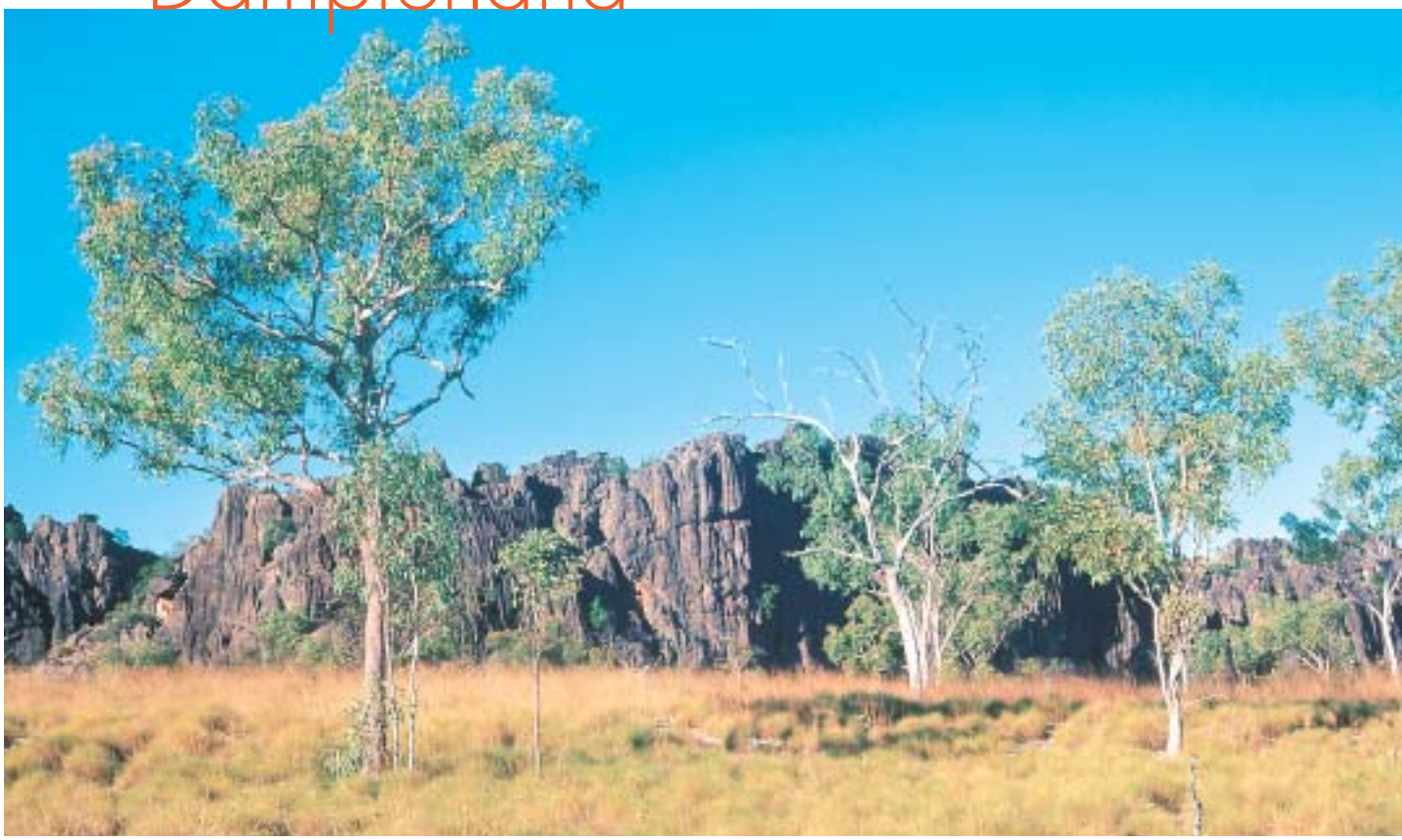
Dampierland



Open eucalypt woodland over hummock grassland on calcareous soil plains of Fitzroy Trough, Dampierland Bioregion, W.A. Background is the Napier Range, a stranded Devonian barrier reef.
Photo: N.L. McKenzie

Description

Bioregional description and biodiversity values.

There are two subregions: the Fitzroy Trough and Pindanland.

The Fitzroy Trough is the semi-arid northern edge of the Canning Basin and contains the middle and lower catchments of the Fitzroy River. Extensive coastal mudflats are associated with its delta. Devonian limestone barrier reef structures are preserved along the Trough's northern and eastern peripheries.

Quaternary alluvial plains associated with the Permian and Mesozoic sediments of the Fitzroy Trough support *Eucalyptus microtheca* and *Lysiphyllum cunninghamii* tree-savannas over *Chrysopogon-Dichanthium* grasslands with scattered forests of river gum and cadjeput along drainage lines. Devonian limestones in the north and east of the Trough support tree steppes with understoreys of *Triodia intermedia* and *T. wiseana* hummock-grass.

Pindanland is the coastal, semi-arid, north-western margin of the Canning Basin. Quaternary sandplains mantle Jurassic and Mesozoic sandstones and support pindan vegetation on the plains and hummock grasslands on hills.

Quaternary marine deposits on coastal plains support mangal, samphire, *Sporobolus* grasslands, *Melaleuca acacioides* low forests, and *Spinifex-Crotalaria* strand communities.

The region has a semi-arid, hot, tropical climate with summer rainfall.

Special values include the stranded remnants of a Devonian barrier reef system at Windjana and Geikie Gorges, Mimbi Caves and Tunnel Creek. The gorges are world-class tourist destinations and Tunnel Creek is the only known example in WA of a river passing through a range via a cave. The Tunnel supports colonies of ghost bat, yellow-lipped cave bat and orange horseshoe bat.

Rainforests and paperbark swamps are associated with organic profiles of mound springs on coastal mudflats and with primary coastal sand dunes on the Dampier Peninsula. Camballin Floodplain is one of the few large floodplains of the Kimberley region, while vast grasslands occur on black soils of the Roebuck Plains.

Enormous numbers of migratory birds are found at Roebuck Bay and Eighty Mile Beach, where palaeoriver (ancient river) systems have produced extensive coastal mudflats. *Keraudrenia exastia* and *Pandanus spiralis* var. *flammeus* are both declared rare species.

Overall condition and trend

- The Fitzroy Trough subregion has a Continental Stress Class of four (see Glossary), which is appropriate given the threatening processes operating at the landscape scale (grazing pressure and changed fire regime).
- Pindanland was rated as having a stress class of six (near pristine), but this should be reviewed because fire and grazing have contributed to a degradation of the subregion.
- Vegetation cover throughout the region has declined due to an inappropriate fire regime in combination with pastoral use.

Conservation priorities

The reserve system is biased; many ecosystems of both the Fitzroy Trough and Pindanland are not represented in the system. Improved control of fire, feral herbivores and weeds are other priorities.

Nationally important wetlands

Ten Dampierland wetlands are listed nationally, including mound springs supporting diverse flora, a cave watercourse, limestone river gorges, a riverine floodplain, a coastal creek system, and palaeoriver systems important for migratory waders.

The paleoriver systems comprise a large bay, extensive coastal wetland plains, an inland wetland complex and a coastal dune and mudflat system. All the palaeoriver systems are Ramsar listed.

Most are in a fair or good condition but declining, while two are near pristine and of unknown trend. Main threatening processes include grazing and trampling by stock, tourist-use, changed hydrology with siltation and altered flows, feral animals, changed fire regimes and impacts due to the proximity of the town of Broome to two sites.

Wetlands of regional significance

Two other wetlands are important for the maintenance of ecological processes at a subregional scales. The condition of Wollamor claypan is fair and the subterranean soak and creek systems of the Lawford Ranges are near pristine. Threatening processes are:

- weeds,
- grazing by stock and
- tourism.

Riparian zone

Vegetation along creeks and rivers is currently in good condition but is declining across the bioregion. Threatening processes include changed fire regimes, grazing pressure from stock and feral herbivores, weeds changed hydrology and, in some places, tourism.

Ecosystems at risk

Six Threatened Ecological Communities (TECs) have been declared vulnerable under State legislation, and an additional 13 are other communities thought to be at risk. The declared TECs include:

- monsoon (vine) thickets on the Dampier Peninsula, and
- an intertidal faunal community on Roebuck Bay mudflats and a variety of mound springs (Disaster Bay, Bunda Bunda, Mandora Marsh and Big Springs.

Threats to these communities are primarily from grazing (usually cattle) and the associated changes to soil structure, and weed invasion. Intertidal mudflats are threatened by human impact and possibly pollution.

Areas associated with water (wetlands, mound spring communities, clay pans, lakes and creeks) also feature heavily in the ecosystems at risk and are threatened by:

- grazing,
- changed fire regimes,
- urbanisation,
- ground water extraction and
- feral animals.

Most ecosystems at risk have relatively little known about their condition and trend. TECs are generally in fair condition and trend is declining or unknown.

Species at risk

More than 10 per cent of Dampierland's original mammal fauna is regionally extinct.

One bird and two reptiles (both turtles) are listed as endangered, and one mammal, two birds, and four reptiles (also all turtles) are declared as vulnerable under State legislation.

The threatening processes for most vertebrate species are poorly understood or unknown. The bilby and Gouldian finch are both affected by changed fire regimes and grazing pressure operating at the landscape scale.

The bioregion has one critically endangered and one endangered plant listed. The condition of both is unknown but their trend appears to be static or improving. Threatening processes are:

- urbanisation,
- grazing and
- weed invasion.

Management responses

Reserve system

Regional conservation lands include:

- three small national parks (Windjana Gorge, Geikie Gorge and Tunnel Creek),
- one large and one small conservation park (Devonian Reef and Brooking Gorge) and
- one small nature reserve (Point Coulomb).

These reserves comprise one per cent of the bioregion and include examples of only 17 of the region's 86 vegetation associations. The reserve system is highly biased with significant gaps. The management standard is rated as fair for the Devonian Reef national parks (Windjana and Geikie Gorges) where there is a ranger presence. However the impact of weeds, fire and feral animals on these parks is poorly documented. The management standard for all other reserves is poor because the effects of threatening processes are not documented and management is limited to occasional visits.

Fifty-two of the unreserved vegetation associations and 12 partially-reserved associations have a high priority for acquisition or further reservation. They include:

- grasslands,
- grasslands with associated woodlands,
- hummock grasslands,
- shrublands,
- woodlands,
- mosaic communities,
- bare areas,
- succulent steppe and
- mangroves.

Nineteen ecosystems are either "*unreserved and subject to threats*" or "*too little is known about them to make statements of levels of reservation and priority*".

Constraints on reserve acquisition are mainly pastoral land-use and the cost of purchasing pastoral leases.

Off-reserve conservation for species and ecosystem recovery

A number of recovery actions are required for threatened mammal, bird, turtle and plant species.

- Research is needed on the overall condition, trend and impact of threatening processes.
- Frequent, broad-scale, hot, late dry-season burning needs to be avoided in savannah.
- Feral stock should be removed from conservation estate, combined with the close-order management of stock on other lands.
- Feral animals (especially cattle, donkeys and pigs) need to be eradicated.
- There is a need for the systematic survey of each of the plant species to better determine population information and conservation actions.

The effects of fire and grazing are major issues in tropical savanna ecosystems generally. Better coordination between the pastoral grazing industry, traditional owners and the broader community, in the context of management research, is essential for action.

A large off-reserve effort is needed over much of the bioregion, yet resources and community capacity are limited. State and regional weed strategies need definite priorities in both an agricultural sense and an environmental context. Resources are required for priorities that have already been identified.

Integrated natural resource management (NRM)

Existing natural resource management actions include legislation for pastoral lease condition inspections by the Department of Agriculture.

Pastoralists are notified of any problems and, ultimately, the Commissioner for Soil Conservation can resume the lease. In practice, this process does not appear to be very effective. Other actions include:

- threat abatement planning as part of NRM,
- coordinated efforts by the Department of Agriculture to control donkeys, and
- Land Conservation District Committees providing a venue for discussing conservation matters and integrating property and catchment planning.

There is a range of opportunities for NRM.

- Duty of care for biodiversity on pastoral lands needs to be tightened.
- Environmental management systems for controlling weeds, fire and feral animals should be coordinated across a variety of land tenures through Land Conservation District Committees, supported by research into the mechanism and impacts of these threatening processes and cost-effective solutions.
- Shire planning should incorporate biodiversity objectives and acknowledge the worth of the natural environment to tourism and the cost of managing biodiversity and making national parks accessible.
- Catchment and regional plans should be developed collaboratively by all stakeholders.

Constraints include:

- lack of financial resources,
- the small number of people available to implement strategies, and
- that few people recognise biodiversity benefits.

Major data gaps and research priorities

- Planning requires regional vegetation, soil and environmental geology maps at better than 1:250,000 scale.
- There has been no quadrat based fauna and flora survey of the region to assess species and ecosystem status, condition, trend and the effects of threatening processes such as cats, cattle, donkeys, pigs, fire and weeds.