



### Climate change in the late Pleistocene of Sahul (Australia and New Guinea)

More than 80 species of large Australian animals, known as megafauna, disappeared in the last 450 – 400 thousand years (Ka), with most of the decline in the past 40 000 years. Australia and New Guinea were part of the larger continent of Sahul during most of the Pleistocene. Rising sea levels separated the modern countries about 8 000 years ago.

The Pleistocene climate was cooler and wetter than that of today, with rainforest stretching across northern Australia. During the middle to late Pleistocene the climate became increasingly dry, changing the vegetation and the animals that fed upon it. The stress of climate and vegetation changes appears to have led to the extinction of the megafauna (DeSantis et al. 2017).

### Artworks showing extinct animals

Aboriginal rock art in Arnhem Land (Northern Territory) and the Kimberley region (Western Australia) preserves evidence of animals that are now extinct or found only in remnant rainforest of New Guinea. The long-beaked echidna (Figure 1) is an example of the latter, with a modern distribution in the rainforests of southern New Guinea. Rock art in Arnhem Land indicates that the species was found there thousands of years ago, possibly persisting in remnant rainforest pockets into modern times (Helgen et al. 2012).



Figure 1: A living example of *Zaglossus* from New Guinea (left) and Arnhem Land Aboriginal rock art of *Zaglossus* (right)

Further indication of changing climate in the Top End comes from depictions of megafauna species that became extinct 40 000 years ago. There are at least three pictures that have been interpreted as *Thylacoleo*, as the paws and face shape are very different from that of the thylacine (Figure 2). The rock art offers a more detailed view of *Thylacoleo* than fossil reconstructions, indicating that it has a striped back, similar to the thylacine. In one rock art depiction, the animal appears to be attacking a human (Akerman 2009).



Figure 2: *Thylacoleo* is known from skeletal material (left) but tracings of rock art provides additional detail about its striped coat and ear shape (right).

Other extinct rainforest species depicted in artworks include *Palorchestes* (large tapir-like marsupial), *Procoptodon* (giant short-faced kangaroo), *Protemnodon* (giant wallaby) and *Genyornis* (giant flightless bird). Some species of *Genyornis* lived in arid areas, but the other megafauna provide evidence of a cooler and wetter climate in Australia's Top End.

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