

## AN OUTSTANDING REVIEW OF VICTORIA'S CRETACEOUS FAUNA AND FLORA

In January 2017 Dr. Tom Rich and Professor Pat Vickers-Rich were approached by Dr. Ben Kear, Chief editor of *Alcheringa: An Australian Journal of Palaeontology*, to discuss the possibility of compiling a review of the Cretaceous fossil fauna and flora of Victoria. This enormous task was mitigated by the fact that one of Pat's associates, Dr. Stephen Poropat was in the process of assembling a database of Australian Mesozoic vertebrates and was the obvious choice to lead the review.

As Stephen wrote in his report for the Dinosaur Dreaming 2017 Annual Report –

“While I felt confident that I would be able to summarise the vertebrates (other than fish and mammals) without much assistance, I knew that I would need help from other palaeontologists to adequately overview the other fossil groups. Consequently, we enlisted the help of Anne-Marie Tosolini (University of Melbourne) to summarise the plants, Barbara Wagstaff (University of Melbourne) to assess the palynomorphs, Sarah Martin (Geological Survey of Western Australia) to review the invertebrates, and Lynne Bean (Australian National University) to sum up the ray-finned fish. Tom wrote the mammal section, and I did the rest — with helpful input from Ben Kear in places.”

The result of the collaborations between these researchers, experts in their fields, is the most comprehensive review of not just fossil vertebrates, but invertebrates and plants, collected from Cretaceous outcrops in Victoria over the last 100 years. The paper was published in *Alcheringa* in May 2018 and will be the “go to” work for current and future researchers for many years to come. It also helps us to realise just how diverse and exciting the Cretaceous of Victoria must have been.

**Early Cretaceous polar biotas of Victoria, southeastern Australia—an overview of research to date.** S.F. Poropat, S.K. Martin, A-M. P. Tosolini, B.E. Wagstaff, L.B. Bean, B.P. Kear, P.Vickers-Rich, T.H. Rich.  
*Alcheringa* 42, 2018 – Issue 2, pps.157-229.

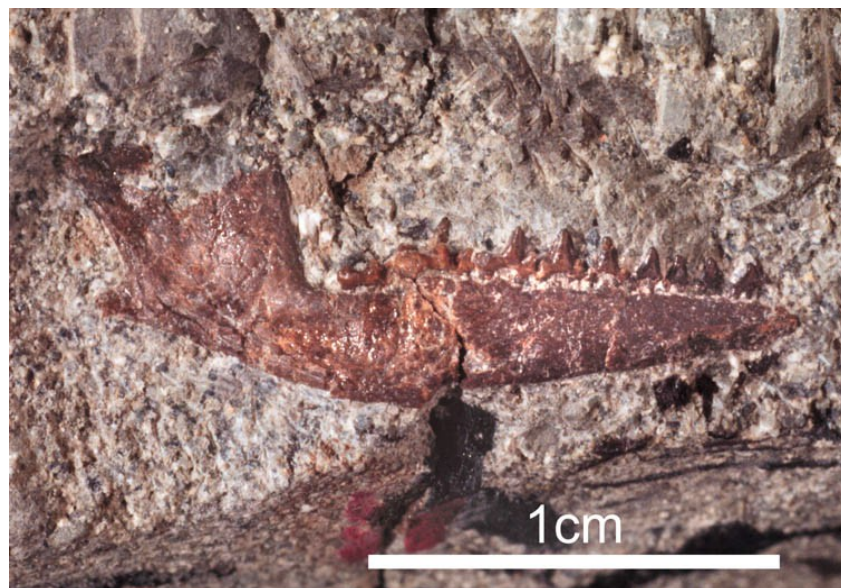
### Abstract:

Although Cretaceous fossils (coal excluded) from Victoria, Australia, were first reported in the 1850s, it was not until the 1950s that detailed studies of these fossils were undertaken. Numerous fossil localities have been identified in Victoria since the 1960s, including the Koonwarra Fossil Bed (Strzelecki Group) near Leongatha, the Dinosaur Cove and Eric the Red West sites (Otway Group) at Cape Otway, and the Flat Rocks site (Strzelecki Group) near Cape Paterson. Systematic exploration over the past five decades has resulted in the collection of thousands of fossils representing various plants, invertebrates and vertebrates. Some of the best-preserved and most diverse Hauterivian–Barremian floral assemblages in Australia derive from outcrops of the lower Strzelecki Group in the Gippsland Basin. The slightly younger Koonwarra Fossil Bed (Aptian) is a *Konservat-Lagerstätte* that also preserves abundant plants, including one of the oldest known flowers. In addition, insects, crustaceans (including the only syncaridans known from Australia between the Triassic and the present), arachnids (including Australia's only known opilione), the stratigraphically youngest xiphosurans from Australia, bryozoans, unionoid molluscs and a rich assemblage of actinopterygian fish are known from the Koonwarra Fossil Bed. The oldest known—and only Mesozoic—fossil feathers from the Australian continent constitute the only evidence for tetrapods at Koonwarra. By contrast, the Barremian–Aptian-aged deposits at the Flat Rocks site, and the Aptian–Albian-aged strata at the Dinosaur Cove and Eric the Red West sites, are all dominated by tetrapod fossils, with actinopterygians and dipnoans relatively rare. Small ornithopod (=basal neornithischian) dinosaurs

are numerically common, known from four partial skeletons and a multitude of isolated bones. Aquatic meiolaniform turtles constitute another prominent faunal element, represented by numerous isolated bones and articulated carapaces and plastrons. More than 50 specimens—mostly lower jaws—evinced a high diversity of mammals, including monotremes, a multituberculate and several enigmatic ausktribosphenids. Relatively minor components of these fossil assemblages are diverse theropods (including birds), rare ankylosaurs and ceratopsians, pterosaurs, non-marine plesiosaurs and a lepidosaur. In the older strata of the upper Strzelecki Group, temnospondyl amphibians—the youngest known worldwide—are a conspicuous component of the fauna, whereas crocodylomorphs appear to be present only in up-sequence deposits of the Otway Group. Invertebrates are uncommon, although decapod crustaceans and unionoid bivalves have been described. Collectively, the Early Cretaceous biota of Victoria provides insights into a unique Mesozoic high-latitude palaeoenvironment and elucidates both palaeoclimatic and palaeobiogeographic changes throughout more than 25 million years of geological time.



Cape Paterson claw – first dinosaur bone found in Australia ( Eagles Nest, Cape Paterson May 1903)



Tiny mammal jaw – *Bishops whitmorei* – found at the Flat Rocks site, Inverloch