

## Grampians National Park (Gariwerd)

An excursion and fieldwork resource for schools



### Congratulations for taking the leap outdoors!

Excursions and field trips are an important part of the educational experience for students, offering hands-on, concrete experiences that are important for reinforcing key concepts taught in the classroom.

Our aim is that every student leaves a park or reserve with a greater appreciation not only of its unique values, but how these are connected to other places and larger issues, and a desire and the know-how to get involved in making a difference.

Our excursion/fieldwork resources aim to help students:

- develop a sense of wonder, curiosity and respect for our parks and the people and environments they support
- develop their knowledge of their own locality and region and how places are connected
- understand the changes that are occurring in our parks and what strategies are being employed to manage these changes
- consider some of the complex interrelationships between the physical environment and the flora, fauna and fungi that live in our parks
- become informed, responsible and active citizens who contribute to the protection of our special places.

This resource is designed to provide teachers with ideas for planning exciting and experiential learning activities out in our beautiful parks, reserves and waterways.

We would love to hear about ways we can improve this resource to support teachers who take their lessons outdoors. Please contact [education@parks.vic.gov.au](mailto:education@parks.vic.gov.au) with your feedback.

## Why visit?

Grampians National Park sits among the traditional Aboriginal landscape known as Gariwerd in central-western Victoria, approximately 260 kilometres from Melbourne. A very special place, it is listed on the National Heritage register for its cultural heritage, landscape and biodiversity values. It is a popular destination for school students to learn about the diverse human and natural history of the area, to be immersed in nature and to experience challenge and adventure through a range of outdoor activities including camping, bushwalking, rock climbing, abseiling, canoeing and mountain bike riding.

Grampians-Gariwerd is remote yet accessible, and is a great location to visit for subjects such as environmental science, geography and outdoor education. It provides a perfect case study to examine the complex nature of park management, and there are also opportunities for students to get ‘hands on’ through participating in the parks’ volunteer program.

## For teachers

This self-guided excursion is designed to be linked to the Victorian Curriculum for the subjects of geography, science and history, but can be enjoyed by a wide range of students who want to explore, discover and learn about our parks. It is suitable and scalable from Levels 5–10. Some suggested linkages to the Victorian Curriculum are provided below:

Subject	Level	Content descriptions
Geography	5-6	Factors that shape places and influence connections
	7-8	Water in the world Landforms and landscapes
	9-10	Environmental change and management
Science	5-6	Biological sciences
	7-8	Biological sciences Earth and space sciences
	9-10	Biological sciences
History	5-6	The Australian colonies
	7-8	Aboriginal and Torres Strait Islander peoples and cultures

For additional information on the park, download the [visitor guide](#) or visit the [Grampians National Park](#) webpage for additional information including facilities, management plans, maps and images.

## Before you go

Make sure you have reviewed the information provided for planning an excursion at <http://parkweb.vic.gov.au/learn> for safety and permit requirements and have checked the facilities available.

For activities such as bushwalking (including overnight camping) and rock climbing, group sizes are generally restricted to 16 people or less (including leaders). Multiples of 16 are acceptable where campsites cater for larger groups. For appropriate group sizes please refer to the [Adventure Activity Standards](#).

All groups are required to let us know you’re coming. Please complete a Group Activity Statement downloadable from <http://parkweb.vic.gov.au/learn> and email to: [groupactivities@parks.vic.gov.au](mailto:groupactivities@parks.vic.gov.au) at least four weeks prior to arrival. This will assist us to alert you to any park closures, storm damage or management activities such as planned burning or pest animal programs that may affect your visit. It also forms part of

your group's emergency management plan and provided quick access to emergency contacts, should your group need assistance.

You will be visiting a national park that is an important home to many species of plants and animals, some found in only a few other areas, and others nowhere else in the world! Please remember to keep to the paths, don't pick or take any vegetation and take your rubbish home with you.

## Collecting data

We encourage you to gather primary data during your excursion to support a truly immersive and hands-on experience. Pictures, drawings and records of sightings are all easy to take and don't require a research permit. If you'd like to do something that involves moving off the paths, including transects or quadrats, please complete an [application for a research permit](#).

## Structuring your excursion

You might like to begin your exploration of Grampians-Gariwerd at [Brambuk the National Park and Cultural Centre](#). The centre provides an opportunity to source current park information, explore interpretive displays, discover the significant cultural heritage of the area and get involved with hands on cultural activities.

Out in the park, there are a number of popular visitor sites that are easily accessible by coach, others require a minibus or small four-wheel drive to get to as they are more remote. Tour operators can assist with recreational activities such as rock climbing, mountain bike riding, kayaking and bushwalking to add to your experience.

### Halls Gap and the Central Grampians

Start at Brambuk for an introduction to the Aboriginal heritage of the area. Pay a visit to Bunjils art shelter near Stawell or Bundaleer cave near Mt Rosea for an immersive cultural heritage experience. A visit to the Halls Gap historical society history room, Agnes' grave, Lake Bellfield, Borough Huts, and 'the tunnel' will highlight some of the area's early European heritage.

For a more contemporary view of people and the land, make a day trip through the Central Grampians, stopping at campgrounds and popular lookouts along Mt Victory/Northern Grampians Rd to investigate the impacts of tourism on the landscape and flora or fauna.

A trip to Venus Baths provides an easy walk where your group can become citizen scientists. Help Parks Victoria and Earthwatch understand seasonal changes in species distribution and behaviour. You can download the field guide, recording sheet and App from the [Climatewatch website](#).

### Northern Grampians

Heatherlie Quarry provides a fantastic opportunity to explore early European industry. Between 1860 and 1941 a large amount of sandstone was extracted from this site which was used in a number of prominent buildings throughout Victoria. Historic huts and mining relics help paint the picture of the past.

Summerday Valley provides an opportunity for introductory rock climbing lessons and a study of recreation and park management strategies.

### Western Grampians

Groups wishing to explore the rugged remote areas of the park can go to Buandik. Nestled at the base of the Victoria (Bullawin) Range this area is one of Victoria's most significant areas for Aboriginal art and living sites. The small campground at Buandik supports small groups seeking a quiet and remote environment. Visit

Billimina and Manja art shelters and investigate park management – including Aboriginal heritage, fire management, recreation, tourism and environmental programs.

### Southern Grampians

The Southern Grampians offers schools a fantastic opportunity to explore the rugged peaks of Mt Sturgeon and Mt Abrupt. The Piccaninny walk offers a shorter experience with similar views. There are a number of opportunities to study early industry and change over time including the gold mining heritage at Mafeking and water pipeline history between The Wannon Divide and Lake Bellfield. There are also a range of park management programs based in the southern parts of the park.

## Learn and discover

### 1. The making of an inland island

Grampians-Gariwerd is a series of north-south oriented ranges rising abruptly from the surrounding plains. They were formed over hundreds of millions of years by a series of different geological processes.

Around 430–400 million years ago, when Australia separated from Africa and Antarctica, a deep inland basin formed over the area where Grampians-Gariwerd now stands. Sediments deposited in this basin over millions of years became compacted and formed the layers of hard sedimentary sandstones, siltstones and mudstones that comprise the ‘backbone’ of the mountain range. Earthquakes and faulting caused the rock layers to fold and tilt to the west and, with subsequent erosion has shaped the landscape into a classic example of a ‘cuesta’ landform, consisting of abrupt escarpments on the eastern side of the ridges and more gently dipping slopes to the west.

Molten magma was forced up into the sedimentary rocks around 395 million years ago. Some of this granitic magma forced its way into cracks in the sandstones to form dykes and sills in the Wonderland Ranges, Mount William and Mount Difficult. Many walking tracks along the escarpments of the ranges are along these weathered sills, and it was a gold-bearing dyke associated with a quartz vein that was the original source of 0.7 tonnes of alluvial gold extracted from Mafeking during the gold rush in the early 1900s.

The sea has also had an influence on Grampians-Gariwerd. Around 10 million years ago the mountains of Grampians-Gariwerd, the Black Range and the Dundas Range were probably part of a promontory that jutted south into the sea (like the Wilsons Promontory today), while nearby Mount Arapiles was probably an island. Grampians-Gariwerd’s coastal history has been an important factor in the development of a distinctive flora and fauna which includes species of normally coastal plants and animals (for example the Southern Emu-wren, Heath Rat, Blue Howittia and a form of Coast Banksia now called Rock Banksia).

While the present-day coastline is now more than 150 kilometres to the south, Grampians-Gariwerd still maintains its island-like character, rising abruptly from the surrounding landscape. Because of its history and geology, it provides a home to a range of plants and animals that have adapted to its unique character.

### 2. People and the land

Aboriginal people have sustained lifestyles in and around Grampians-Gariwerd for tens of thousands of years. Grampians-Gariwerd contains the densest concentration of Aboriginal rock paintings in Victoria and is one of the major rock art sites in south eastern Australia, comprising more than 100 sites. The presence of so much artwork indicates that Grampians-Gariwerd was a very important site for Aboriginal people. Gariwerd is listed on the National Heritage register for its evidence of early occupation in the semi-arid zone and later temperate environments over the past 20,000 years.

Ngamadjidj Shelter, a short walk from Stapylton Campground, is an important Aboriginal rock art site. The walk to the shelter gives an insight into the culture and heritage of the local Aboriginal people. Ngamadjidj is on the Northern tip of the ranges near a small secluded waterhole. The paintings at this site are unusual because only white clay was used. Elsewhere in Grampians-Gariwerd the paintings were mostly done with red pigment. Unfortunately, nothing is known about the meaning of these paintings and the traditional lifestyle of the Jarwadjali was destroyed before it could be recorded.

Europeans first came to the area in 1836 when NSW Surveyor-General Major Thomas Mitchell led an expedition to western Victoria, naming the ranges after the Grampians in his native Scotland. Mitchell's expedition opened the way for European settlement, including grazing, gold mining, quarrying, timber production, water harvesting and tourism. Mitchell's report described the land as full of riches to be harvested and exploited, encouraging squatters to move there in the early 1840s.

The first pastoral run in the area was occupied by Lieutenant Robert Briggs Ledcourt in 1841. Many more runs were established in the following years, mainly for grazing sheep. However, the mountains themselves were generally unsuitable for grazing and were more valued for their resources of water, stone, timber and gold. As European settlement spread, the Grampians-Gariwerd became a vital source of water for farming and domestic purposes for a large part of north-western Victoria, and to this day continues to be an important water supply to local communities.

Since its declaration in 1984, the park has been one of Victoria's largest and most popular, attracting increasing numbers of interstate and overseas visitors, and many Victorians have continued to have a close involvement with its management.

Today the park is the fourth largest national park in Victoria and welcomes more than a million visitors each year. Recreational activities such as picnics, scenic driving, wildflower and wildlife viewing, bushwalking, camping and rock climbing are the most popular ways to experience the park.

### 3. Water in the landscape

Over many millions of years, water has shaped both the geology and ecology of Grampians-Gariwerd, and continues to do so today. Grampians-Gariwerd receives a relatively high and reliable rainfall, however it doesn't all fall evenly over the mountains. The localised variation in rainfall has produced a mosaic of habitats, including streams, swamps and reservoirs that support a diversity of aquatic species including native fish, eels and crayfish, and drier terrestrial habitats such as woodlands and grasslands.

Water harvesting has occurred within Grampians-Gariwerd since Europeans settled the area in the late 1800s. While little is known about the impacts of early water harvesting on park ecosystems, construction of the Moora Moora Reservoir, artificial lakes, drainage channels and clearing of some areas for tracks have significantly reduced stream flow in some areas, impacting the wetland habitat available as well as vegetation communities that rely on regular inundation (such as River Red Gums).

The health of the water and stream ecosystems within the park is important to maintain and improve, as water has an impact far beyond the physical boundaries of the National Park. For example, the Glenelg and Mackenzie rivers have their source in Grampians-Gariwerd, as do several substantial streams, and water occasionally reaches as far as Wyperfield National Park, 150 kilometres northwest. Almost three quarters of the park is used as special water supply catchment areas, producing high-quality water to supply western Victoria, which is important to the regional economy. The significance of water to the ecosystems and economy of the region is one of the reasons the National Park was created.

## 4. A biodiversity hotspot

An island of native vegetation surrounded by cleared agricultural lands, Grampians-Gariwerd protects some of Victoria's most diverse ecological communities and is one of the most bio-diverse regions in Victoria. It is so unique that it even has its own bioregion, the term used to categorise areas with similar ecological communities. It is listed on the National Heritage list for its floristic richness and endemism, diversity of terrestrial and freshwater invertebrates, important example of geological and formative processes and the resulting natural landscape – or aesthetic value.

Over 975 native plant species occur in Grampians-Gariwerd, representing over a third of Victorian flora, and is home to 20 species found nowhere else in the world. The incredible diversity of plant life in is linked to the wide variations found in its geological formation, topography, soils and climate, and its island-like isolation from the surrounding landscape.

There are many different environments within Grampians-Gariwerd, from the sub-alpine rocky heathlands of Mount William and the tall forests of the wetter gullies to the heathlands and wetlands of the slopes and valleys. These all create distinct habitats for a host of plants, animals and fungi, many of which are found nowhere else. For example, twelve plant species, including the Grampians Gum and Grampians Parrot-pea, are only found at Grampians-Gariwerd.

The extensive size of the park provides important habitat for over 200 bird species, 35 mammal species, 28 reptile species, six native fish and eleven species of frogs. Rare and threatened fauna found within the park include the Brush-tailed Rock-wallaby and Long-nosed Potoroo. Brush-tailed Rock-wallabies were once common along most of the east coast of Australia but hunting pressures in the early 1900's caused their near-extinction. The Brush-tailed Rock-wallaby disappeared from the park but was reintroduced into Grampians-Gariwerd in 2008 after an intensive study and captive breeding program. This and many other research programs continue within the National Park.

## 5. Managing the park today

Park rangers have a challenging job, balancing the need to conserve important plant and animal species, landscape features and cultural heritage, alongside the needs of visitors and regional communities and Victorians. Grampians-Gariwerd is managed in accordance with the *National Parks Act 1975* to protect its natural and cultural values while providing for a range of recreation opportunities including scenic driving, camping, bushwalking and rock climbing.

Since Europeans arrived in the landscape, deer, foxes, feral cats, rabbits, goats, rats, mice and feral bees have all been introduced to the park environment. Hard hooved animals cause damage through compaction of soil, accelerated erosion (especially around water) and can also compete with native animals for food. Cats and foxes are very good hunters, killing large numbers of native birds, reptiles and mammals, many of which are already threatened by reduced habitat availability and climate change.

Water harvesting has changed some of the ecosystems in the park, and the natural water cycle has been considerably modified in some areas, especially the Victoria Valley, by the construction of the Moora Moora Reservoir. Management of water harvesting must consider the needs of local communities and business as well as the ecological condition of streams and wetlands, which can be affected by reduced stream flow.

Steep slopes and lots of water means that the potential for soil erosion and loss is high. Most of the soils are shallow and infertile and occur on the slopes, requiring vegetation to hold them in place. Activities that

reduce vegetation cover in these areas (such as large intense bushfires, feral animal and recreation impacts) can have the cumulative impact of habitat destruction, soil loss and a reduction in water quality.

The invasive pathogen, *Phytophthora cinnamomi* (Cinnamon Fungus), is seriously affecting a number of native species such as the Grass Tree. *Phytophthora* is a microscopic, soil borne pathogen (disease causing organism), previously classified as a fungus. It attacks the roots of susceptible species, inhibiting their ability to absorb nutrients and water. *Phytophthora* comes from the Greek meaning “plant destroyer” and the family includes the pathogen which caused the Irish Potato Famine of the 1840s causing an influx of Irish immigrants to Australia. *Phytophthora* has been recorded at many sites within the park. The organism is spread to non-infected areas through water, animals and on the bottom of boots and vehicles. Land managers do not have a cure for this pathogen so the only way to limit its impact is to avoid spreading it.

*Acacia longifolia* (Sallow Wattle) is a native species to Australia, however studies within Grampians-Gariwerd have shown that it has the ability to reduce floristic diversity, meaning where it is found to occur, there are fewer other species present. Currently found in the north of the park, it has the potential to spread throughout the park if not managed, changing the type and structure of the native forest environments. Since 2014 there has been a management program in place to try to halt its spread south by defining a containment area where it would be realistic to maintain the current range of this species and eradicating the plants outside of this area.

Natural processes including fires and floods can be seen as disasters and have, in recent years significantly affected the park’s amenity and ecosystems. However, fire and water play important ecological roles, releasing and moving nutrients around, creating new growth and food for animals and promoting seed germination of some species. Any change in the natural fire regime can significantly impact some species and communities. Because Grampians-Gariwerd contains a diverse mosaic of vegetation communities, and because fires can also present a risk to public and private infrastructure and human life, establishing appropriate fire regimes throughout the park presents a particular challenge for land managers.

Recreational and commercial activities can also have a significant impact on park values. For example, the park is popular for climbing and walking however these activities can fragment significant plant communities, spread cinnamon fungus, impact water quality (through poor toileting and rubbish disposal), increase the risk of bushfires and damage cultural artefacts and rock art sites. Park managers employ a range of strategies to try to minimise the impact of recreational and commercial activities, including licensing (regulation), temporary closures for rehabilitation, or closure and relocation of facilities and infrastructure to reduce impacts.

The park management plan provides more information on the management directions and strategies employed to counter some of the issues highlighted above and to assist visitors safely explore and enjoy the park.

#### Case Study: Managing a dynamic natural landscape at Summerday Valley

Summerday Valley is a site within the northern Grampians that has been largely influenced by natural disaster and human use of the site.

After a major fire in the 1980s, severely burnt vegetation meant Summerday Valley unintentionally opened up as a popular rock climbing site. Many access tracks criss-crossed the area, causing erosion and loss of stabilising groundcover.

More recently Summerday Valley was affected by flooding rains in 2011-12. Around 280mm of rain fell in just three days creating landslips, overflowing creeks and a massive amount of mud. The flood caused new areas to be exposed, including an Aboriginal cultural heritage site on one of the main walls at Summerday Valley. Three years after the floods, fire burnt the area again and the site was closed for public safety and repair.

The flood and subsequent fire gave Parks Victoria a chance to reassess the site and strategically plan how visitors interact with the natural features while also improving conservation outcomes.

Under the guidance from the park management plan and the Fire Recovery Plan, Parks Victoria, along with financial support from the Grampians Walking Track Support Group, Horsham Rural City Council and CliffCare have redesigned the site to make it more sustainable to visitor use over time.

The sandy, eroded main entry track was redirected to a track over rocks that can sustain more foot traffic. Wire boardwalks are used in wet or sandy areas to minimise erosion and stabilise soft soils. The track now flows better and good planning has minimised soil movement and erosion. Water now runs through the site without causing major erosion. In 2016 the Grampians was subject to flooding rains closing large areas of the park. Summerday Valley remained open and shows the redesigned track work successfully mitigated potential damage.

Within the main rock climbing area, the centre of the site has been fenced off. This area is where the original 1980's tracks cross-crossed vegetation. Visitors and climbers are now redirected around the base, close to the cliff face. Revegetation and undisturbed regrowth within fenced centre area has resulted in rare plants like large leaf ray flower reappearing after being absent for years.

## Discover and reflect

You might like to enhance your excursion with some activities and inquiries that help students record and extend their learning back into the classroom. You might like to complete one or more of the following:

1. Take photos to create an annotated photolog or poster of your excursion to share with classmates. You could use social media to share it with friends.
2. Create a short video that helps tell one of the five stories outlined above to share with classmates.
3. Consider the historical impacts of rock-climbing on Summerday Valley, management strategies to improve the sites sustainability and the presence of threatened species at this site. Bouldering is now an emerging sport at this site and growing in popularity. Should Parks Victoria establish a management plan for bouldering, and what might this need to consider?
4. What evidence can you see of community partnerships in Summerday Valley's redesign? Why is this important?
5. Consider the historical impacts of rock climbing on the landscape, ecology and cultural heritage of Summerday Valley. What management actions do you think would help minimise these and why?
6. Describe the benefits of having areas set aside for campgrounds, rather than people camping wherever they like?
7. Consider and discuss how people living here thousands of years ago may have interpreted the landscape differently to how we understand its origins today.
8. Discuss possible impacts of increased visitation on some of the popular sites you have visited. If you were a park ranger, how would you manage these impacts?
9. What evidence can you see that shows plants recover after fire?

10. Create a sound map of various points around the park, taking a series of 30-second audio recordings, referenced back to points on a map. Students can also record their audio observations on paper, using lines made from a central point to indicate the direction, type and frequency of sounds they hear, and whether it adds or detracts from the environment.
11. Discuss the role National Parks play in connecting people to their environment, or influencing personal relationships to nature.
12. Become a citizen scientist and walk our [Climatewatch trail](#). You can download the app, recording sheet and species identification guide from the [Climatewatch](#) website.
13. Download PDF Avenza Maps App and a free copy of Grampians National Park to record your fieldwork / excursion and upload photos and notes.

## Get active

[Contact the ParkConnect team](#) if you would like to get your students involved in some hands-on volunteer activities in Grampians National Park.

*Parks Victoria respectfully acknowledges the Traditional Owners of what is now known as Victoria. For many thousands of years they have lived in harmony with, and carefully managed the Country for which they have a deep spiritual connection. Contemporary Aboriginal people are proud of their ancestry and in addition to their inherent rights, they have spiritual and cultural obligations to ensure that their ancestral land and culture is managed responsibly and appropriately.*