PROGRAM & ABSTRACTS

18th Conference on Australasian Vertebrate Evolution, Palaeontology and Systematics

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Melbourne Museum, Melbourne, Victoria

Monday 27th – Thursday 30th November 2023
The Koonwarra Fossil Fish Beds Konservat-Lagerstätte: an Update

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The Koonwarra Fossil Fish Beds located in South Gippsland, Victoria, Australia is renowned for the quality and quantity of the Early Cretaceous fossil plants, arthropods and fish recovered from this ancient lake deposit.

A 21 metre, 5 cm diameter core was drilled at this site by Vic Roads on 22 January 2018. The lowermost 10 m of the core sampled almost the entire thickness of the fossiliferous unit. Given time constraints when the core was drilled, it had to be abandoned just short of reaching the expected base of the fossiliferous unit. Based on the spacing of varves, the 10 m of the fossiliferous section of the core was deposited in approximately 5,000 yrs. The lower section of the core has enabled detailed studies of the sequences of the sediments, palynomorphs and geochemistry.

The geochemical data collected consisted of measurements of carbon, nitrogen and sulphur. Samples were taken at 10 cm intervals over the 10 m of the lower part of the core. The proportions of the isotopes of all three elements are concordant with the lake bottom sediments being anoxic. This accords with the lack of bioturbation of those sediments.

Prominent amongst the geochemical results was the recognition of three spikes in the abundance of sulphur below 16 m. This supports the hypothesis that there were three episodes of increased volcanogenic activity that contributed sediment to the Koonwarra lake, volcanogenic sediments being considered to be the general source of the lake sediment.

95 plant taxa were represented in the 24 samples analysed. Based on key taxa, a mid-Albian age, 107 myBp, was suggested for all samples taken from the core.

Samples collected from sands immediately above and below the fossiliferous unit were Zircon dated (U-Pb) at ≤114 myBp (late Aptian or younger). As zircon dates from sediments are maximum dates, the data are consistent with a mid-Albian age for the core based on the pollen fossils.

Thursday 4:30 pm, P38