

Taphonomy of the megafauna accumulation at Lancefield Swamp, Victoria

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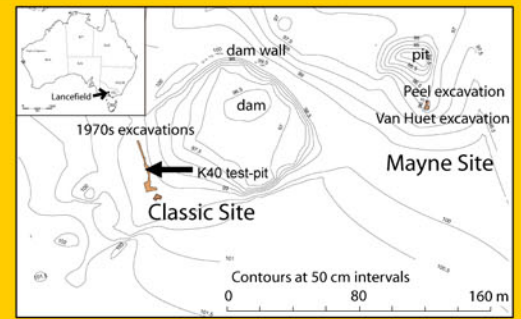
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Introduction

Taphonomic analysis of the megafauna bone accumulation at Lancefield Swamp can test models for Late Pleistocene faunal extinction¹. If the bones represent an *in situ* waterhole death assemblage dated to the Last Glacial Maximum (30-19,000 BP), as argued previously, then extinction was likely due to climatic impacts, not human ones². If recent claims are correct, however, the bones were re-worked by mass flow from a deposit dated 30-60,000 BP, and Lancefield does not falsify the human overkill model³. In February 2004, excavation of test-pits next to old trenches in the swamp's Classic and Mayne sites enabled a taphonomic analysis of bones from across the swamp. Three test-pits were examined, K40, Van Huet, and Peel (see map).



Results & discussion



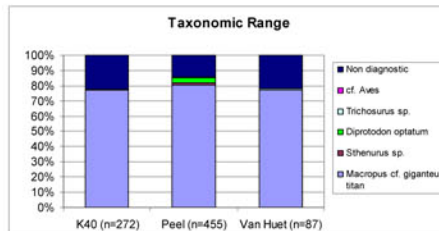
Macropus giganteus

In each test-pit, hind-limb, lower axial and girdle elements are most common, consistent with modern observations of kangaroo carcasses subjected to moderate scavenger disturbance.

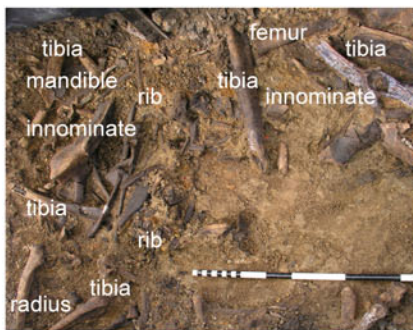


Photo: D. Page

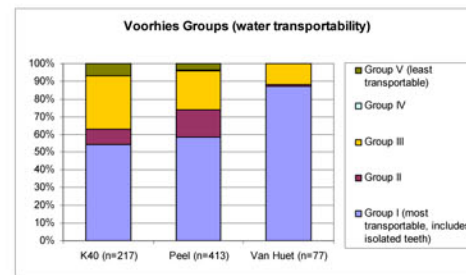
Fracture patterns show that most bones broke after burial and loss of tensile strength. The recovery of many specimens as multiple pieces in the K40 pit suggests little post-breakage movement of bones.



The dominance of *Macropus cf. giganteus titan* in all three test-pits suggests that the same selective process, such as ecological tethering of kangaroos during drought, or predation by large carnivores, caused bones to accumulate across the swamp.

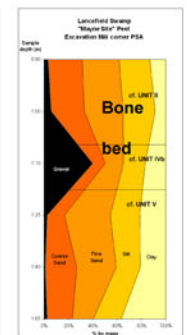
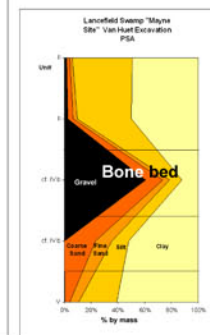
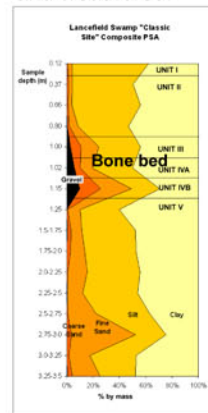


Scavenger activity is also indicated by gnaw-marks from rodents and large animals (cf. *Thylacoleo*). Pits, punctures and spiral fractures of fresh bone were rare.



Unlike the K40 and the Peel pits, the Van Huet pit contains mainly skeletal elements easily transported by water, suggesting it represents channel-fill.

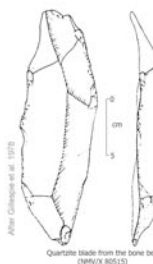
Bones from the Van Huet test-pit are more abraded and weathered than those from other areas. The Peel test-pit bones are the least abraded and weathered.



Particle Size Analysis indicates low energy deposition in the K40 and Peel test-pits, higher energy deposition in the Van Huet test-pit. Van Huet and Peel sediments are poorly sorted.

Human role unlikely

Two artefacts were previously found with the bones, but no bones cut by stone tools were found and selective removal of body parts was not identified.



Conclusions

- Bones were deposited at Lancefield Swamp as a result of a taxon-selective process such as drought or predation, and most areas were not subject to major disturbance by scavengers or by sedimentary processes.
- The exception is the area excavated by Van Huet where re-deposition of a macropod-dominated bone accumulation by stream flow or sediment movement is indicated. Conditions for preserving bone are poor in the surrounding landscape, so it is likely that the Van Huet bones derive from another part of the Lancefield Swamp bone bed.
- These findings suggest that the same event or series of events caused the initial deposition of bones at Lancefield Swamp. Dating work in progress will indicate when these events occurred.

Acknowledgements

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