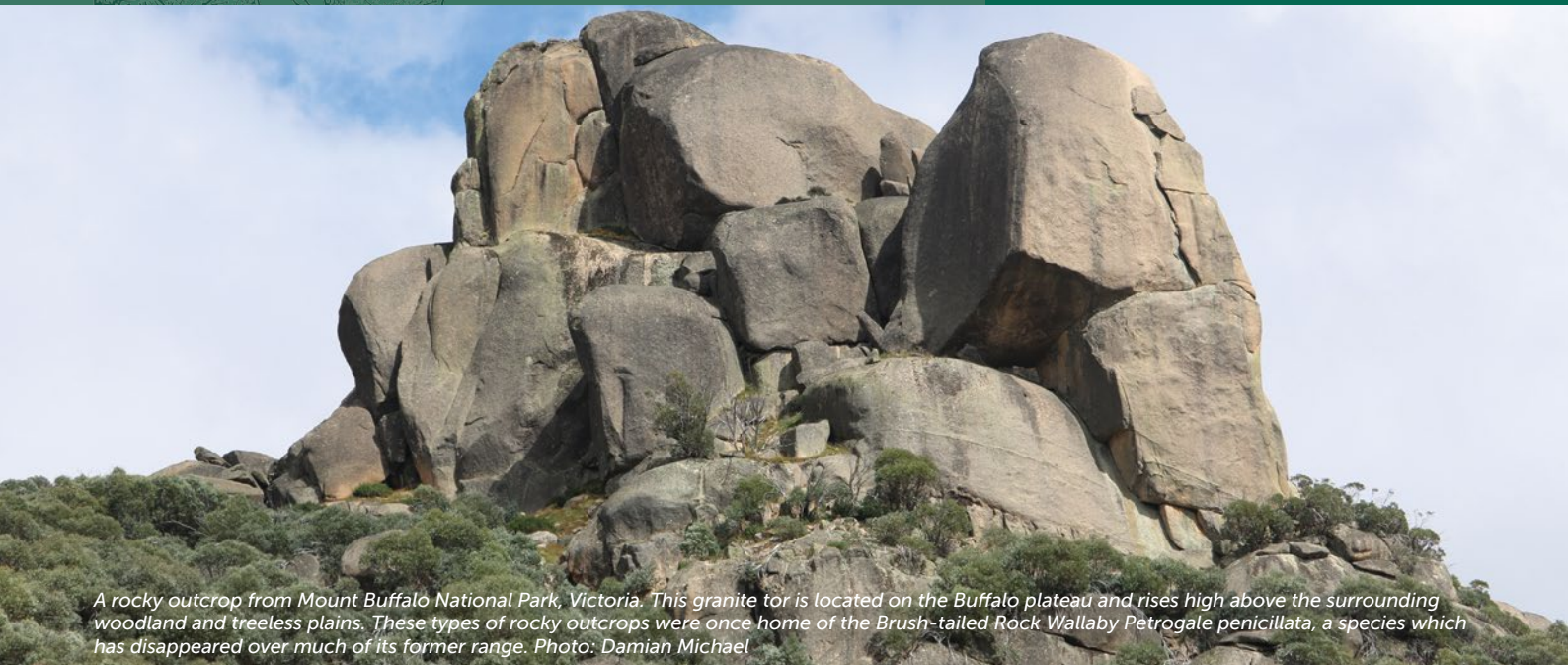


# Rocky outcrop degradation and the impacts on native wildlife



Threatened  
Species  
Recovery  
Hub

National Environmental Science Programme



A rocky outcrop from Mount Buffalo National Park, Victoria. This granite tor is located on the Buffalo plateau and rises high above the surrounding woodland and treeless plains. These types of rocky outcrops were once home of the Brush-tailed Rock Wallaby *Petrogale penicillata*, a species which has disappeared over much of its former range. Photo: Damian Michael

## What are rocky outcrops?

Rocky outcrops are visible exposures of bedrock. They occur on all continents, many islands and on the ocean floor, and are found in a wide range of vegetation types and climate zones. Rocky outcrops vary considerably in size and shape, and often have an 'island-like' appearance of protruding from relatively flat landscapes.



## How do rocky outcrops form?

Rocky outcrops form when bedrock is exposed at the Earth's surface through erosion, a process which may take millions of years. Heat, water and chemical reactions shape the exposed rock resulting in a wide range of characteristic and complex rock formations. Different rock types produce rocky outcrops with distinctive shapes and features. For example, granite outcrops are often domed-shaped with flared sloping sides, ironstone formations are often irregularly shaped, sandstone formation are often flat-topped and layered in appearance and basaltic formations are often block-shaped and have column-like features.

*The Inland Carpet Python *Morelia spilota metcalfei* is a threatened species closely associated with rocky outcrops in parts of its geographical range. This species is often illegally collected from the wild and sold in the pet industry. Photo: Damian Michael*

## Why are rocky outcrops important?

Rocky outcrops provide plants and animals with shelter, protection from predators and refuge from fire or extreme weather conditions. Rocky outcrops also provide animals with places to forage, lay their eggs or give birth to live young. Many rocky outcrops support rare and endangered plants and animals and are places rich in biological diversity.

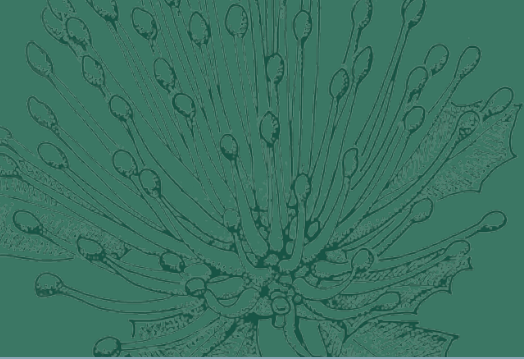
Large rocky outcrops can influence weather conditions and provide geologically stable microclimates that are exploited by organisms with ancient lineages. Some rocky outcrops retain moisture through moss beds and subsurface seepages which is then slowly released back into the environment. Many rocky outcrops are sacred and provide Indigenous people with a wide range of resources, including water, food, medicine and stone tools.



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## What threatened species are dependent on rocky outcrops?

Approximately 180 species are restricted to rocky outcrops in Australia, of which, more than 50 are threatened with extinction. These include various rock-dwelling lizards and snakes, bats and rock-wallabies, possums, rock rats, rock pigeons and grass wrens, spiders and aquatic invertebrates. Some of the most threatened species restricted to rocky outcrops include the Black Mountain Boulder Frog *Cophixalis saxatilis*, Gulburu Gecko *Phyllurus gulbaru*, Arnhem Land Skink *Bellatorius obiri*, Barrier Range Dragon *Ctenophorus mirrityana*, Brush-tailed Rock Wallaby *Petrogale penicillata*, Central Rock Rat *Zyomys pedunculatus* and Southern Bentwing Bat *Miniopterus schreibersii bassanii*. A large number of plants and ecological vegetation communities associated with rocky outcrops are also threatened. These include the Arnhem Plateau Sandstone Shrubland complex and species such as the Narrabarba Wattle *Acacia constablei*, Bega Wattle *A. georgensis* and Rhyolite Midge Orchid *Genoplesium rhyoliticum*.

From an agricultural perspective, rocky outcrops are important because they provide livestock with shelter, harbor species that prey on agricultural pests, and support insects which contribute to crop pollination. Large expanses of exposed rock serve as natural fire breaks and buffer the effects of intensive fires.

## What are the main threats to rocky outcrops?

Rocky outcrops are quarried and used for landscaping, constructing buildings and roads. Some rock types are used to make pavers, benchtops and sculptures. In peri-urban areas, rocky outcrops are destroyed or removed to make way for urban development. In rural areas, rocky outcrop are often damaged by livestock and feral animals such as pigs, goats and deer.

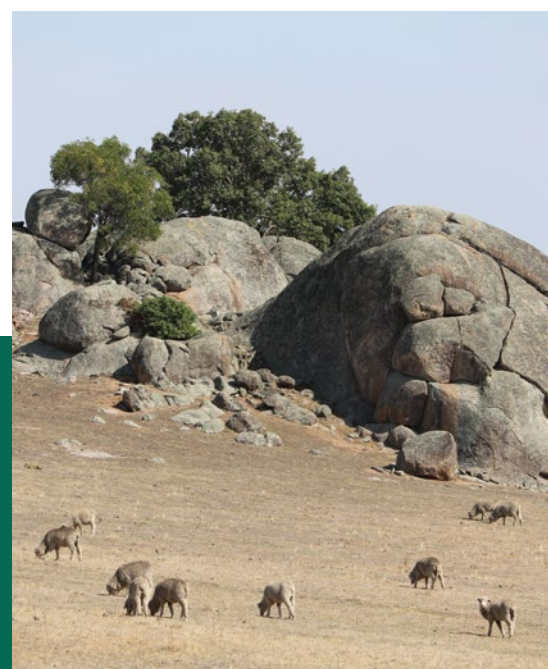
Rocky outcrops can be damaged by illegal reptile collectors, bush rock removal and various recreational activities such as rock crawling and rock climbing. The vegetation that grows on rocky outcrops is often degraded through land clearing, inappropriate fire and livestock grazing regimes, and invasive weeds. In some regions, rocky outcrop plant

and animal communities are affected by climate change, air pollution and acid rain. Degradation of rocky outcrops reduces habitat suitability for a wide range of plants and animals and places many species at risk of local extinction.

## How should rocky outcrops be managed to improve biodiversity?

Rocky outcrops in good condition should be fenced off from livestock and grazing pressure, invasive weeds and pest animals should be managed or controlled. Rocky outcrops in poor condition should be revegetated with local providence species taking into account plant species composition and planting density. Artificial rocks can be created and used to restore missing microhabitats.

*A rocky outcrop in an agricultural landscape that has been degraded by land clearing, overgrazing by livestock and invasion by exotic weeds. Photo: Damian Michael*



## Further Information

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For more information on Research Project 1.2.1.6 Enhancing critical habitat for the Pink-tailed Worm-lizard in agricultural landscapes see the TSR Hub website.