

INFORMATION SHEET



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Dinosaur Dreaming – The Inverloch Fossil site

The Flat Rocks fossil site at Inverloch is located approximately 150 km south-east of Melbourne, on the south coast of Victoria. The area has special significance to Australia's fossil history as the discovery of Australia's first dinosaur bone, the Cape Paterson Claw, was found at a nearby site in 1903 by William Ferguson. The currently active site was discovered in 1991 when a group of researchers from Monash University and Museum Victoria were prospecting that part of the coastline for suitable locations for potential fossil dig sites.



The Cape Paterson claw, found by William Ferguson in 1903 at Eagle's Nest, was Australia's first dinosaur bone.
Source: Museum Victoria.

The first formal dig at Inverloch was in 1992 when researchers spent two weeks testing the productivity of the site. In this time more than 300 fossil bones buried below the surface of the shore platform were recovered. The site proved so productive that organised annual summer digs called 'Dinosaur Dreaming' commenced in 1994 and have collected an average of 700 fossil bones and teeth from each field season. The fossil layer at the Flat Rocks site is still producing as many fossil bones and teeth as when digging first started. The Dinosaur Dreaming dig will continue for as long as financial support continues to fund the dig.

How old are the fossils?

The sedimentary rocks along the Strzelecki coastline were laid down approximately 120 to

115 million years ago in the Early Cretaceous period. The rocks have been dated using both Fission Track Dating (based on radioactive content) and Palynology (based on the fossil pollen in the rock). Both methods of dating correlate the age of the rocks to about 120 million years plus or minus five million years.

The Fossils of Flat Rocks

The fossil bones of many different animals have been found at the Flat Rocks site. There is evidence of at least five different types of dinosaur as well as the fossil bones of other reptiles, birds, mammals and fish. The fossil bones found at the site are the remains of animals that lived in an ancient river and the surrounding valley. The bones were washed into the river during flooding events and concentrated in the river bed.



The Dinosaur Dreaming field dig at Inverloch.
Photographer/Source: Lesley Kool

Dinosaurs and other reptiles

The most commonly found dinosaur at Flat Rocks is a small plant eater belonging to the Hypsilophodont family. This dinosaur was the size of a small wallaby and ran on its hind legs. *Qantassaurus intrepidus* is the latest hypsilophodontid dinosaur to be named from the site, however there are at least two other members of the hypsilophodontidae family



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represented. Evidence of tiny dinosaur bones at the site suggests that the area may have been a nesting ground for part of the year. There is also evidence of other dinosaurs including ankylosaurs and theropod dinosaurs at Flat Rocks and surrounding areas.

Flying reptiles (pterosaurs) are sometimes mistakenly called dinosaurs, but belong to a different group of reptiles. A number of unusual teeth found at the Flat Rocks site have been assigned to pterosaurs, as well as some limb bones. The turtles of Flat Rocks appear to have been rather primitive. They had short necks, unlike most of Australia's modern turtles. A number of isolated teeth have been identified as belonging to small fresh-water plesiosaurs.

Mammals

In 1997, a fossil jaw only 17mm long with four teeth was found. The jaw belonged to an insectivorous mammal no bigger than a mouse and was named *Ausktribosphenous nyktos*. The teeth resembled those of a placental mammal. However, because all previous fossil evidence supported the idea that marsupials arrived in Australia long before placental mammals, the description of this discovery as a placental mammal was not accepted by many researchers. There has been much debate since the discovery of this jaw, and there is still no agreement as to which group of mammals it belongs to.

Since 1997 a further 36 mammal jaws have been found at the site, some of which belong to a new group of monotremes (*Teinolophos trusleri*) and represent the world's oldest and smallest monotremes. In 2004 a single tooth in a jaw fragment was found that may represent evidence in Australia of a group of extinct mammals called Multituberculates.

Other animals

The fossilized remains of fish are very common at the Flat Rocks site. Before 1997 the only evidence of Early Cretaceous birds in Victoria came from Koonwarra, 40 km north of the Flat Rocks site. In 1997 the first definitive bird bone

was found at Flat Rocks. A number of other possible bird bones have since turned up at the site and are currently being studied.

Volunteering at the dig – getting involved

Dinosaur Dreaming Field Digs commence in mid to late January each year and run for six weeks, ending in early March. New volunteers are invited to apply to join the dig for one week during this period, commencing on a Sunday and ending on a Sunday. There are a limited number of places available and selection is at the discretion of the selectors. Applications and information on becoming a volunteer at the 2006 dig are available from Melbourne Museum's Discovery Centre:

Melbourne Museum Discovery Centre

GPO Box 666E

Melbourne, Victoria, 3001

Phone: 03 8341 7111 (10am – 4:30pm daily)

Fax: 03 8341 7788

Email: discoverycentre@museum.vic.gov.au

Further reading

Museum Victoria Information Sheets:

Geological Time and the Age of Rocks
Victoria's Dinosaurs

Vickers-Rich, P., Monaghan, J. M., Baird, R. F. and Rich, T. H. 1991. *Vertebrate Palaeontology of Australasia*. Pioneer Design Studio, Novacek.

Vickers-Rich, P. and Rich, T. H. 1993. *Australia's polar dinosaurs*. Scientific American, July 1993: 50–55.

Vickers-Rich, P., and Rich, T., 2000. *Dinosaurs of Darkness*. Allen & Unwin, Crows Nest.

Internet resources

Museum Victoria's *Dinosaurs & Fossils* web site:

<http://www.museum.vic.gov.au/science/dinosaurs/>

Monash Science Centre – Dinosaur Dreaming:

<http://www.sci.monash.edu.au/msc/dinodream/>

Museum of Palaeontology, University of California, Berkeley:

<http://www.ucmp.berkeley.edu/>

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