

Possums and gliders

There are 29 species of Australian possums and gliders within the order Diprotodontia and suborder Phalangeriformes. Several species also occur in New Guinea. There are six families: Burramyidae (pygmy possums); Phalangeridae (cuscuses and brush-tailed possums); Pseudocheiridae (ring-tailed possums and greater glider); Petauridae (possums and other gliders); Tarsipedidae (the honey possum [*Tarsipes rostratus*]); and Acrobatidae (the feather-tailed glider [*Acrobates pygmaeus*]) (see Appendix 1). The smallest species have an adult body size of less than 10 g, while the largest may weigh up to approximately 4.5 kg (Smith and Winter 1984). All gliders and nearly all possums are arboreal and live in forest or heathland, but some are semi-terrestrial, including the mountain pygmy possum (*Burramys parvus*), rock ring-tailed possum (*Petropseudes dahli*) and scaly-tailed possum (*Wyulda squamicaudata*) (Strahan 1995). Many species have a restricted range but some, such as the common brush-tailed possum (*Trichosurus vulpecula*), common ring-tailed possum (*Pseudocheirus peregrinus*) and sugar glider (*Petaurus breviceps*), have extensive ranges (Smith and Winter 1984). In addition, common brush-tailed and common ring-tailed possums often live in urban areas (How and Kerle 1995; McKay and Ong 1995). These two species are commonly seen in veterinary practice in Australia. Sugar gliders are common pets in other countries and the common brush-tailed possum was introduced to New Zealand in 1858, where it is now a major

agricultural and ecological pest (Tyndale-Biscoe 2005).

The limbs and tails of possums and gliders reflect their generally arboreal niche. Gliders are distinguished from possums by the presence of a gliding membrane (patagium) extending from the hindlimb to the forelimb (Fig. 8.1). The gliding membrane consists of a fold of skin, connective tissue and muscle. In *Petaurus* spp. it extends from the fifth digit of the manus to the distal metatarsus or first digit of the pes. In the greater glider (*Petauroides volans*) and feather-tailed glider it extends from the elbow (Fig. 8.2) to the distal tibia and stifle respectively.

There is elongation of the long bones and vertebrae of the gliders (McKay 1989; Suckling 1995; Woodside 1995; Johnson and Hemsley 2008; Jackson 2012). Elongation of these bones increases the effective gliding surface area (Lindenmayer 2002). However, the feather-tailed glider does not show the marked elongation of the vertebrae or limb bones associated with the evolution of gliding. In such a small animal, the presence of the patagium alone is presumably sufficient to provide the necessary increase in surface area (Turner and McKay 1989; Jackson 2012). The tails of possums and gliders are long and moderately prehensile (McKay 1989; McKay and Winter 1989; Russell and Renfree 1989; Lindenmayer 2002).

In this chapter, anatomical descriptions and radiographic images focus primarily on readily accessible species. However, when radiographically