

a fossil comes to life



by William D. Turnbull, Associate Curator, Fossil Mammals

The mammal Burrhamys was known only from fossil remains until 1966, when Dr. K. Shortman of the Walter and Eliza Hall Institute of Medical Research, Melbourne, discovered and collected a living specimen. Identification was made by Mr. R. M. Warneke, Senior Research Officer of Fisheries and Wildlife Department, Victoria. The photos of the living animal are by Mr. James Cooper of the same agency.

IN AUGUST 1966, in the hut of a ski lodge at Mt. Hotham, Victoria, Australia, a most unusual and unexpected zoological discovery was made. The appealing little animal shown here, a small phalangerine possum, was seen and captured. When put into the hands of scientists of the Victorian Fisheries and Wildlife Department, the animal was recognized to be the first living representative of the genus *Burrhamys*, which heretofore had been known only from fossil remains. It is indeed remarkable that an animal as distinctive in its dentition as *Burrhamys* has survived so long without zoologists being aware of its presence. However, its small size, wary nature and outward similarity to other related small possums can account for this oversight. Nevertheless, in this day of world-wide, extensive alteration of natural environments by man, it is truly astonishing to discover a living representative of a mammalian genus previously thought to be extinct.

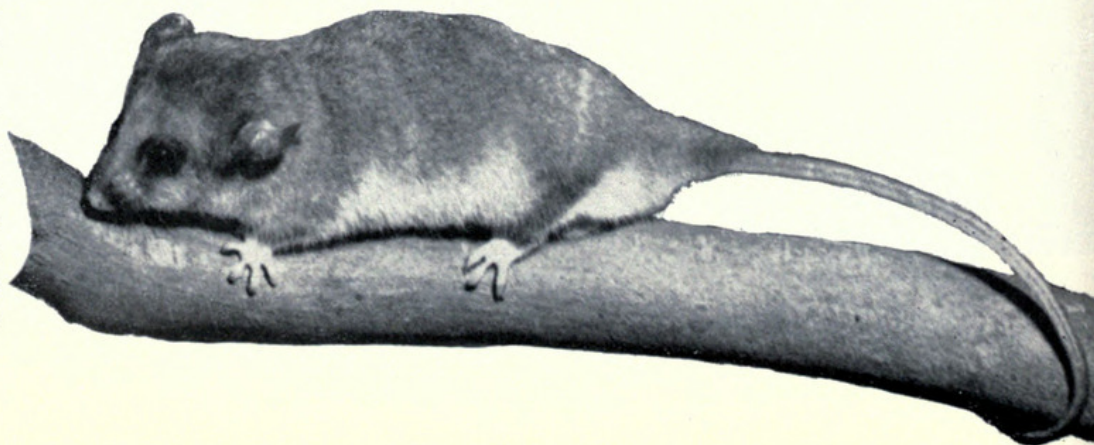
Burrhamys is a familiar name in the Geology Department, since fossils of this genus have been studied for many years. In 1895, the paleontologist Robert Broom (who subsequently became well known for his work on South African Permian fossils from the Karoo) gave the name

Burrhamys parvus to a few cave fossils from a travertine deposit from the Wombeyan Caves of southeastern New South Wales, Australia. This material consisted of six jaws and three or four skull fragments of animals characterized by the form of their high, serrate, grooved and ridged last premolar teeth. For over 50 years Broom's original description and other brief notes published in 1896 were all that was known about the genus *Burrhamys*. In the 1950's two advances were made. The first of these was made by W. D. L. Ride (presently the director of the Western Australian Museum at Perth). He restudied Broom's original materials and prepared and studied other materials which Broom had collected but not worked on.

In Broom's day, the preparation technique for exposing travertine-encased bones was to scratch away the lime rock

to expose the contained bones. This procedure could only be done after the presence of bone was ascertained, by breaking the rock or seeing suggestive surface irregularities. Ride began to restudy Broom's materials, using an acid preparation technique which enabled him to recover more of the contained bones with minimum damage to the small, delicate fossils. The reports on Ride's findings, including a redescription of *Burrhamys parvus*, appeared in the *Proceedings of the Zoological Society* (London) in 1956 and 1960.

At about the same time that Ride was working on the New South Wales fossils, another discovery of *Burrhamys* remains was made in southeastern Victoria at the Buchan Caves. There, Norman Wakefield (presently associated with Monash University) discovered numerous remains of *Burrhamys* which he re-



ported in 1960. This fossil deposit contains a mixed sample, as far as time of deposition is concerned. Some of the bones are reddish, and these Wakefield believes to be the older specimens, possibly several thousand years old. Other bones are white, and Wakefield gives evidence that they are very recent, perhaps only a few hundred years old or less. This evidence led to informal speculation on the possibility of the existence of a living *Burramys*.

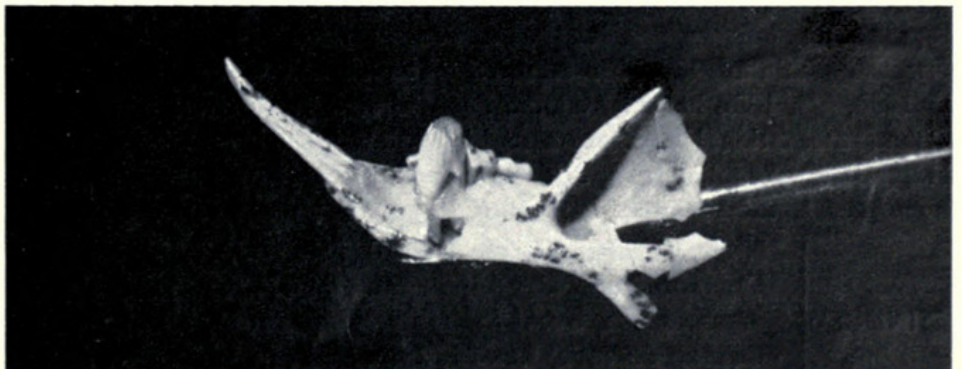
The first *Burramys* materials obtained for the Field Museum collections consist of three tooth fragments and a complete molar tooth from the Late Pliocene of the Grange Burn, Hamilton Fauna that Dr. E. L. Lundelius and I collected in 1963-64. This material is insufficient to form the basis of a new species, but nevertheless it is adequate to show the unique ridging of the premolar teeth which suggest that the material represents an undescribed species. The fauna to which these four teeth belong has been dated at 4.35 million years by the potassium-argon method. Hence *Burramys* now has a time range of nearly four and one-half million years, and a geographic range that extends in an arc from within 100 miles of Sydney in the East to within about 150 miles of Adelaide in the West—a straight line distance of about 500 miles.

In 1963 it was arranged through Mr. Harold Fletcher, then the Assistant Director of the Australian Museum, Sydney, that 185 unprepared Wombeyan Cave travertine blocks belonging to that institution be loaned to Field Museum for preparation and study by Dr. Lundelius, myself and associates. Frederick Schram and I have completed a preliminary report on the first of the rodent remains recovered from that fauna. Work is going ahead on the other groups. The entire lot of travertine blocks has been acid prepared, leaving us with thousands of bones, teeth and fragments for study. Among these are additional unreported specimens of *Burramys parvus*.

Thus, the Museum is in a unique position of involvement with the work on this little-known mammalian genus, and the 1966 discovery gives us the great advantage of working from a live specimen in addition to fossil remains.



Each of the fossil *Burramys* specimens shown here are mounted on pins (the rough shafts beneath the teeth). They are not all to the same magnification, but the common pin mountings will serve to scale them. Top Row: Three of the oldest teeth (4.35 million years) recovered from a fossil soil near Hamilton Victoria. Two of them (left and center) are partial lower premolars seen in side view, and the third is a complete upper molar seen in crown view. Bottom: A left lower jaw of a *Burramys parvus* specimen from the Wombeyan Caves of New South Wales, the locality that yielded the original materials upon which the genus was based. The relatively large incisor tooth and the distinctively ridged, serrate premolar are clearly shown.





Turnbull, William D. 1968. "A Fossil Comes to Life." *Bulletin* 39(1), 6–7.

View This Item Online: <https://www.biodiversitylibrary.org/item/25678>

Permalink: <https://www.biodiversitylibrary.org/partpdf/374680>

Holding Institution

University Library, University of Illinois Urbana Champaign

Sponsored by

University of Illinois Urbana-Champaign

Copyright & Reuse

Copyright Status: NOT_IN_COPYRIGHT

Rights Holder: Field Museum of Natural History

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.