

HABITATS

A. Sandy Cays and Barrier Reefs

Australia has two large barrier reef systems, one of which is located along the northwest Australian coastline, which is inaccessible and rarely visited. The other, the Great Barrier Reef, extends from east of Cape York Peninsula in ne. QLD, south to Gladstone in c. QLD. Parts of this massive reef system are very accessible and therefore are some of the most popular tourist attractions in the country. In a very few localities within this large system the coral sands have become concentrated to form small sparsely vegetated sandy cays, or islands. These remote cays are incredibly important for seabird colonies, as they provide safe areas free from land predators. In 2011 one of these well-visited islands, 4-acre Michaelmas Cay, near Cairns, held 160,000 breeding seabirds. More than thirty seabird species have been recorded there, with Sooty Terns and Brown Noddies providing the greatest number of nesting birds in the colony. Other species regularly seen around there include Great Crested, Lesser Crested, Little, Bridled, and Black-naped Terns; Great Frigatebirds; and Brown Boobies.

B. Mangrove

An intertidal wooded habitat concentrated on the north and northeast coastlines of Australia. More than twenty species of mangrove occur in the Cape York Peninsula (in the far northeast), and only a handful of species extend as far as NSW near the southern limit of the habitat. Forest formation varies from monotypic clusters to tall forests with multiple, well-developed stories (i.e., canopy, midstory, and under-story), all of which have a muddy substrate with conspicuous lenticels (emergent roots). Good mangrove systems can be found around Darwin, Brisbane, and Cairns, which have boardwalks that allow access to birds such as Australian Yellow White-eye, Collared Kingfisher, Mangrove Honeyeater, Large-billed Gerygone, and Little Kingfisher. In general, mangroves are well protected, owing to their inaccessibility, except in eastern Australia, where there has been extensive clearing for tourist development (e.g., Surfer's Paradise and the Gold Coast, QLD).

C. Coastlines

Most of western, southern, and southeastern Australia (including TAS) is dominated by rocky coastlines and clean sandy beaches. The beaches tend to be dominated by shorebirds such as Pied Oystercatcher and Whimbrel, and in habituated parts of Australia are very prone to human disturbance. This has had an adverse effect on sensitive birds such as Hooded Plover. Rocky coastlines are less prone to human disturbance and therefore provide refuge for species such as fur seals, nesting Sooty Oystercatchers, and colonies of Black-faced Cormorants. Rocky headlands are also good places to look for pelagic species such as whales, albatrosses, and shearwaters.

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A. Alpine Heath

Alpine heath occurs along the mountain ridges, above the tree line, from Lamington National Park (QLD) south to, and including, TAS. This habitat generally comprises waist- to head-high dense shrubs, with occasional scattered trees. Good examples are found at Barren Grounds (NSW), Snowy Mountains (NSW), and Cradle Mountain National Park and Mount Wellington on Tasmania. Although alpine heath is generally low in species diversity, and few species are restricted to this habitat, some of them are more abundant or conspicuous there, such as Beautiful Firetail, Flame Robin, Striated Heathwren, and Yellow-tailed Black-Cockatoo. Some rarer species are found only in this habitat, such as the scarce and secretive Eastern Bristlebird, and Corroboree Frog.

B. Coastal Heath

A widespread habitat that extends from north of Perth all the way around the south coast to c. QLD that grows on sand-dominated soils. The most extensive examples can be found where there is a strong Mediterranean climate, such as s. NSW, TAS, and southernmost WA. In general appearance and structure, coastal heath is similar to alpine heath, but the former is much more diverse in terms of both plant and animal life. Although the climate is often wet in these areas, the plants show adaptations to avoid desiccation in these windy environments. Banksias are common, but in *shrub form*, such as *Banksia eriquofolia* and *Banksia ser-rate*, which are very important for nectarivorous birds like honeyeaters. Reptiles that can be expected in this habitat include Red-bellied Black-Snake, Death Adders, Short-beaked Echidna, Red-necked Wallaby, and Rufous-bellied Pademelon. Typical birds from this habitat include Swamp Harrier, New Holland Honeyeater, White-cheeked Honeyeater, Little Wattlebird, and Red-eared Firetail (in WA only).

C. Coastal Scrub

Essentially a denser, more forestlike form of coastal heath. It generally forms in microenvironments *within* coastal heaths, where there is greater protection from wind, and in local areas with higher clay content in the soil. Coastal scrub is dominated by banksias in *tree form* such as *Banksia intergefolia*. Inside these small enclaves of microhabitat it genuinely feels lush and rainforest-like, as reflected in the bird and animal community. Eastern Yellow Robin, Lewin's Honeyeater, Spangled Drongo, Blue-tongued Skink, and Brown Snakes are found there, all of which are less abundant in the surrounding heath.

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A. Tropical Rainforest

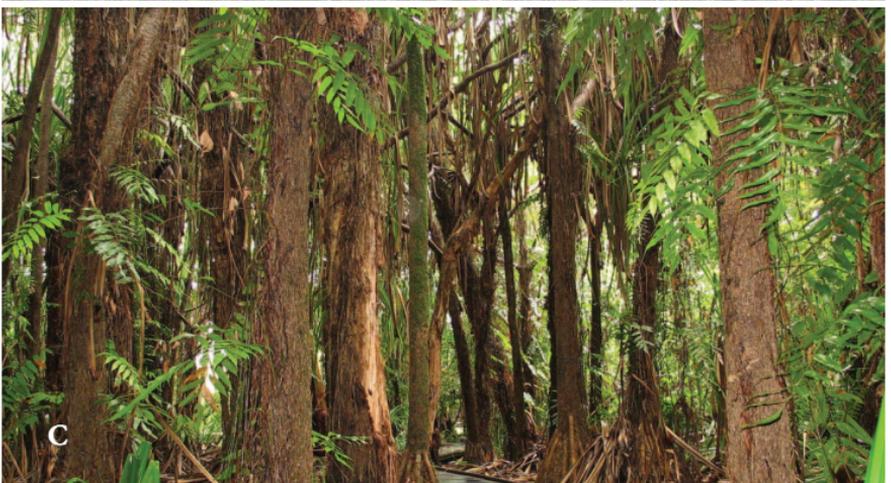
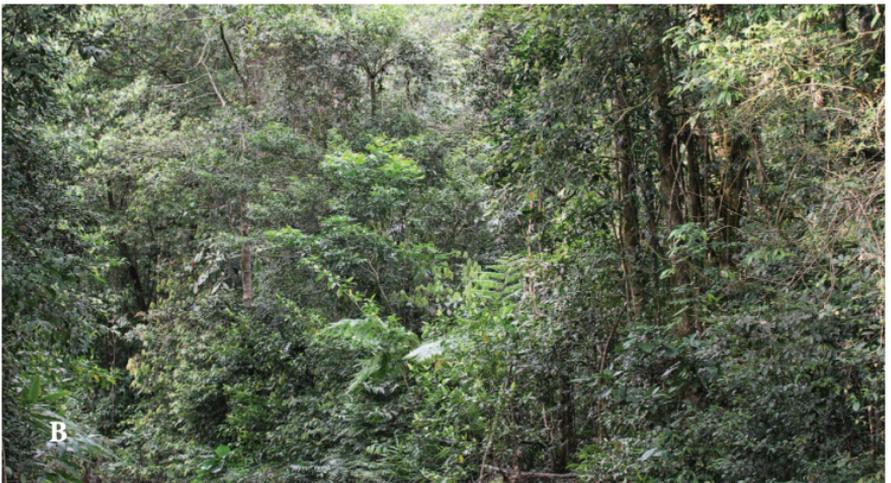
Tropical rainforest is confined to a small coastal area of Cape York Peninsula and a more extensive area known as the Wet Tropics in the Cairns region of ne. QLD. It is characterized by a large variety of evergreen trees that form a thick canopy and a relatively open understory, owing to poor light penetration. It appears much like the picture postcard images of rainforest in the tropics of the world, such as that found in New Guinea, Borneo, and the Amazon. The animal life is highly specialized, often found only in this habitat, and shows a greater affinity with the island of New Guinea to the north than it does with the drier regions through the rest of Australia. Indeed, some bird species are even migratory between Australia and New Guinea, such as Buff-breasted Paradise-Kingfisher, Chestnut-breasted Cuckoo, Channel-billed Cuckoo, and Red-bellied Pitta. Other spectacular resident birds and families that are representative of New Guinea forests include the mighty Southern Cassowary, Noisy Pitta, and Spotted Catbird. Mammals are represented by some very distinct species, such as Striped Possum, Lumholtz's Tree Kangaroo, Musky Rat-Kangaroo, Red-legged Pademelon, Spectacled Flying Fox, and the possumlike cuscus. Reptiles and amphibians are also well represented by Jungguy Tree Frog, velvet geckos, and Boyd's Forest Dragon. Good examples of this habitat include the Daintree/Cape Tribulation area of QLD.

B. Montane Rainforest

Also known as subtropical rainforest, it occurs in the high mountains of the Atherton Tablelands (ne. QLD) and continues in isolated pockets southward into c. NSW. In the south of this range it occurs at lower elevations than in the warmer north, being found right down to the coast around n. NSW (e.g., the Big Scrub). This habitat has undergone extensive clearing for timber production, cane farming, and dairy farming, and only very small pockets now remain. Good examples of this habitat can be found around the Atherton Tablelands in Curtain Fig, Mount Lewis, Mount Hypipamee National Park, and Lake Barrine; and in s. QLD at Lamington National Park. Lowland remnants occur around the Mount Warning/ Murwillumbah in n. NSW. Some of the animals represented in this habitat include Victoria's Riflebird, Australian Logrunner, Chowchilla, Regent Bowerbird, Green Catbird, Great Barred Frog, Lesueur's Frog, Mountain Brushtail Possum, and Red-legged Pademelon.

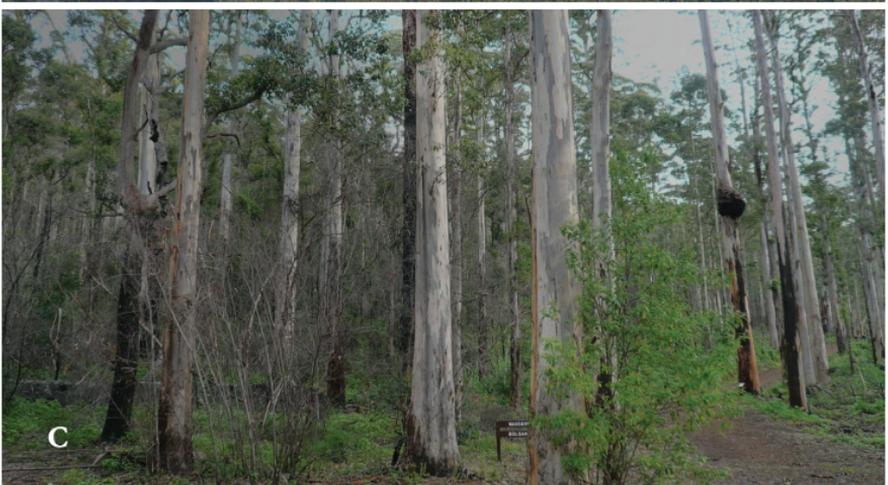
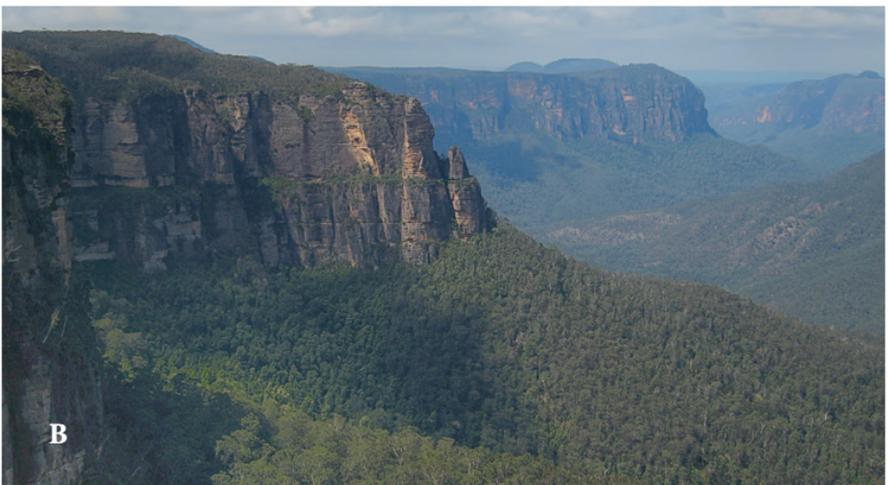
C. Tropical Palm Forest

A microhabitat within rainforests, including both tropical and montane rainforests. Although the microhabitat looks highly distinctive in terms of plant life, the animal life is very similar to that found in the surrounding rainforests. In n. QLD it can be a good place to find Striped Possum, Northern Brown Bandicoot, Orange-footed Scrubfowl, Papuan Frogmouth, and Carpet Python. In s. QLD and n. NSW, such as on Mount Tamborine, tropical palm forests can be good places to search for Albert's Lyrebird and Marbled Frogmouth. Probably the most accessible patch of this kind of forest can be found within the Centenary Lakes complex within Cairns.



A., B., and C. Wet Eucalypt Forests

Eucalypt forests are also known as sclerophyll forests. They are found from coastal e. QLD to VIC, all over TAS, and in sw. WA. Although very variable, these forests share the characteristic of being dominated by several tall eucalypt canopy species and having an understory of many other plant families. Viewed from a distance the forest looks very different from rainforest, but the distinction can be gradual, with rainforest within the gullies and eucalypt on the ridges. Up close the understory plant composition can be similar to that of rainforests, with some of the same species represented—and therefore similar animals as well—but the canopy is much more open, because it comprises straighter, slimmer-trunked trees that bear smaller leaves, which leads to a more extensive, denser understory than in the well-shaded rainforests. Therefore, in some areas (e.g., Mount Lewis, QLD) the distinction between wet eucalypt forest and rainforest is gradual and inconspicuous. Furthermore, so-called rainforests of Tasmania (photo A), are in fact largely wet eucalypt forests with some rainforest species represented in the understory and canopy. In the Blue Mountains of NSW (photo B) and the jarrah forests of sw. WA (photo C) the distinction is far clearer, with massive stands of monotypic eucalypt canopy trees, little midstory, and a thick understory. Birds typical of these highly variable environments include Superb Lyrebird, Scarlet Robin, Superb Fairywren, Eastern Spinebill, Yellow Wattlebird, and Black-headed Honeyeater. The classic wet eucalypt forest animal is the Koala, with others such as Platypus, Common Wombat, Common Ringtail Possum, and Red-necked Wallaby also occurring, in addition to the distinctive Pink-tongued Skink.



A. Karri Forest

Karri is a very distinctive type of wet eucalypt forest that is confined to extreme southwestern WA. Karri trees are a truly massive eucalypt species and are the largest of all Australian trees. Karri is also one of the tallest hardwood trees on Earth. This kind of forest is literally dominated by this one large tree species, making it a very striking habitat, characterized by the karris' enormous trunks, with few branches present except at the very highest levels, no midstory, and a sparse understory dominated by wattle trees (acacia). On the ground the prevalent cover is provided by ferns. Karri forest is generally depauperate in terms of animal species, although some western bird specialties can be found there, like Western Spinebill, Western Yellow Robin, and Western Thornbill, as well as more widespread species such as White-cheeked Honeyeater. These forests are centered on Pemberton in sw. WA.

B. Open Eucalypt Forest

These forests are found bordering wet habitats (including wet eucalypt forest, rain-forest, and heaths) inland from the coast in a broad arc covering eastern and southern Australia, but are absent from the exceptionally dry areas of the south around the Great Australia Bight. (i.e., all of eastern Australia around to Adelaide, and then again from Esperance around to Perth). Any drive between Brisbane and Melbourne will be spent mostly in this habitat. A very open wooded habitat, with scattered trees, usually dominated by just a few slim-trunked eucalypt trees. It also generally has an extensive grassy understory. This is the habitat generally pictured when tourists think of the classic Aussie bush scene. It has been extensively cleared for sheep farming. This is a very diverse habitat with many animals, including Koala, Euro, Whiptail Wallaby, Peron's Tree Frog, Eastern Brown Snake, and Eastern Striped Skink, to name but a few. Birds found there include Spotted Pardalote, Glossy Black Cockatoo, Scarlet Honeyeater, Crested Shrike-Tit, Gray Butcherbird, and the familiar Noisy Miner.

C. Monsoon Forest

Dense forests found only on the coastal extremities of northern Australia that grow in areas with pronounced dry and wet seasons, and shed their leaves during the dry season. They occur in four distinct localities: most often along dry creek beds in dry terrains (Howard Springs, NT); along sandstone escarpments (Nourlangie Rock, Kakaduu NP); in low-lying areas along the coast (East Point, Darwin), and around the Gulf of Carpentaria and the Cape York Peninsula within shallow, almost indiscernible, broad depressions. Monsoon forests are characterized by a thick canopy, although they are generally shorter overall than tropical rainforests, and have a shady, vine-dominated, open understory with a deep and extensive layer of leaf litter. Birds typical of this restricted habitat include the gorgeous Rainbow Pitta, Buff-sided Robin, and the striking but localized Black-banded Fruit-Dove (found only around escarpments). In the Cape York Peninsula, where these areas are found in depressions, the species composition reflects that found in the surrounding rainforest, such as Magnificent Riflebird, Fawn-breasted Bowerbird, Yellow-billed Kingfisher, and Green-backed Honeyeater. All these species are rare and local and restricted to Cape York Peninsula.



A. Tropical Wetland

These are large expanses of water, often containing mats of floating vegetation—sometimes bordered by reeds in shallow areas, and pandanus where there are steeper banks—found in the humid tropical regions of northern and northeastern Australia. Lilies are a major component, so this habitat is important for Comb-crested Jacanas, often referred to as “Lily-trotters,” as well as Magpie-Geese and Green Pygmy-Geese. Massive congregations of Magpie-Geese can occur in such areas, numbering in the tens of thousands. Close inspection of pandanus can reveal Northern Water Dragon. pandanus also provides an important nesting habitat for Crimson Finch. Many of these wetland areas are temporal (e.g., Marmuluk in Kakadu NP), containing water only in the December to April wet season, while others are permanent, like Mareeba Wetlands in QLD and Yellow Waters Billabong in Kakadu National Park, which has water year-round. Artificial wetlands like Fogg Dam in the NT provide a similar habitat. These are very important for waterbirds especially, and in some areas (e.g., Yellow Waters) they provide great opportunities for exploring by boat, where kingfishers, cranes, herons, egrets, whistling-ducks, and dotterels can be seen congregating in significant numbers and feeding alongside spectacular wildlife such as Australia’s most feared predator, the Estuarine Crocodile.

B. Temperate Billabong

These permanent oxbow lakes in temperate Australia lack the floating vegetation of their tropical counterparts and therefore often hold a mix of species different from that found in tropical wetlands. Waterbirds are often the most visible wildlife in these areas, where congregations of ibis, ducks, rails, herons, and shorebirds occur. The composition of these groups may be quite different from that found in tropical wetlands, however. For example, few whistling-ducks are seen, although temperate duck species such as Blue-billed, and Musk Ducks, and Australian Shoveler can be found along with others such as Red-necked Avocet and Yellow-billed Spoonbill. In inland Australia the borders of these wetlands are dominated by Red River Gums, and it is this tree that forms a crucial habitat for hole-nesting birds in the region such as Superb Parrot, the yellow form of Crimson Rosella, Regent Parrot, Pink Cockatoo, and White-browed and Masked Woodswallows. Barking Owls and Southern Boobooks also often are found at their highest concentrations in these areas with abundant nesting sites. Because such areas are important water sources for animals, a variety of wallabies and other mammals may be seen around dawn and dusk in such areas.

C. Inland Dry River

Inland dry rivers can also comprise a significant component of Red River Gums and therefore can be similar to temperate billabongs (see preceding section); however, they rarely contain water. Some flow for short periods only every few years. Thus these habitats are of little importance for waterbirds and as local sources of water for animals, although they retain their importance for hole-nesting bird species. They occur throughout inland Australia.



A. Open Woodland

A mixed woodland that usually comprises acacias, cypress pines, and eucalypts, although generally with no dominant canopy species. It is often disheveled looking with trees of varying heights and a great variety of tree species and tree forms—some multistemmed, others single-trunked. The canopy is not closed, and there is a significant development of the midstory. Although there is little understorey, usually there is a substantial cover of grasses on the ground, with minimal leaf litter. As this habitat is so varied, it takes many different forms, and many different names are applied to it. The most common form is known as Brigalow, found in c. NSW up to c.s. QLD. This habitat is diverse in terms of animal life, with birds such as Western Gerygone, Varied Sittella, and Yellow-rumped Thornbill, as well as reptiles like Eastern Bearded Dragon and Burn's Dragon. Mammals are represented by Eastern Gray Kangaroo, and Feral Pigs are a prominent pest there.

B. Mallee

Mallee is a localized type of scrublike woodland dominated by a few mallee species of eucalypts and forms a distinctive structure. It is a dangerously uniform habitat, in which it is remarkably easy to get lost, comprising medium-height (3–6 m/10–20 ft high), multi-stemmed eucalypts that grow out from the base in a coppice-like fashion. Although appearing impenetrable from the edges, mallee is quite open when within it and easy to walk in, as there is limited understorey, and the ground is flat and open, with a scattering of tinder-dry leaf litter that is neither deep or extensive. Mallee is found around the southern coast of Australia but also substantially inland in areas with a Mediterranean climate, with little rain in the winter (April to August) and almost no rain through summer. Mallee occurs in flat, very sandy, soils. In terms of plant life it is depauperate, as few other species are able to grow in this stressed sandy and dry environment. Much of the wildlife that occurs is specialized to this habitat. Notable bird species include Malleefowl, Chestnut Quail-Thrush, Red-lored Whistler, Purple-gaped Honeyeater, Black-eared Miner, and Shy Heathwren. Many reptile species are found only there, and although Shingleback can be found in other habitats, it is often abundant in mallee. Mallee has become severely fragmented from the pressures of wheat farming, although large tracts still exist in VIC (e.g., Little Desert NP) and SA (e.g., Gluepot Reserve).

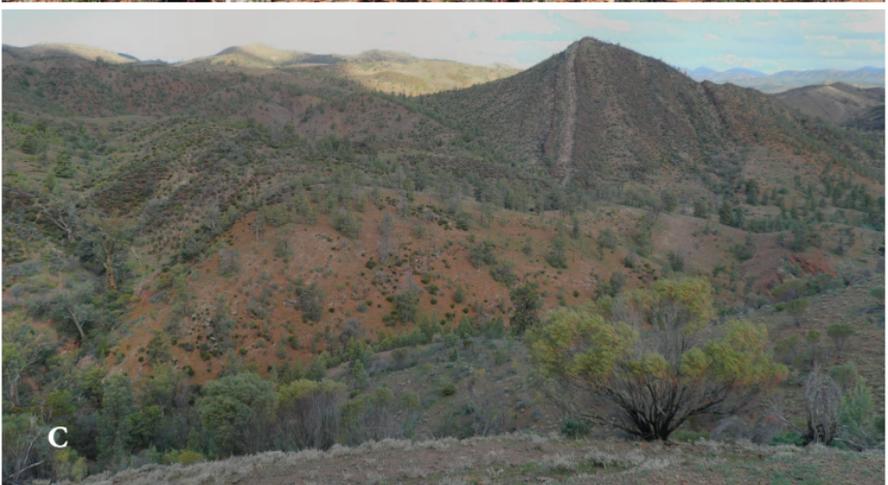
C. Mulga

Mulga is an acacia-dominated equivalent of the mallee. Thus mulga is less uniform in appearance than mallee, often considerably taller, and with a more developed eye-level midstory, making it appear much less penetrable when walking within it. The higher diversity of plant life compared with that in mallee is reflected in the animal life, too, and those species that do occur there are usually far less specialized relative to their mallee counterparts. However, there is some overlap between these habitats in terms of species. The following inhabit both: Pink Cockatoo, Hooded Robin, Black Honeyeater, and Red-capped Robin. Some birds that are peculiar to mulga or more abundant there include Budgerigar, Splendid Fairywren, Mulga Parrot, Chestnut-breasted Quail-Thrush, and Pied Honeyeater. Other animals that inhabit mulga include Long-nosed Dragon, Central Bearded Dragon, and Red Kangaroo. Mulga occurs in far western NSW, sw. QLD, and much of inland WA, generally north of the corresponding mallee areas.



A., B., and C. Stony Deserts

Stony deserts are the most barren areas in Australia. These are found in n. SA, w. QLD, and s. NT. They are characterized by sparse and very low level vegetation, either centered around upland areas inland (e.g., West MacDonnell Ranges, NT; Mount Isa, QLD; and Flinders Ranges, SA) or on broad colluvial plains (e.g., Birds-ville Track, in QLD and SA). The upland stony deserts (photos A and C) tend to be spinifex-dominated. These spiky, coarse grasses can be difficult to walk through but provide a very specialized habitat for a range of wildlife (photo A), including birds such as Spinifexbird, Spinifex Pigeon, Painted Firetail, Rufous-crowned Emuwren, and Dusky Grasswren, and animals like Black-flanked Rock Wallaby. The colluvial stony deserts are characterized by a layer of small pebbles and cobbles that have been varnished with silica, which gives them a shiny, smooth texture and that form an almost impenetrable layer to the fine red sands below. These barren-looking areas are known as Gibber Plains and support remarkably little wildlife (photo B). Animals that do occur there are extremely specialized and include birds such as Gibberbird, Chestnut-breasted Whiteface, and Inland Dotterel, all of which are very sparsely distributed species, highly nomadic, and very hard to find within this habitat. Unless one is specifically searching for animals, these regions often appear absolutely devoid of life.



A. and B. Sandy Deserts

A massive habitat in terms of land area, stretching from the west Australian coast right across the center of the continent into far western NSW. Australian sandy deserts are not the same as sandy deserts within North Africa (e.g., the Sahara) and the Middle East (e.g., the Saudi deserts), with their characteristic crescent-shaped and constantly moving sand dunes, which are located perpendicular to the prevailing winds. The Australian deserts comprise longitudinal dunes, located parallel to the prevailing winds, that are much more sedentary and stretch for many tens of kilometers. It is this sedentary nature of the Australian dune system that results in a very different looking habitat (photo A), with *spinifex* grasses growing on the sandy ridges, and acacia groves in the swales between the dunes. This permanent vegetation allows for a much richer flora and fauna assemblage than do the sandy deserts elsewhere in the world. The underlying characteristic of these deserts is that they hold many irruptive and nomadic species that respond dramatically to water levels, which in themselves vary tremendously from year to year or even decade to decade. In one year some areas may be barren, while in another years or years this same area can be flush with plant life and boast abundant animal life following a pronounced period of rains. Whereas some species of animals in this environment are sedentary, such as Eyrean Grasswren, others, such as the Princess Parrot, are extremely irruptive and nomadic. Animals exhibit these characteristics as well. For example, truly massive numbers (in the thousands) of Red Kangaroos congregate in years of abundant resources. A great example of this habitat type can be seen around Uluru (Ayer's Rock), NT (photo B). One of the reptilian oddities of this habitat is the unique Thorny Devil.

C. Tropical Savanna

These grasslands are restricted to the humid tropical north of Australia, occurring most extensively in n. WA, the Top End of the NT, and the Cape York Peninsula south to c. QLD. This habitat is characterized by very sparse tree cover with an extensive, thick ground layer of grasses, which are naturally seasonally burnt. This creates a new flush of grasses after each burn. The effects of this phenomenon can be seen directly during a burn when flocks of Black Kites in particular gather to scavenge on any dead animals and prey on any others fleeing the flames. Notably, this industrious bird has also been observed taking embers from a burn and dropping them in an unaffected area. Other birds, like finches, that feed on grasses can also be affected by a burn, moving into an area of flush new grass growth to feed on the seeds. These include Gouldian, Masked, and Long-tailed Finches, and Pictorella Mannikins. Partridge Pigeons are also affected by the burn cycle and frequently forage within recently burnt areas (page 25, photo A). Tropical savannas are also affected by human-caused fires, and in areas where such fires are considerably more frequent than the natural burn cycle, this can adversely affect the species present. These are gradational habitats: at one end of the range are very few trees with little canopy cover, and mainly grasslands, whereas the wetter extreme can be universal canopy cover, which is sometimes called *tetradonta woodlands*. However, these variations in vegetational structure and the dominant tree type seem to have less influence on the fauna found within, which is remarkably similar at both extremes (e.g., many birds found in the Broome area of WA extend right across through the NT and into the drier sections of the Cape York Peninsula).

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B. and C. Sandstone Escarpments

These rich red-stained rocks form dramatic formations that are restricted to tropical northern Australia, from the Kimberleys in n.WA to the Top End of the NT. There are other sandstone escarpments in northern Australia that could arguably be placed in this habitat category; however, we have excluded them and have placed them instead in stony deserts and sandy deserts, as the faunal assemblage most reflects those other habitat types rather than these escarpments, which have a distinctive character of their own. The Arnhem Land Escarpment covers the eastern half of the Top End of the NT and is the landscape most familiar in Kakadu National Park. The easternmost edge of the Arnhem Land plateau has tropical savanna bordering the cliff edges. The top of the escarpment is carpeted with clumps of spinifex grasses growing out of cracks in this sandstone conglomerate massif. The habitat on top is not uniform, however. There, swales break up the cover of spinifex, where a stunted microhabitat of eucalypts grows, some of which take on a mallee form. This spinifex and eucalypt assemblage is home to some of Australia's most restricted-range bird species, such as Chestnut-quilled Rock-Pigeon, White-lined Honeyeater, and especially the highly sought after, and extremely elusive, White-throated Grasswren. Another specialized bird is the well-named Sandstone Shrike-Thrush, which eats, sleeps, nests, and sings from the red sandstone rocks and is intimately tied to these northern escarpments. This is also the realm of the Black Wallaroo, a scarce and localized species confined to this habitat, which is a plain, dark, Euro-like wallaby. The bases of some of the outcrops within the Arnhem Land Escarpment are bordered with humid monsoon forest, such as at Nourlangie Rock in Kakadu National Park, which can hold Black-banded Fruit-Dove, Green Oriole, and Orange-footed Scrubfowl. The Kimberleys is a much more remote escarpment in n.WA with outliers to the western edge of the NT. Generally, the faunal assemblage is similar to that found within Arnhem Land, with either similar species or distinct races of the same species. Black Grasswren replaces the White-throated Grasswren in the Kimberleys, and the White-quilled Rock-Pigeon found in the Kimberleys is a sister species of the Chestnut-quilled Rock-Pigeon found in Arnhem Land. Similarly, the Kimberley Honeyeater was formerly considered a distinct race of White-lined Honeyeater but is now regarded as distinctive enough from the closely related Arnhem species to be given full species status of its own, and is therefore now seen as a species endemic to the Kimberleys. Sandstone Shrike-Thrush is also present. Other animals are also represented by endemic races or species, and found only there, including the Short-eared Rock-Wallaby and the fearsome Northern Death Adder.

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