

Australia, New Guinea and some nearby islands are home to the vast majority of living marsupials, a group of mammals that separated from other mammals in the Mesozoic, about 160 million years ago. Elsewhere, marsupials are only known from the Americas, although fossils have been found in Asia and Europe. Many Australian marsupials have become iconic and are much-loved symbols of our nation. Sadly, many are imperilled by land clearing and threats from introduced predators.

One of the most distinctive (and perhaps cute) marsupial groups comprises the bandicoots and bilbies which are classified in their own order, the Peramelemorphia. They have long ears and snout, and enlarged front legs. There are only about 22 living species of bandicoots and they are only found in the Australo-Papuan region. Their size and relatively placid nature has made them vulnerable to land-clearing and introduced predators such as feral cats and foxes, and many species now have a greatly restricted range. Even worse, several others are now extinct. Much work is being done to conserve bilbies and bandicoots, through programs such as *Western Shield*, but a robust species-level taxonomic framework is required to bolster efforts.

A recent scientific publication by Dr Kenny Travouillon from the Western Australian Museum and Dr Matthew Phillips from the Queensland University of Technology in the journal *Zootaxa* examined the taxonomy of bandicoots and bilbies by comparing features and using DNA data. They examined a wide array of species, including all modern species and several extinct species known only from fossils. They found that the bilbies (*Macrotis* spp.) and the pig-footed bandicoot (*Chaeropus ecaudatus*) formed a distinct group, which corroborates previous research as members of two separate families, Thylacomyidae and Chaeropodidae, respectively. The four genera of Papuan bandicoots also formed a distinct group, and this in turn was the sister-group to the Australian *Isoodon* and *Perameles*.

They delved deeper into the status of the quenda, which is endemic to south-western Australia. It has usually been considered as a subspecies known as *Isoodon obesulus fusciventer*, with the other subspecies found in south-eastern Australia. However, Kenny and Matthew raised it to a full species, finding consistent differences in the shape of some of the teeth and some previously published molecular data. This species is now known as *Isoodon fusciventer*.

They then turned their attention to the other genus, *Perameles*. Previous classifications recognised only a few modern species, including the long-nosed bandicoot (*P. nasuta*) from eastern Australia, the eastern barred bandicoot (*P. gunnii*) from south-eastern Australia, the western barred bandicoot (*P. bougainville*) from WA, and the extinct desert bandicoot (*P. eremiana*) from central Australia. Their study found that the taxonomic situation is more complex than this classification depicts. The south-western populations of the western barred bandicoot were found to be quite distinct from other populations, which they recognised as a distinct species. This species was last recorded in 1907 and is only known from old museum specimens and sub-fossil material. Following the international rules for classifying species, the oldest name, *Perameles myosuroides*, has been applied to this species.

They then found something truly remarkable – a species that had not been previously recognised. Among various museum collections were several skins and skulls that did not fit definitions of any of the named species. The rump was adorned with conspicuous butterfly-shaped stripes which provided the inspiration for the scientific name they selected, *Perameles papillon*. All of the museum specimens came from the Nullarbor Plain, and the species hasn't been seen alive since 1928.



## Discovering marsupials

**Above** A western barred bandicoot.  
Photo – Jiri Lochman

These exciting discoveries help paint a more detailed picture of the wonderful diversity of Australia's native mammal fauna prior to European settlement. But, more poignantly, they highlight what we have lost.

We already knew that several species of *Perameles* became extinct during the 19<sup>th</sup> and early 20<sup>th</sup> century, and the addition of *Perameles papillon* and *Perameles myosuroides* to this list is even sadder. The only species of the *Perameles bougainville* group that survived the onslaught of introduced predators such as foxes and cats, land clearing and altered fire regimes, was the western barred bandicoot on two Western Australian off-shore islands. Attempts to introduce the western barred bandicoot into feral-free habitats will help establish further populations.

It's clear that without access to the rich resources that are available in museums and their collections, the new species would never have been discovered. While it's sad to learn of the demise of *Perameles papillon*, it is a sobering reminder that we must treasure what we have while it is here, and protect biodiversity for future generations.