressive invading plant that is hard to control. It provides an ideal habitat for the Southern Brown bandicoot so it is vital that its eradication is conducted in conjunction with habitat restoration.
- **Boneseed** is a big problem in the Mount Lofty Ranges, but also affects other areas of the state. The Totrix Leaf-roller moth has been released so that it will eat and kill the blackberries; this is known as a biological control. Its recent success though has been limited due to drought conditions and the moths being eaten by other species.
- **Gorse** is found through many agricultural areas in the state, but is more common in areas of higher rainfall. A spider mite has been released for the biological control of gorse in the Mount Lofty Ranges.
- **Mesquite** is found in the far north of the state. It forms impenetrable thickets, smothers native vegetation and causes difficulties for pastoralism.



#### Distribution of key marine pests

Approximately 250 introduced marine species (plants and animals) have been found in Australian waters, with around 30 to 35 species recorded in South Australia. There is little information about the distribution and numbers of these species, and many have been introduced through ballast water or on the hulls or anchor ropes of vessels.

- **Invasive seaweed** is the most significant marine introduced pest in South Australia. It was discovered in West Lakes and the upper Port River in early 2002. It has the potential to spread over large areas like in New South Wales, and has been associated with the collapse of fisheries overseas.
- The **European Fan Worm** is native to the Mediterranean Sea. It forms dense populations and out-competes native species for habitat. There are large populations in the upper Gulf St Vincent.
- **Toxic dinoflagellates** produce toxins that build up in filter feeding species (eg shellfish) and cause

Paralytic Shellfish Poisoning in predator species and human consumers. Blooms of these organisms may clog the gills of marine species or take oxygen from the water leading to widespread fish kills.

#### Distribution of key freshwater pests

There are a number of freshwater fishes that are having a significant impact on freshwater ecosystems in South Australia. These species compete with native fish for food and habitat and can reduce water quality. The worst ones are the European carp, Eastern Gambusia, redbfin, perch, rainbow trout, brown trout and tench. Release of any of these species after catching them is illegal under the *Fisheries Act 1982*.

#### Mundulla yellows

Mundulla yellows is a disease that affects eucalypts and other native plants. It was first seen in a place called Mundulla in the 1970s. When it attacks plants, their leaves go yellow and after 10 years or so, the canopy of the tree dies back. Plants infected with Mundulla yellows always die.



## Responding to introduced species

The Animal and Plant Control Commission (APCC) is an organisation responsible for managing introduced species under the *Animal and Plant Control Act 1986*. The APCC oversees and coordinates animal and plant pest control activities throughout the state. Some of the activities done to reduce introduced species numbers are listed below. Often these approaches are carried out together in an integrated pest management program.

- Baiting, such as for foxes.
- Releasing diseases specific to animals (eg Rabbit Haemorrhagic Disease).
- Biological control; releasing insects or pathogens to attack weed species.
- Further research about introduced species.



## Taking action for introduced species

- Have a look at your garden at home. Write a list of the species that are introduced and the ones that are locally native. Which list is bigger? Try and encourage your family to plant only locally native trees and shrubs. This will also help to bring native birds to your garden.
- Do you have a cat? Think about the potential impact your cat could have on the environment. What are the ways that you can be a responsible cat owner and make sure your cat doesn't impact on biodiversity?

## Introduced Species

### Impacts of introduced species



#### Biodiversity

Introduced species are the leading cause of biodiversity loss worldwide. Weeds smother native vegetation and compete for space, light, habitat, water and nutrients. Rabbits, feral goats and deer prevent plant regeneration by eating seedlings. Feral camels and deer trample native vegetation.



#### Land Resources

Weeds change the composition of soil quality and increase fire hazards. Feral animals such as goats, rabbits, deer, pigs and camels erode soil resources through trampling and overgrazing.



#### Water

Weeds degrade water courses and affect water quality.



#### Economic

Weeds cost South Australian agriculture an estimated \$650 million per year. These costs come from reduced crop yields, poisoning of stock, tainting of meat and milk and reduced wool values if contaminated with burrs and seeds.



#### Cultural

Aboriginal and recreational use of native ecosystems can be reduced by replacing introduced species with native species.

Introduced Species



# Attention!!

## Introduced species can also be fungi!

*Phytophthora cinnamomi* is a significant threat to biodiversity and is listed as a key threatening process in the *Environment Protection and Biodiversity Conservation Act 1999*. It is a microscopic fungus-like organism that rots the roots of susceptible plants causing death. It is spread throughout many areas in the Mount Lofty Ranges and parts of Kangaroo Island. The fungus is native to South-East Asia.

*Phytophthora* can spread from plant to plant through root contact. There is no cure for *Phytophthora* and it spreads quickly during rainfall. Transport of infested soil and plant material by vehicles and humans is the most important factor in the

spread of this fungus. The best way to control the fungus is to prevent the transfer of infested soil or plant material. So try to:

- avoid driving, riding or walking in areas when soils are wet and sticky
- stay on designated roads and tracks
- brush soil off vehicles, bikes, boots and camping gear before and after each trip
- obey road signs
- use wash down or hygiene stations where provided
- protect your bush, do not buy infected plants
- report any unusual plant death.



**Introduced Species**



**Research Ideas**

**about introduced species**

- 1 **What are introduced species?**  
\_\_\_\_\_
- 2 **What impact have introduced species had on the environment?**  
\_\_\_\_\_
- 3 **Why have some native animals come to depend on some introduced species?**  
\_\_\_\_\_
- 4 **Why do some native plants and animals become pests in other parts of Australia?**  
\_\_\_\_\_
- 5 **How have human activities impacted on the numbers of introduced species in your community, South Australia, Australia and globally?**  
\_\_\_\_\_
- 6 **What does the State of the Environment report tell us about introduced species in South Australia?**  
\_\_\_\_\_
- 7 **What might happen in the future if things continue as they are?**  
\_\_\_\_\_
- 8 **What are government, business and industry doing to address introduced species numbers in South Australia?**  
\_\_\_\_\_
- 9 **What can we do individually, or in communities, to reduce the impact of introduced species in South Australia?**  
\_\_\_\_\_

**RESOURCES**

For more detailed information on the issue and actions you can take see the State of the Environment Report for South Australia 2003. This is available at:  
[www.environment.sa.gov.au/soe2003](http://www.environment.sa.gov.au/soe2003)



This fact sheet is part of a set of 23 fact sheets about the key environmental issues identified in the *State of the Environment report 2003*, produced for the Environment Reporting Education Resource. You can access the fact sheets and learn more about taking action for the environment at the Education Resource website: [www.environment.sa.gov.au/reporting/education](http://www.environment.sa.gov.au/reporting/education). For more information call the Environmental Education Unit of the Department for Environment and Heritage (08) 8226 4466.



department for environment and heritage

