8. Koalas

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1 TAXONOMY, DISTRIBUTION AND BIOLOGY

The koala (*Phascolarctos cinereus*) is the only member of the Family Phascolarctidae and is included, with wombats, in the Suborder Vombatiformes. Three different 'races' or subspecies have been described, based on geographic range and morphologic characteristics: *P. cinereus cinereus*, found in New South Wales, *P. c. adustus*, found in Queensland, and *P. c. victor*, found in Victoria. Recent molecular genetic analysis has determined that morphologic variation between northern and southern populations is clinal, and might reflect adaptation to climate over an extensive range rather than a significant divergence at the DNA level (Houlden et al. 1999). The tentative conclusion was that *P. cinereus* should not be considered as having three subspecies, but should be considered as a single evolutionarily significant unit.

The koala is found in eastern Australian sclerophyll forests and woodlands, and there are populations in Queensland, New South Wales, the Australian Capital Territory, Victoria and South Australia (Melzer et al. 2000). It has a widespread distribution and is abundant in many areas. The distribution, however, is largely fragmented, with populations separated by unsuitable habitat or cleared land (Martin & Handasyde 1999).

Estimates of population size are few and inconsistent. The conservation status varies throughout its distribution, reflecting regional perceptions of current threats to koalas and to their habitat (Melzer et al. 2000). Populations in New South Wales and Queensland are subject to a number of key threatening processes, including habitat loss through clearing of native vegetation and urban development, and populations are declining in those states. Increasing urban expansion also contributes to mortality in local populations via increases in road-associated deaths and exposure to attack by domestic dogs.

In contrast, unsustainably high population levels have developed in six isolated patches across Victoria, and on Kangaroo Island (SA) (Menkhorst et al. 1998). Habitat destruction and hunting contributed to a marked decline in populations in Victoria and South Australia during the early 20th century. Koalas were reintroduced in some mainland habitats in these states, via translocation from flourishing populations that were established on off-shore islands during the late 19th and early 20th centuries. Unsustainable densities in isolated populations (including some of those established on these islands, and several mainland populations living in remnant habitat) have resulted in overbrowsing of forage trees, widespread tree death and, in some cases, starvation of koalas (Martin 1985a).

Koala populations in South Australia have largely been re-established using animals translocated from a single colony that flourished after being introduced to French Island (Vic.), during the 1880s. Three South Australian populations were found to have low heterozygosity compared with an undisturbed mainland Victorian population, and this low allelic diversity was