

**B.** *Sarcophilus harrisii*, also known as the Tasmanian Devil, is mainly a scavenger who feeds upon the carcasses of dead animals. Its strong jaws and teeth allows it to devour through fur and bones. This carnivorous marsupial gives out fierce noises used to assert dominance or even fear.

**C.** *Wonambi naracoortensis*, roughly six meters in length, would often stake out prey at watering holes. This snake did not use venom, but rather constricted its prey until it could not breathe and then slid the animal down its throat. Though its skull was small, its recurved teeth could lock and stay in any animal.

**D. & E.** *Palorchestes azeal* was first identified by its teeth, which resembled those of kangaroos. Its powerful arms and compressed claws allowed the herbivore to tear at tree bark or pull up shrubbery. The animal's prehensile tongue could manipulate vegetation, similar to modern giraffes.

**G. & H.** *Procoptodon goliah* is one of the most heavy-built kangaroo in known history. It lived in harsh environments characterized by sand dunes. Complex teeth indicates the animal was a browser and able to handle tough vegetation. It stood no taller than two meters but could reach up to three meters with its long and mobile limbs.

**I.** The graphs show the distribution of speleothem ages versus an oxygen-isotope curve for marine sediments,, and a temperature record of the Southern Ocean. Four periods of speleothem growth are observed: 20–115,, 155–220, 270–300, and 340–420 ka. Speleothem deposition is observed right up to glacial maximums. Infiltrating rainwater, regional temperatures, and the partial pressure of CO<sub>2</sub> and Ca concentration of these waters are shown by this study to have a correlation with Speleothem deposition. Thus, the Speleothem can provide clues to the climates during the time of fossil deposition. (Ayliffe et al. 1998)

**Geologic Age:** The Naracoorte Lagerstätte contains fossils from the Late Pleistocene Epoch. Sediment and organism began accumulating in this Lagerstätte ~300,000 years ago up until 15,000 years ago. The caves themselves formed around 1 million years ago in the Gambier Limestone which formed 37 million to 12 million years ago during the late Eocene or Miocene epochs. Sediment deposits in the cave have been very well-preserved and have formed over the course of 500,000 years.

**Significance:** This site allows scientists to reconstruct paleoenvironments of the Late Pleistocene in South East Australia. The wide variety of fossils such as plant material, pollen, algae, and even DNA have allowed for significant advances in the research on ancient climates in the region.

**Paleoclimate:** The Late Pleistocene Australia was characterized by increasingly cooler and drier climate with occasional periods of warmer, wetter climate. There were several extinction events that occurred during the Pleistocene that were a result of these climatic changes and are reflected in the fossil record at the Naracoorte Lagerstätte.

**A.** The Naracoorte caves are located in South Australia. They host a wide variety of fossil taxa, many of which fell to their deaths within the caves, unable to escape. Sediment would later fill these caves, preserving past and present Australian wildlife. More than 100 vertebrate species have been found in the caves. 47% of the species found in the caves are still extant today (Heritage Council).

**F.** The Naracoorte Caves are considered a World Heritage site. The park opens only four of the 28 caves to the public, as the others continue to be excavated for research. Naracoorte is considered important because it is one of the most complete fossil record for that time in Earth's history.

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#### Bibliography (Images)

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