

Geology of Flinders Chase National Park

Geology

Geological phenomena are major attractions in Flinders Chase National Park. The naturally sculptured Remarkable Rocks formation lies atop a remnant granite outcrop to carve and shape the coastline. The nearby Kelly Hill Caves offer a visually stunning example of limestone caves and fantastic cave formations.

The western coastline of Kangaroo Island is dominated by tall limestone cliffs overlying metamorphosed sedimentary rocks and topped by high, rolling calcareous sand dunes. The uplands of Flinders Chase NP (Gosselands) are formed by an ironstone plateau (called laterite), deeply incised by streams exposing folded and metamorphosed sedimentary rocks. Soils within the Park range from acid duplex soils in the Gosselands area to deep calcareous sands in the south west.

Admirals Arch



Photo credit: G McGregor

The focus of wave energy over millions of years caused the formation of the Casuarina Islets and Admirals Arch of the south west tip of Flinders Chase National Park. The roof of the Arch will eventually collapse and form the third Casuarina Islet.

There are three types of rock which erode at different rates:

1. Outer layer: Hard slowly dissolving and eroding.
2. Inner layer: Soft rock which has already eroded.
3. Base layer: Hard, dark rock which is very slow to erode.

Remarkable Rocks



Photo credit: G McGregor

The formation of Remarkable Rocks is a five hundred year old story of change. Little by little change continues – aided by the wind, rain, salt and the footsteps of one hundred thousand visitors per year.

More than 500 million years ago melted rock rises:

- A huge geological upheaval caused the melting of rock far below the earth's surface.
- The molten rock (magma) was buoyant and began to rise, moving upward through the overlying rock.
- During this time, the overlying sedimentary rocks (metamorphosed sedimentary rock of the Kanmantoo Group) were affected by heat and pressure (metamorphosed – made harder and more crystalline).
- Very slowly the molten mass begins to cool – up to 10 kilometres below the earth's surface. Slow cooling at great depths forms granite.
- The cooled granite develops into block with variably spaced cracks; the overlying rock is beginning to erode. As the weight of the overlying rock is removed, the granite begins to fracture into sheets (layers).

About 200 million years ago the granite dome is finally exposed.

- Further fractures developed in the top sheet, allowing weathering to take place, eventually isolated blocks form on the granite 'dome'.

For the last 200 million years the granite dome has been subjected to erosive forces, these forces have formed the curious shapes you see today at Remarkable Rocks:

- Alternate heating, cooling, wetting and drying.
- Sea spray entering cracks and crevices – the crystallising salt expands and breaks up the rock.
- Wave action during periods of higher sea levels.

Orange lichen makes soil

The orange colour on the rocks is an extremely slow growing organism known as lichen. Grey and green lichens grow on the rocks in less exposed sites.

Lichens are the only living thing able to survive on bare rock. They secrete an acid to release their food (minerals and nutrients) from the rock. This process creates soil – slowly breaking down Remarkable Rocks.



Texture of Golden yellow orange Lichen on rocks at Remarkable Rocks, natural rock formation at Flinders Chase National Park. One of Kangaroo Island's iconic landmarks, South Australia — Photo by Sasimoto (depositphotos.com).

For more information

Natural Resources Centre, Kangaroo Island

P (08) 8553 4444

E kinrc@sa.gov.au

www.naturalresources.sa.gov.au/kangarooisland/



Natural Resources
Kangaroo Island



Government
of South Australia