

## Section 2.1: Biodiversity

### WHAT IS THE ISSUE?

Biodiversity (or biological diversity) is the variety of all forms of life. It provides us with a range of plant and animal resources, many of which humans exploit directly, but all are connected in the broader ecosystem. Any decline in biodiversity will lead to a decline in the resources available to us.

The complexity and evolution of life has produced a world of diversity. The isolated and ancient geography of the Australian continent has produced unique ecosystems.

Over a short history of colonisation in Australia our biodiversity has become greatly threatened and the health of the landscape has declined. Prior to this period the land was under management of the First Peoples of Australia using Aboriginal farming and hunting practices developed over thousands of years. Many environmental issues have resulted from the abrupt cessation of these traditions and land management practices. Although the Aboriginal peoples had altered the biota significantly over thousands of years, Australia still retained diverse ecosystems when Europeans arrived here.

Drastic changes have resulted from the importation of land management techniques from the vastly different environment of Europe. In the 1860s cereal farming extended into the seasonally rich grasslands and channel-country of northern South Australia only to fail in a run of drought years. This led to a line (Goyder's Line) being delineated on the map, indicating the northern limit of sustainable cereal farming.

[Climate change](#) threatens our biodiversity with average lower rainfalls and an increase in temperatures across South Australia being observed over the past century. Some [native plants](#) are threatened by climate change, drought and severe weather. Planting native plant species that are more adaptable and resilient to climate change can be a solution to the effects of this change. Fire is a natural process that native vegetation has adapted to and some plant species respond well to fire and

require it to germinate, but sometimes an intense fire can alter habitat and [bushfire recovery and biodiversity](#) will need to be monitored as the habitat recovers. A bushfire may increase threats to biodiversity such as weed invasion, erosion and over grazing of new growth.

Particularly [birds in the woodlands of southern Australia](#) have shown a recent decline across the agricultural zone. Many bird species and other native fauna are under threat and [regional recovery plans](#) have been enacted following the [EPBC Act 1999](#) (*Environment Protection and Biodiversity Conservation Act 1999*) and [National Parks and Wildlife Act 1972](#) and other plans such as [No Species Loss Nature Conservation Strategy](#).

### HOW DOES IT AFFECT YOU AND YOUR CATCHMENT?

The Mount Lofty Ranges have lost many species due to the removal or alteration of over 95% of the pre-European vegetation cover and the introduction of exotic species. Refer to the maps in Appendix 2 showing the loss of remnant vegetation between 1945 and 1980 and the present Native Vegetation Cover (2020). Please note it is not known which remnant vegetation layers were included in the 1980 and 1945 maps, therefore comparing them against the current 2020 map is not recommended.

Remnant native vegetation is still threatened. The fragmentation of remnant areas will continue to lead to further losses due to weed infestation and livestock and feral grazing. Over-grazing in our grassy woodlands has inhibited natural regeneration and resulted in the loss of understorey habitat. Flow-on effects include insect attacks on Eucalypts left vulnerable by the decline of the insectivorous birds that once sheltered in the undergrowth below.

Today the threats that impact on biodiversity in our region, specifically along watercourses include:

Inappropriate grazing of stock which can lead to erosion and overgrazing

- Emergence of new pest species such as goats and deer
- Changes in assemblages of native species such as kangaroos, lorikeets, and corellas
- Over-abundance of native grazing species (e.g. kangaroos)
- Invasion of weed and pest species
- Decline in water quality due to sedimentation, run-off of topsoil and pollutants from stock
- Loss of quality habitat for native flora and fauna species
- Increased biomass of aquatic plants species such as Typha and Phragmites which tend to out compete other suitable native riparian plant species
- Climate change impacts such as changes in rainfall patterns and more frequent wildfire

The Hills and Fleurieu Landscape SA Board is delivering and supporting programs through the four key [Biodiversity conservation strategies](#): 1. Maintain (viable) landscapes; 2. Reverse declines; 3. Recover threatened species and ecological communities; and 4. Control emerging threats.

The maintenance and enhancement of biodiversity on individual properties will help to address issues such as habitat fragmentation and loss. Even small reserves may assist sustainability. Maintaining biodiversity with your property plan should also yield production and aesthetic benefits.

Watercourses are an important part of our landscapes. Healthy and clean watercourses and river systems provide essential refuge and habitat for native wildlife and biota, such as reptiles, native fish, birds and invertebrates, support our precious and finite water supply, and allow for the existence of local agriculture. Riparian reserves may act as a biodiverse corridor for flora and fauna, thus linking isolated habitats and preserving our natural heritage at the same time as improving water quality and farm productivity. Restoring connectivity within waterways provides benefits not only for the immediate site but also downstream ([Bush Heritage Australia](#)). Effectively managing our local

watercourses, particularly the River Torrens and Onkaparinga, reduces pollutants going out to sea.

Rivers and creeks require care and management to prevent their decline, and if done appropriately we can continue to support our rich biodiversity such as fish and bird species in our region.

Healthy water quality through maintaining suitable water flows, management of baseflows and reinstatement of connectivity are critical for the conservation of native freshwater and estuarine fish species. Refer to Landscape SA Hills and Fleurieu website for [Native Fish Species in the Mt Lofty Ranges](#). Some fish species need river and sea water to grow and obstacles and weirs interfere with their complete lifecycle. In 2006 the first **Fishway box** at the Torrens River outlet was installed, as a solution to assist the movement of fish species. A Fishway, which acts like a ladder, allows them to get over higher obstacles, rest and climb over to move downstream. In 2016 the Fishway was damaged due to storms and has been recently restored, and now after 3 years it will be interesting to observe fish species such as Congolli, Climbing and Common galaxias, Pouched lamprey and eel species during the breeding season and improve biodiversity. The Adelaide Mt Lofty Ranges Management Board (now known as Landscape SA) has initiated this project. View the [video](#) on Facebook “Fish get a hand up at the Torrens Outlet”.

More generally, habitat is the natural home or environment of a plant, animal or other organism which provides it with the food, water, shelter and space it needs to survive. If its home changes, it has to adapt to stay there. You could imagine if a wall suddenly disappeared from your house that might take some adjustment! Habitat might not be what you expect either; you might not place much value on dead trees and twigs/sticks and leaf litter on the ground, but these can give species like lizards and insects a home and food source. To learn more about the different types of Australian habitat visit the [Australia Museum](#) website. In excess of 300 native vertebrate species use hollows in some form and [nesting boxes](#) provide an artificial home when the natural environment cannot provide this.

[Building nest boxes after a fire](#) can be particularly important to provide an artificial home to many native animals such as possum species, microbats, and pardalotes. Habitat and biodiversity may become under threat after a bushfire event and actions to assist recovery can include fencing and control of erosion, weed, feral animal, kangaroo, and livestock.

Other [South Australia Legislation](#) provides an important framework in the protection of our biodiversity assets and can assist landholders in navigating through the land management requirements and regulations. To find out more about why native fauna is important and the threats visit the [Landscape SA Hills and Fleurieu website](#). In addition, [publications and information resources](#) by the Department for Environment and Water offer an example of the conservation programs being undertaken in South Australia by dedicated researchers and external partners. The regions [NRM Strategic Plan](#) is another document to assist stakeholders in managing our natural resources.

## MANAGEMENT OPTIONS

- Remnant vegetation should be protected and managed, as it protects biodiversity.
- Remnant and replanted native vegetation should be used to protect the riparian zone and groundwater recharge areas.
- Further fragmentation or isolation of remnant native vegetation should be avoided.
- Native vegetation should be viewed as an integral part of a sustainable enterprise.
- Exotic species that threaten native vegetation and or commercial enterprises should be controlled or eradicated.
- Consider revegetation of indigenous plant species that are adaptable and resilient to climate change
- Consider revegetation projects for biodiversity benefits, e.g. increase and support biodiversity, provide bird habitat

- After a bushfire allow time for your bush to regrow, while protecting recovering habitat from threats
- Monitor and manage threats after a bushfire such as over grazing, weeds, and erosion
- Get out in nature and appreciate its biodiversity value
- Join a local Landcare Group as a volunteer to assist in protecting, learning, and sharing knowledge about biodiversity
- Identity, record and collect species observation data and contribute the many available online applications to improve the knowledge and distribution of species
- Get involved in biodiversity Citizen Science Projects in your local area

## FURTHER RESOURCES

### Natural Resource Centres:

[Adelaide Hills Natural Resource Centre – Norton Summit](#)  
[Mount Pleasant Natural Resource Centre](#)  
[Strathalbyn Natural Resource Centre](#)

### Landscape SA documents & websites:

[Bats in your Backyard](#), Backyards 4 Wildlife Info Sheet.

[Best practice land management guidelines for small grazing properties](#) (2017)

Bushfire recovery and biodiversity, [Factsheet](#), January 2015

Native plants -

<https://landscape.sa.gov.au/hf/plants-and-animals/native-plants-animals-and-biodiversity/native-plants/>

Post-fire woody weed control in bushland, [Factsheet](#), January 2020

[Weed management techniques](#) (minimal disturbance), Factsheet 2019.

### Other resources:

Atlas of Living Australia - <https://www.ala.org.au/>

Atlas of Living Australia/BioCollect BDBSA -  
<https://www.ala.org.au/biocollect-for-citizen-science/>

[Australian Conservation Foundation](#)

BirdsSA - <https://birdssa.asn.au/>

Census of SA Plants, Algae and Fungi -  
<http://www.flora.sa.gov.au/>

FrogWatch SA -  
<https://www.frogwatchsa.com.au/>

iNaturalist app - <https://www.inaturalist.org/>

Landcare SA - <https://landcaresa.asn.au/>

South Australian Legislation –  
<https://www.environment.sa.gov.au/about-us/Legislation>

Threatened Species Recovery Hub -  
<http://www.nespthreatenedspecies.edu.au/>

Trees For Life / Bush For Life –  
<https://treesforlife.org.au/bush-for-life>

**Datsheets provided:**

*Native Aquatic Plants in the Mount Lofty Ranges*  
(series of 11)

*Bird Species and Habitats*

*Frogs of the Mount Lofty Ranges*

*Freshwater Macroinvertebrates*

*Freshwater Fishes of the Mount Lofty Ranges*  
(series of 3, part A, B & C)

*Bats of the Mount Lofty Ranges*

*Native Animal Nest Boxes*