

TWO NEW FOSSIL FINDS REPRESENTING THE LARGE EXTINCT DIPROTODONTID MARSUPIAL ZYGOMATURUS

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Most Australian naturalists have heard of *Diprotodon*, the largest known marsupial, remains of which have been found in many Australian localities, including several in Western Australia (Merrilees, 1968). Most if not all of these remains are currently ascribed to one species, *Diprotodon optatum*. A reconstruction of the skeleton of this animal is displayed in the Museum. Non-specialists perhaps are less familiar with other species, not quite as large as *D. optatum*, but still very large, and sufficiently like it to be grouped in the same family (Diprotodontidae). There has been no recent revision of the Diprotodontidae, and the names and relationships of the various species which have been described are not at all settled. Unlike many Australian mammal groups, the diprotodontids have a fossil record covering part of the Tertiary as well as the Quaternary geological periods (Stirton, Woodburne and Plane, 1967).

In Western Australia, remains of diprotodontids smaller than *D. optatum* have been recorded from Mammoth Cave, Strong's Cave, Gingin and the Billabalong crossing of the Murchison River. Until recently, these remains were ascribed to the species *Nototherium mitchelli*, for example by Glauert (1948) dealing with the Mammoth Cave remains, and the name *Nototherium* will be familiar to many Western Australian naturalists. However, it appears that the Western Australian remains are more properly ascribed to the species *Zygomaturus trilobus*. Merrilees (1968) briefly recorded the occurrences of *Zygomaturus trilobus* in Western Australia as then known. A tentative reconstruction of the external appearance of this species is shown in Fig. 1.

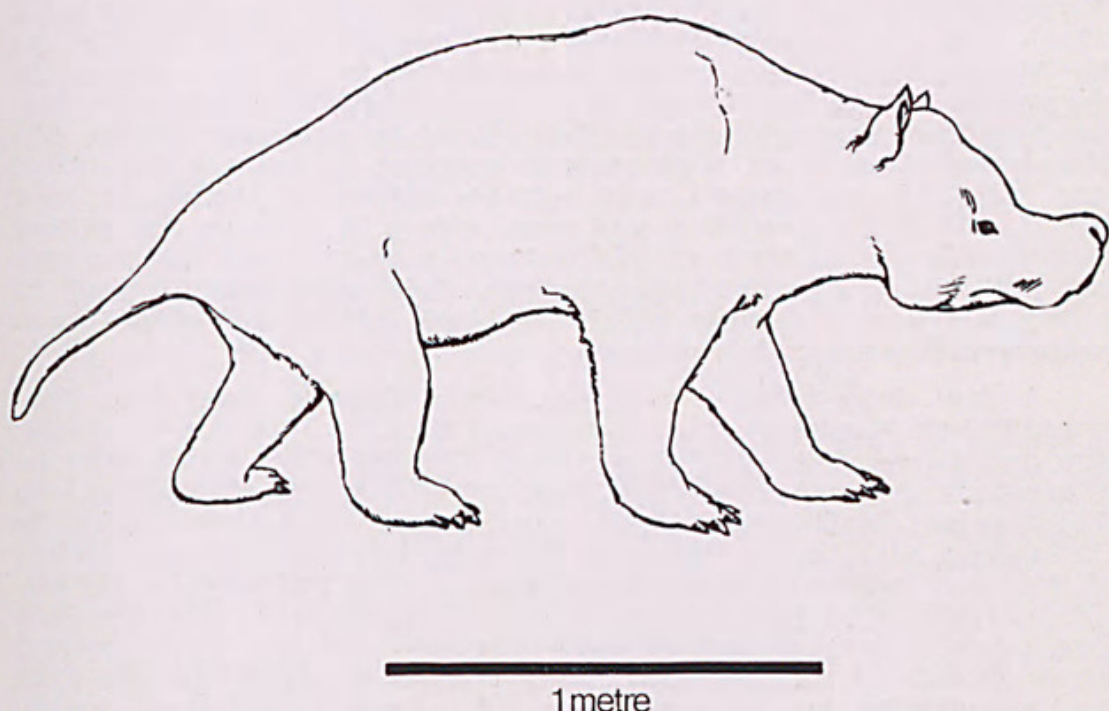


Fig. 1.—Tentative reconstruction of external appearance of *Zygomaturus trilobus*.

Early in 1969, two mandibles reached the Western Australian Museum, both of which represent *Zygomaturus trilobus*. Both specimens were found by amateur naturalists, in both cases they dealt with their finds in exemplary fashion, even though in both cases they were a little afraid that their finds might be treated lightly, or might not be worth the trouble of reporting to the Museum. Part of my purpose in writing this report is to reassure naturalists that their efforts, successful or abortive, to find new fossil mammal sites will be appreciated. Not every naturalist readily distinguishes the bones of horses, sheep, foxes, domestic hens and other introduced animals from those of native animals, and it is not to be expected that amateurs will be able to assess the scientific worth of bony remains they might happen upon. Indeed, in the case of fragmented bones, it is by no means always easy for the specialist to make this value judgment at once. We at this Museum can cheerfully face the prospect of identifying mountains of cow, camel and other bony remains of no present scientific interest because we can be confident that every now and then the remains of native animals will be included and lead us to interesting new fossiliferous sites.

Mr A. Marsh of Jerramungup, a keen fisherman with a naturalist's interest in the identity of the fish he catches, found one of the two new *Zygomaturus* specimens quite accidentally during a fishing expedition. Mrs R. Roe found the other while she was searching for invertebrate fossils in company with Mrs. F. Dodds, both of them following an interest in rocks and fossils. In both cases the finds were made as a result of the naturalists' general alertness to their environment, not by deliberate search, and it is alertness to the potential interest of bones that I hope will be fostered by this report.

Mr Marsh found his specimen (now identifiable by its Western Australian Museum catalogue number 69.4.37) projecting from the side of a small gully transecting cliffs of Coastal Limestone fronting Reef Beach, in the Bremer Bay district. He brushed away some of the soft rock surrounding the specimen, whereupon the projecting jaw split away from its fellow of the opposite side, which was still embedded. The jaw and teeth were not familiar to Mr Marsh, nor to any of the experienced farmers to whom he showed it, and so he brought it to the Museum for identification. Pending identification and assessment of its scientific value, Mr Marsh refrained from making any attempt to extract the other jaw. Mr J. M. Clark and I, with suitable collecting equipment, met Mr Marsh at Bremer Bay, and were taken by him to the rather inaccessible site of his find. We were able to excavate the remaining jaw, to verify that only the mandible was present, and to collect a charcoal sample which we hope will be sufficient for a radiocarbon date determination.

A few days after our return from Bremer Bay, Mrs Roe brought her specimen (now numbered 69.4.39) into the Museum. She had found it in McIntyre Gully, Gingin, close to the site of a previous *Zygomaturus* find (Main, 1949) formerly ascribed to *Nototherium*. McIntyre Gully is a narrow, steep walled incision in Cretaceous marine fossiliferous deposits, but pockets or patches of younger sediments are also exposed in the gully walls (Feldtmann, 1963). The tips (only) of one tooth were noticed by Mrs Roe, projecting from one of these patches, and she then scraped away enough of the clay and rubble matrix to show that she was dealing with the jaw of some large animal not immediately familiar to her but suspected of being "*Nototherium*" because of the earlier find nearby. Mrs Roe excavated the specimen, carefully preserving and noting the positions of small fragments of tooth

and bone inadvertently detached in the process. She marked the site with a painted stick but resisted the temptation to chip away the obscuring matrix from all the teeth present, which might have resulted in damage to the specimen. Miss J. K. Penglase, Mr J. M. Clark and I subsequently met Mrs Roe at McIntyre Gully, and we examined the site and its surroundings, finding a few bones of other animals, including domestic animals, but only one additional fragment which might represent *Zygomaturus*. There appears to be no appreciable quantity of charcoal in this deposit, so it may not be easy to date.

At both sites, only small fragments of tooth or bone lay within a few feet of the main specimen, but it is possible that other specimens still lie buried further away within the sediments concerned. In neither case does extensive quarrying seem practicable, but it would be useful to revisit the sites from time to time after rains or strong winds or landslips which might reveal further specimens.

ACKNOWLEDGEMENTS

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NOTES ON *VARANUS BREVICAUDA*

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Varanus brevicauda (Fig. 1), the smallest of all known goannas, was described and figured by Boulenger in 1898. The type and paratype were collected on the Sherlock River in north-western Western Australia. Until 1964, when K. R. Slater collected a specimen from the Tanami desert in the Northern Territory, this species was thought to be restricted to the North-west (Glauert, 1923, 1961). In 1967 my wife, Helen, and myself further extended the known range to include the Lake Carnegie region of central Western Australia.

There are only 20 known specimens of this rare pygmy goanna, listed below: (BMNH = British Museum of Natural History, SMF = Senckenberg Museum, ERP = my personal col-



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