

1. Vegetation clearance in the Onkaparinga Catchment

Concepts

- Loss of vegetation is the first factor in many environmental issues
- Impacts of local vegetation clearance
- History and methods of local land clearance

Discussion topics and information

Impacts of local vegetation clearance

Over the last 150 years, the Mount Lofty Ranges bioregion has become the second most heavily cleared bioregion in the whole of Australia (second only to the Western Australian wheat belt). We also have the second highest rate of extinction anywhere in Australia, having lost many species of birds and mammals. Many native plants and animals depend on remnant vegetation for their survival, but 26 plant, 23 mammal and 2 bird species are already extinct in South Australia with a further 1,000 already under threat.

There is little doubt that loss of natural vegetation directly correlates with the loss of species. However, when we look at views over the Mount Lofty Ranges and Adelaide Plains there appears to be a lot of vegetation. The problem is that much of this vegetation is very broken up, with little or no understorey. Much of the remaining vegetation lies on poor soils and is of lower resource value to wildlife than vegetation that occurs on rich soils.

Many of the trees and shrubs that we grow in our gardens provide no food or habitat to the birds and animals of the area. In fact some of the trees we plant can cause problems for native species. They can escape from our gardens and crops and take over areas of native bush, leaving less room for local native plant species. Some of the plants provide habitat to introduced pest species of birds such as Starlings

and Sparrows which directly compete with native species. The loss of the local native vegetation which once covered the entire region is considered the most serious factor in a large number of environmental problems. Some of these problems include:

- Loss of food and habitat resources for terrestrial wildlife which has caused several local extinctions.
- Proliferation of aggressive pest species which cause harm to less common native species.
- Reduced air quality due to lower rates of photosynthesis.
- Reduced water quality due to a lack of remaining vegetation which can help to filter landscape runoff.
- Reduced water quality caused by increased erosion of stream beds and higher levels of sediment in the water column. The roots of native vegetation naturally holds stream banks together, preventing erosion. Erosion can also threaten human-made infrastructures such as roads, bridges and houses.
- Extinction of aquatic wildlife such as frogs and fish which are sensitive to high levels of sediment in the water column.
- Destruction of the marine environment caused by greater quantities of sediments flowing down rivers. Land-based sediment deposits on reef and seagrass communities, preventing their regeneration. This in turn reduces habitat for marine fish and can result in lower numbers of local species, such as whiting.

Where did all the vegetation go?

We often think of land clearance as only happening shortly after the European settlement of the region. In many places this is certainly the case, particularly in the damp, fertile valleys where the tallest trees grew. However, land clearance still occurs across the world, in Australia and even in the Onkaparinga Catchment area.

Despite having laws to prevent land owners from clearing vegetation, there are loopholes in these laws which allow people to clear vegetation for building houses and infrastructure such as roads. While there may only need to be a small amount of land cleared to build a house, this adds up over time, as more properties are subdivided. Properties which may have once been 100 hectares with 70% native vegetation and one house are frequently split up into five hectare blocks, all of which have a house, driveway, sheds and exotic gardens. It is easy to see how large tracts of vegetation become split up.

Methods of land clearance

Chainsaws and trucks: many areas are logged for the timber they provide. This is common in areas with tall timber such as Victoria, Tasmania and Queensland. Historically, this occurred in South Australia in the early days of settlement. The olden days would see these trees cut down with hand saws and axes and pulled out of the valleys with horses and bullocks. The giant Candlebarks which grew deep in the fertile valleys were cut down for building and the resulting land used for horticultural pursuits, such as market gardening. Stringybarks were cut down to make roof shingles, as the logs would split very cleanly. The Native Pine forests which once covered the northern suburbs were cut down for their soft wood value as construction timber. Several Wattle species were cut down for their bark which was used as furnace fuel, as well as for dye in the tanning industry. Blackwoods were sought after for their beautiful timber in furniture construction.

Bulldozers and chains/clear felling: following the selective styles of clearance, large areas of remaining vegetation which occurred in the most fertile areas was considered worthless and cleared by bulldozers dragging chains between them, which destroyed everything in their path. The resulting piles of vegetation were then often burnt on site. Land cleared in this method is often used for cropping, orchards and other intensive uses. This technique still occurs in other States of Australia.

Grazing: while the wet and highly fertile areas were being cleared for horticultural pursuits, the extensive areas of grassy woodland mostly on the eastern side of the Onkaparinga were stocked with sheep and cattle. The more open style of vegetation occurring in these areas allowed the livestock to easily wander in and graze without any prior clearance necessary. Over time the understorey vegetation was grazed and destroyed as was any natural regeneration of these plants at ground level. Many of the large River Red Gums and South Australian Blue Gums were also cut down for firewood and building railroads. Most of these areas now only have a few large trees with no understorey. Grazing can also be considered a modern style of land clearance, as many property owners still allow their livestock to graze in areas of native vegetation.

Recreational use: areas which are not properly managed may endure bike riders, horse riders, and bushwalkers using unofficial trails through sensitive areas. This can result in severe damage to the ground flora and prevent regeneration in the future. Over many years the number of tracks may increase so much that the vegetation is no longer as thick as it once was and much of its habitat value to local wildlife may be lost.

The implications of land clearance are becoming clear, with a high level of local extinctions and areas of poor water quality. Many stream banks are badly eroded and the marine environment continues to show signs of stress with reduced seagrass and kelp coverage and fewer fish in local waters. Despite all this, land clearance continues a little at a time under the guise of housing development, infrastructure management and fire prevention. These issues are all important, but with the breakdown of our life systems which depend so heavily on native vegetation, can we really afford to lose any more?

Lesson ideas

Research the pre-European vegetation association of your local area and locate any nearby remnants. Are the remnants used by humans now? Are they well managed? See *Vegetation Cover* map at the back of this folder.

- Complete the worksheet *Can we make development sustainable?*
- Complete the activity *Rural subdivision: Frances Parrot's farm.*
- Start a media file of stories pertaining to loss of vegetation (some included with this activity). Discuss issues with students.

Recommended resources

Flannery, Tim 1994 *The Future Eaters*. Reed New Holland. Part 3 The last wave: Arrival of the Europeans

A fascinating look at the changes to the Australian landscape caused by European settlers in the early years.

<http://www.deh.gov.au/biodiversity/publications/series/paper6/biosa.html>

Facts and figures on land clearance in SA over the last 30 years.

<http://www.acfonline.org.au/docs/publications/rpt0002.pdf>

A report comparing Australia's rate of land clearance to other countries and the implications for biodiversity.

http://www.nccnsw.org.au/member/cbn/projects/EducationCentre/hi_land.html

Information on land clearance pitched at primary to middle school aged students with links to many NSW land clearance examples and implications