

**A Fragile Balance:**  
**The extraordinary story of Australian marsupials**

**Christopher Dickman**

illustrated by Rosemary Woodford Ganf

Craftsman House 2007

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A beautifully illustrated overview of Australia's marsupials, *A Fragile Balance* sets them in their ecological and evolutionary context and explores their place in Australian history and culture. It is a survey for the general reader, but it treats some topics in greater depth and should appeal to those with some background in biology.

Dickman begins with the distinctive features of marsupials — notably their reproductive system, but also key skeletal features — but doesn't go into anatomical or physiological detail. He describes their origins in South America, their arrival in Australia (also part of Gondwana at the time) around 60-65 million years ago, and their radiations and responses to the vicissitudes of changing continental climate.

In more recent history, one major debate is over the extinction of Australian megafauna. Surveying the latest work on this, Dickman concludes that hunting by Aborigines "almost certainly did the deed", though not by rapid direct elimination or slow attrition — "megafauna were uniquely susceptible to very small increases in mortality owing to their slow reproduction and hence inability to replace hunting losses".

Nearly ninety pages are devoted to natural history. Here Dickman divides the marsupials into guilds, or groups of animals that exploit similar environmental resources: carnivores, omnivores, herbivores, and their subdivisions. Using this framework he explores species distributions and abundances, looking at the factors that constrain the number and kinds of species in different locations. The ranges of individual species of insect-eating omnivores, for example, "are dictated principally by their feeding and nesting requirements, which depend in turn on the distributions of preferred trees and shrubs". In contrast, "the key that has opened the arid

plains to the Bilby is its ability to dig spectacularly deep, sheltering burrows that can go down to 2 metres and exceed 3 metres in length".

The same framework helps to make sense of the "spectacular variation" in marsupial life histories and reproductive strategies. Some species can take advantage of brief periods of plenty by rapid reproduction. One of the strangest is the "big bang" reproduction of Dibblers, where males mate and then die en masse. At the other extreme, some species can live for several decades.

Two other topics are treated here. Dickman evaluates the evidence that Australian marsupials are generally — in comparison with placental mammals or South American marsupials — adapted to poorer soils and less fertile environments. And he touches on the ways in which marsupials help to form their environments, through grazing and foraging, by seed dispersion, and as soil movers.

A brief cultural history covers indigenous relationships with marsupial fauna and the very different responses of early European explorers and naturalists, and then of settlers and pastoralists. Native mammals were viewed as threats or competition to livestock, and in many cases governments offered bounties for them: "between 1881 and 1900 alone, some 21.4 million kangaroos and wallabies were killed in New South Wales, as well as 3.2 million smaller marsupials". Things have progressed since then, but representations of marsupials in literature and art suggest that Australian attitudes to our indigenous fauna remain ambivalent: we are "strangers in a strange land".

This leads naturally to conservation. Dickman explains how conservation status is assessed, looking at IUCN classifications and the various state and federal laws in Australia. His analysis of threats to marsupials, and the extinctions so far, focuses on NSW. Here most losses have been in the west, and are the result of pastoralism and habitat destruction, along with the introduction of cats, rabbits and foxes. In contrast, there have been fewer losses in wooded areas in the east of the state, which retain tree cover that offers protection against feral predators and are less hospitable to rabbits, mice or goats. The overall conclusion is that "retention of

habitat is critically important for the conservation of marsupials".

As separate pieces within *A Fragile Balance*, scientific specialists provide two-page perspectives on particular species and their conservation — the Bilby, the Koala, Leadbeater's possum, the Tasmanian Devil, the Marsupial Mole, and the Bridled Nailtail Wallaby — and an indigenous Australian presents a perspective on the Red Kangaroo.

Finally there's a thirty page "species guide", covering six species a page, for each offering a small distribution map and a paragraph on ecology and distinctive features.

### **Stripe-faced Dunnart // *Sminthopsis macroura* (GOULD, 1845)**

#### **Distribution**

*Arid and semi-arid Australia, from west coast of Western Australia to central NSW*

A prominent dark stripe extending from the nose to the top of the head, makes this animal easy to recognize. The size of a large mouse (15-25 g; 0.5-0.9 oz), it has grey-brown upperparts and white underparts. The eyes are large and dark; the ears are large and lightly furred. In common with other arid zone dunnarts, its tail becomes distended with fat deposits when food is abundant and may become quite skinny in poor seasons. It occupies many different habitat types, including shrubland, and tussock and hummock grassland on sandy, stony, rocky and clay soils. At night, it forages for invertebrates in open spaces close to cover. During the day, it rests in soil cracks or under rocks and logs. In the breeding season from July to February, females can raise up to 2 litters of 8 young. The gestation period is very short, only 11 days. The young stay in the pouch for 4 weeks before being weaned at 10 weeks.

**Status** *Locally common*

There's also a glossary and a thematically structured bibliography.

All of this has ignored what is the most striking feature of *A Fragile Balance*, the absolutely gorgeous watercolor illustrations by Rosemary Woodford Ganf — one for each species, showing the animal along with some environmental context. These are only loosely coupled to the text, but balance it exceptionally nicely. The result is a book that could sit on a coffee-table, but which offers real substance.

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