New Reserves Proposed for Dampier Peninsula

Lying between the aridity of the Great Sandy Desert and the sub-tropical North-west Kimberley region, the Dampier Peninsula exhibits a unique blend of habitats and wildlife from both areas together with vegetation formations found nowhere else in the world. Since European settlement, a total of 311 plant, 33 mammal, 214 bird, 69 reptile and 9 amphibian species have been recorded on the Peninsula in a variety of habitats ranging from coastal mangroves and mudflats to sandplains, pindan, jungle-like vine thickets, freshwater swamps and limestone sinkholes. Despite this, only one small portion, the Coulomb Point Nature Reserve, has been reserved for conservation to date, and it includes only some of the rich variety of habitats found on the Peninsula. Consequently, proposals are now before the State Government for a further three reserves to be declared, totalling another 29 117 hectares.

The natural history of the Dampier Peninsula and its environs soon after first European settlement is relatively well known. Extensive collections of vertebrates were made by Dahl from 1895 to 1896 and by Soderberg and Lonnberg from 1910 to 1913. In most cases their specimens were accompanied by environmental descriptions including general accounts of the vegetation.

The earliest recorded observations of the vegetation of the Peninsula were made by William Dampier who anchored in the *Cygnet* near Karrakatta Bay in January 1688. Dampier described the hinterland as an area ". . . of dry, sandy soil, destitute of water . . . yet producing diverse sorts of trees; but the woods are not thick nor the trees very big. Most of the trees . . . are about the biggness of our large apple trees and about the same height. There was pretty long grass growing under the trees but it was very thin" (Grant-Richards 1906).

Another party, led by the French naval surveyor, Nicholas Baudin, charted the western coast of the Dampier Peninsula in August 1801 naming a number of prominent features including Cape Bertholet, Carnot Bay, Cape Borda, Cape Leveque and Coulomb Point.

In February 1822, Phillip King in the *Bathurst*, accompanied by the botanical collector, Alan Cunningham, charted the eastern coast of the Peninsula and named Point Cunningham, Goodenough Bay, Foul Point and Disaster Bay. A number of days were spent ashore exploring and collecting plants as the *Bathurst* lay at anchor in Goodenough and Cygnet Bays.

Further observations on the vegetation as seen soon after the wet season were made by Alexander Forrest in April 1879 during his expedition from the De Grey River to Beagle Bay. Forrest observed that ". . . The country along the south and east shore of Beagle Bay is very good, and abounds in permanent springs;

▲ *Eucalyptus*—pindan comprising *(E. miniata)* open forest, with scattered *(E. polycarpa)* and *(Acacia tumida)* forming a sub canopy in the proposed Borda Nature Reserve.

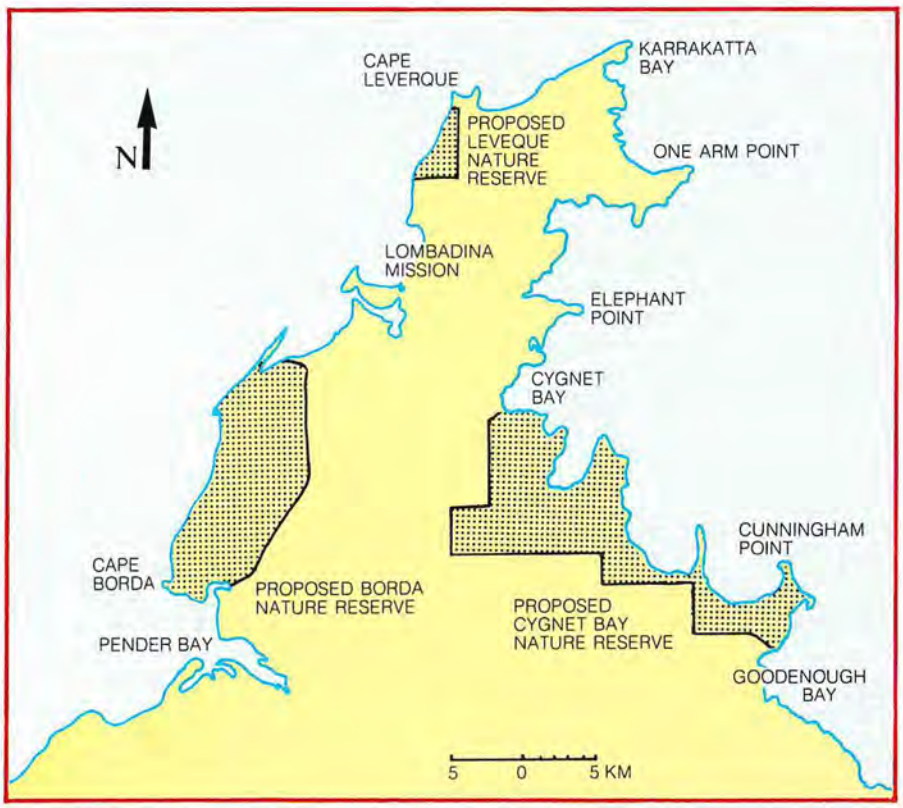
nearly every mile surface water is to be found. The country is however rather densely wooded with cajeput, red and white gum, and many species of acacia, as well as the palm tree, also the black wattle which would in course of time be a valuable article for export. The cajeput tree here grows to an immense size, and would when sawn be suitable for building purposes and fencing." The palm Forrest referred to is actually Pandanus, and the black wattle is either *Acacia tumida* or *A. eriopoda* (the most common tree wattles of the Peninsula).

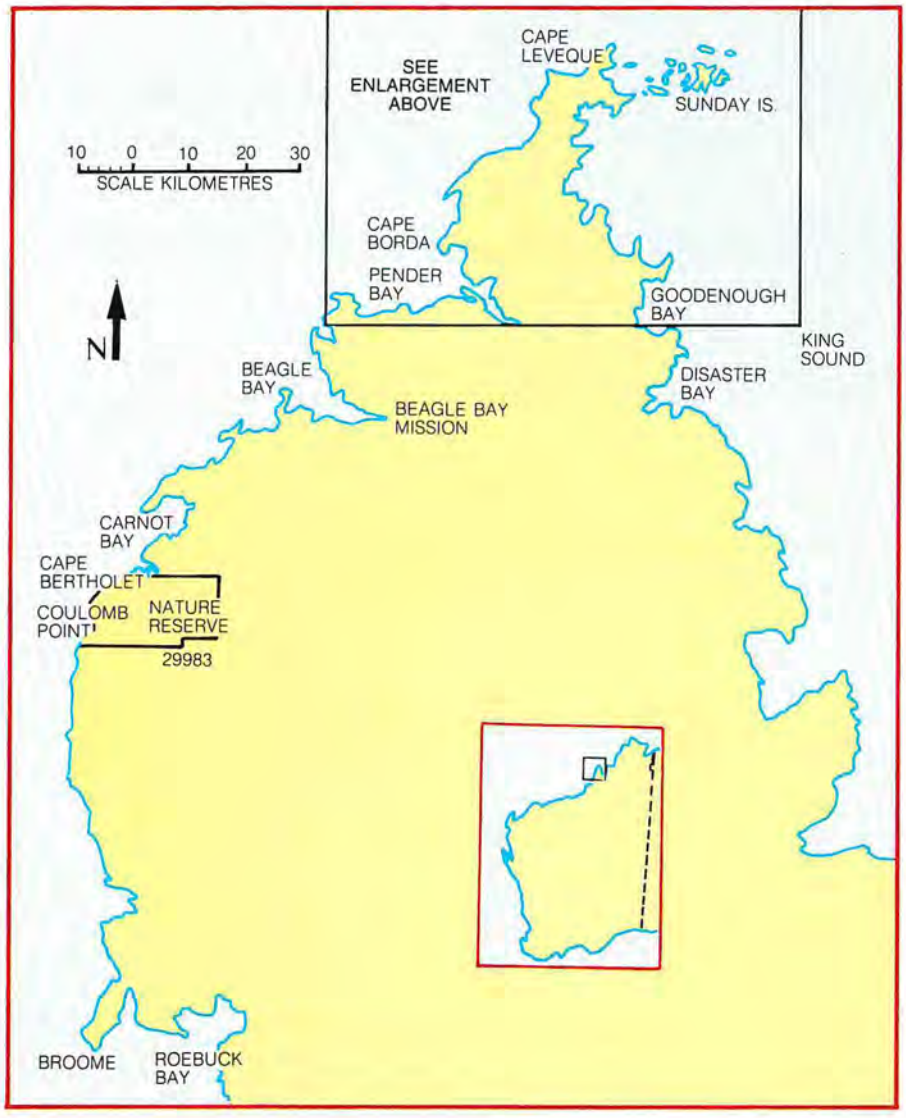
During the same year Julius Brockman made notes on the vegetation of the Peninsula during a trip from Beagle Bay to the Fitzroy River and observed dense wattle thickets over 'bamboo grass' east from Beagle Bay. Brockman also noted that the country about 30km east of Beagle Bay was very dry, much of it burnt clean. Brockman made particular note of the dense vine thickets found behind the coastal sand dunes on the north end of the Peninsula ". . . We turned into the beach again at sunset . . . and had hard work to force our way through the jungle that skirts the sea hills, having to get out our knives to cut the tangled masses of creeper, often as strong as rope".

In 1906, W. V. Fitzgerald collected plants near Cygnet Bay, Swan Point and Cape Leveque while taking part in the Crossland Expedition. Further collections from the Peninsula were made by C. E. Lane-Poole in October, 1919 during a visit to the area in connection with the issuing of licences to extract tannin from mangrove bark. Early additions to the knowledge of the Peninsula's flora were also made by C. A. Gardner during the Easton Expedition of 1921.

Despite this seeming wealth of information, some of which was very colourful, it should be noted that the descriptions of vegetation structure in the journals and publications of the above investigators were very superficial and restricted to specific localities. In fact, the first detailed account of vegetation structures on the Peninsula was not produced until 1964 (Speck, Wright and Rutherford) and the first detailed vegetation map of this area was compiled as recently as 1979 by J. S. Beard.

It is quite likely that the vegetation of the Dampier Peninsula has changed to some degree since the beginning of this century, particularly when related to densities and





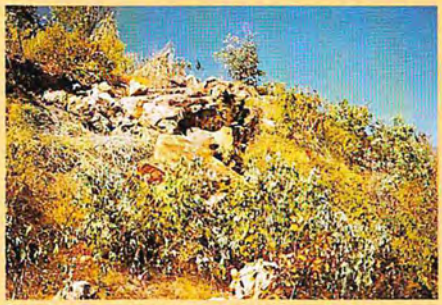
understorey elements, as since about 1890 the Peninsular has been subjected to intensive pastoral management. This has involved intensive grazing, very frequent and widespread burning and some localised clearing – events not conducive to regeneration of tree species and the persistence of shrub layers and leaf litter, but favouring the development of annual and perennial grasslands. However, there is evidence that widespread bushfires pre-dated European settlement. In 1838 Stokes commented that " . . . indeed during the dry season it not infrequently happens that an immense tract of land is desolated by fire, communicated, either by design or carelessness of the natives, to the dry herbage on the surface".

In fact, grazing and burning are now recognised as important factors in the modification of vegetation structure and floristics and native fauna richness elsewhere in Australia.

A joint field study involving members of the Western Australian Wildlife Research Centre, the Western Australian Herbarium, the W.A. Museum, the Bureau of Mineral Resources and the C.S.I.R.O. in 1977 and 1978 noted that there was hardly a hectare of the Dampier Peninsula which did not include at least one cattle pad while huge areas were at early stages of regeneration after fire. Trampling damage was especially apparent in the species rich communities along watercourses, in ephemeral swamplands, and in the sub-coastal semi-deciduous vine forests – all sites where cattle congregate. The widespread influence of fire on the Coulomb Point Nature Reserve had also sharply reduced mature stands of the *Acacia* dominated 'pindan' vegetation for which the reserve was originally proclaimed.

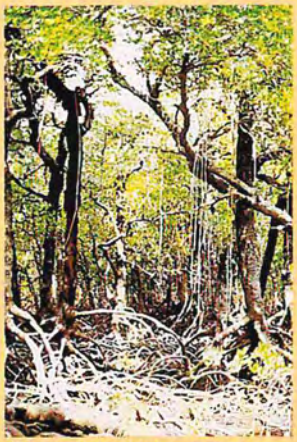
During 1980 and 1981 higher cattle prices induced the mustering and sale of stock. The effect of this reduction in cattle numbers was apparent in June 1981; trampling was a severe problem only near water and in vine forests and other near-coastal communities. Burning, however, was still a major influence on the vegetation; large tracts of blackened country were evident with green foliage being retained only by mature Eucalyptus trees and by scarcely-visible green shoots in the blackened

Aerial view of part of the proposed Cygnet Bay Nature Reserve



Sandstone scene at the south end of Deepwater Point, showing shrub which is *(Exocarpos latifolius)* over hummock grass (*Triodia pungens*).

Eucalyptus—pindan typical of the northern end of the Peninsula.



(Rhizophora stylosa) as an open forest in the mangroves fringing the bay.

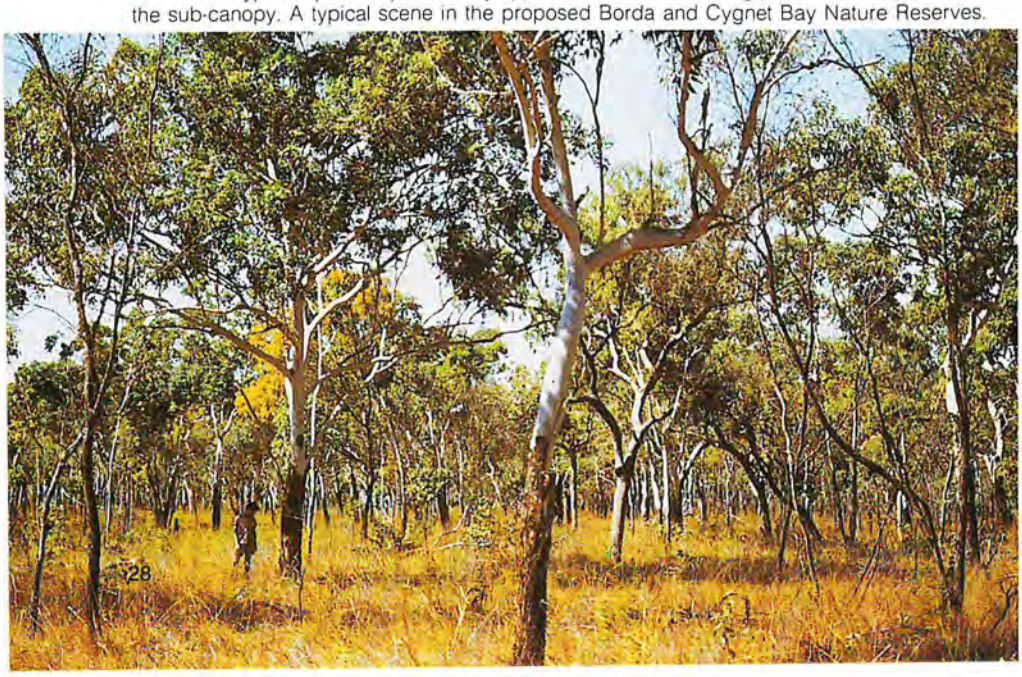
A narrow fringing of *(Melaleuca acacioides)*. forming a low closed forest.

Samphire fringes the coastal mudflats with the landward zone of the mangrove community in the background.

▲ Limestone surface in the proposed Borda Nature Reserve showing a sink hole. The dense grass is *(Spinifex longifolius)*.

▲ Freshwater swamp in the Coulomb Point Nature reserve.

▼ *Eucalyptus*—pindan *(E. miniata)* open forest with a flowering *(Acacia tumida)* visible in the sub-canopy. A typical scene in the proposed Borda and Cygnet Bay Nature Reserves.



butts of the tussock grass. At the same time, the country immediately south of Pender Bay was seen burning on a 20 kilometre front for at least five days.

The woodlands to open-forests of *Acacia* and *Eucalyptus* that now dominate the Dampier Peninsula are best described as a tree savannah over annual tussock grassland as the 1977-1978 survey noted substantial shrub strata only in discontinous and isolated areas that had escaped burning for several years. In general, the Peninsula could be described as a very gently undulating, monotonous and featureless sandplain dominated by the above eucalypt and *Acacia* woodland (pindan) although the coastal and near coastal areas exhibit considerable habitat diversity. Also in general terms, the northern part of the Peninsula is much wetter than the south, to the extent that it supports small pockets of monsoon forests existing at the southern limit of their range in Western Australia.

The Dampier Peninsula has a tropical climate with a distinct wet season from December to March during which almost all the annual rainfall is received and humidity is high. Only two significant seasons occur, separated by brief transitional periods during which daytime temperatures are noticeably higher.

The difference between the wet and dry seasons is dramatic, the landscape taking on a completely different complexion. In 1926 Dahl described the change vividly" . . . some weeks ago these plains were desert. Dry and fine sand rose in little clouds at every step of the horses, while the wind swept the sand away and played with the dry debris of the withered vegetation. Now it might happen that the grass and rushes rose higher than the saddle as one rode among chains of glittering lagoons, and every step of the horses might flush a profusion of waterfowl . . . almost all of them were species which during the dry season were entirely absent from these parts."

As Dahl suggested, birdlife is one of the Peninsula's strongpoints. A total of 214 species comprising 143 non-passerine and 71 passerine have been recorded from this area. The richness of the avifauna is mainly due again to the diversity of coastal

habitats whereas the non-coastal fauna is fairly typical of semi-arid Kimberley.

Although acacia-dominated pindan covers about 70% of the Peninsula and contains many flowering trees and shrubs and often a good ground cover of tussock and soft grasses, it has a fairly low number of sedentary bird species such as the Rufous Whistler, Grey Shrike-thrush, Crested Bellbird, Grey-crowned Babbler, Variegated Fairy-wren, Rufous Songlark and Singing Honeyeater. A larger category comprises nomads, breeding and non-breeding visitors and nectivorous birds following the flowering trees and shrubs.

At the more humid northern end of the Peninsula, the pindan occurs as *Eucalyptus miniata, E. tectifica* and *E. papuana* forests and woodlands. These cover only 15% of the Peninsula but boast about 30 species including the Rainbow Lorikeet, Varied Lorikeet, Boobook Owl, Blue-winged Kookaburra, Jacky Winter, Hooded Robin, Northern Fantail, Leaden Flycatcher, Australian Sittella, Black-tailed Treecreeper, Striated Pardalote and Gouldian Finch.

In contrast to the above, a total of 161 bird species has been recorded in the remaining 15% of the Peninsula, almost all of which consists of coastal or near-coastal habitat. For example, the large blocks of mangal along the Dampier Peninsula coasts are home to 14 birds most of which are confined to mangroves: Mangrove Heron, Little Bronze Cuckoo, Mangrove Kingfisher, Brown-tailed Flycatcher, Mangrove Robin, Mangrove Golden Whistler, White-breasted Whistler, Grey Fantail, Broad-billed Flycatcher, Shining Flycatcher, Mangrove Flyeater, Dusky Flyeater, Yellow White-eye and Red-headed Honeyeater.

Birds mostly seen in the Peninsula's samphire flats, open grasslands and coastal dunes include Brown Quail, red-breasted Button-quail, Australian Bustard, Oriental Pratincole, Horsfield's Bushlark, Richard's Pipit and Golden-headed Fantail Warbler.

The coastal *Melaleuca* woodlands, Kimberley vine forests, thickets and scrub also harbour a considerable number of species including the Bar-shouldered Dove, Rufous Whistler, Red-winged Parrot, Black-faced Cuckoo-Shrike, Great Bowerbird, Red-crowned Pigeon, Brown Honeyeater, White-gaped Honeyeater and the Rufous-throated Honeyeater. Other species found in vine forests include the Mangrove Golden Whistler and Little Friarbird.

Watercourses, swamps, tidal mudflats and beaches are important for many species of waders and waterfowl.

Although the Peninsula boasts a rich avifauna, some species which are common in similar habitat on the Yampi Peninsula (to the north-east) and the Fitzroy River (to the south-east) are conspicuous by their absence. These include the Sulphur-crested Cockatoo, Blue-faced Honeyeater, Silver-crowned Friarbird, Crimson Finch and Masked Finch. This is probably due to the limited access to the Peninsula, bounded as it is by King Sound in the north-east and the semi-arid pindan to the south. This same restriction is probably a major reason for the relatively small number of terrestrial mammals encountered on the Peninsular.

Since European settlement, only 33 species of native mammal have been recorded on the Peninsula but a number of these have since become extremely rare or have disappeared altogether. Some of the reasons for this decline may include changes in the environment brought about by the activities of the pastoral industry as well as the introduction of exotic species such as the black rat, cat, feral donkeys and cattle.

Amongst those mammal species which persist on the Dampier Peninsula are the Red Kangaroo, Sandy Wallaby, Northern Nail-tailed Wallaby, Northern Planigale, Western Chestnut Mouse, Little Native Mouse, Black Flying Fox, Red Flying Fox, Echidna, Dingo and about 12 species of insect-eating bats.

As outlined at the beginning of this article there is currently only one conservation reserve on the whole Dampier Peninsula. The Coulomb Point Nature Reserve comes closest to representing the typical habitat of the Peninsula rather than the special by including extensive areas of *Acacia* pindan communities on sandplains and, to a lesser extent, on light alluvial soils, as well as small areas of four different coastal environments: samphire and grasslands on supratidal mudflats, estuarine low forests of paperbarks, coastal sand dunes and vine thickets. However, it does not include the eucalypt pindans of the northern end of the Peninsula, nor does it include tidal mudflats or mangroves because the reserve does not extend to low water mark.

Consequently, a further three conservation reserves are proposed on the Dampier Peninsula. These are the Borda Nature Reserve (12 302ha), the Cygnet Bay Nature Reserve (15 805 ha) and the Leveque Nature Reserve (1 010 ha). All should extend to the low tide line. The three proposed nature reserves were selected from the only remaining area of vacant Crown land in well-watered areas of the South-west Kimberley. Together with the Coulomb Point Nature Reserve they total only 3.9% of the Peninsula's land surface yet represent most of its biological richness. If granted, it has also been recommended that the reserves should remain open to Aboriginal usage for traditional purposes such as ceremonial use of sacred sites, and existing access routes to oyster and pearl licence areas should also be guaranteed.

The above story was adapted for SWANS by Clifford Young from Wildlife Research Bulletin Number 11, Wildlife of the Dampier Peninsula, South-West Kimberley, Western Australia, *edited by N.L. McKenzie 1983. The Bulletin is available from the Extension and Publicity Office of the Department of Fisheries and Wildlife, 108 Adelaide Tce. Perth.*