

Introduction

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Some 25 000 species of vascular plants – 10% of the world’s total – are found in Australia. At least 85% of these species are endemic, an outcome of 42 million years of isolation. Two-thirds of the Australian continent is arid, with less than 300 mm of rain a year. This area stretches from the Pilbara region of the north-west to the southern Nullarbor, where the desert meets the coast. Surrounding the arid zone on three sides are broad semi-arid belts in which woodlands, mallee, and sclerophyll shrublands are prevalent. Salt lakes with uncoordinated drainage are common in broad valley floors, particularly in the west and south of the semi-arid zone, but the east is occupied by the bulk of Australia’s largest river system, the Murray-Darling. The wetter parts of Australia occupy less than a fifth of the continent, south and eastwards of the eastern highlands, across the tropical north and in a small isolated region of the south-west. Vegetation is complex, matching the topography and geology of these areas. The wettest places, often with deep fertile soils in eastern and northern Australia, are occupied by rainforests, while shallow soils in the highest rainfall areas have stunted woodlands and heaths. Wet sclerophyll forests occupy fire-prone sites and contain immense hardwoods such as mountain ash (*Eucalyptus regnans*) in the southeast and karri (*Eucalyptus diversicolor*) in the south-west. The highest mountains support alpine vegetation and stunted sclerophyll communities. Less fertile

soils on rock outcrops throughout the wetter parts of Australia also have sclerophyll shrublands and stunted woodlands. Freshwater lakes and streams are strongly seasonal, as are coastal estuaries and bays into which the latter discharge. Coastal floras include mangroves and the usual cosmopolitan plants of dunes and strand, while adjacent Australian marine environments are noteworthy in the north for their coral communities of the Great Barrier Reef on the east coast and such places as Ningaloo Reef on the west coast.

Across Australia, there are three key floristic elements: woody evergreens, rainforests and the cosmopolitan plants. The bulk of the 25 000 species are endemic evergreen sclerophyllous plants of forests, woodlands, mallee, shrublands, sedgeland and grasslands. Particularly noteworthy is the dominance of three woody, evergreen genera: *Eucalyptus/Corymbia* (more than 900 species) and *Acacia* (more than 1100 species). Spinifex hummock grasses of the genus *Triodia* are prominent over vast desert areas. Species-rich families in Australia include the Proteaceae (banksias, grevilleas, etc.), Myrtaceae (eucalypts, melaleucas, etc.), Ericaceae (Epacridaceae – southern heaths), and Restionaceae (southern rushes). Occupying about 5% of the continent, the south-west of Western Australia is especially rich in the Gondwanan element of the Australian flora, with an estimated 8000 species, 50% of which are endemic to the region.