Ord Victoria Plains 1 *(OVP1 – Ord subregion)*

GORDON GRAHAM
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Information from Western Australia and the Northern Territory has been listed separately in this synopsis as a result of different vegetation mapping protocols that have been used in the two jurisdictions and the associated difficulties in combining that information.

Subregional description and biodiversity values

Description and area

Western Australia:
The bioregion shows level to gently undulating plains with scattered hills on Cambrian volcanics and Proterozoic sedimentary rocks; vertosols on plains and predominantly skeletal soils on hills. The overall vegetation is grassland with scattered bloodwoods (*Eucalyptus spp.*) and snappy gum (*Eucalyptus brevifolia*) with spinifex and annual grasses. The climate is dry hot tropical, semi-arid with summer rainfall. The subregional area is 2, 282, 600ha.

The lithological mosaic has three main components:
(1) Abrupt Proterozoic and Phanerozoic ranges and scattered hills mantled by shallow sand and loam soils supporting *Triodia* hummock grasslands with sparse low trees.
(2) Cambrian volcanics and limestone form extensive plains with short grass (*Enneapogon spp.*) on dry calcareous soils and medium-height grassland communities (*Astrebla spp.* and *Dichanthium spp.*) on cracking clays. Riparian forests of red river gum (*Eucalyptus camaldulensis*) fringe drainage lines.
(3) In the southwest, Phanerozoic strata expressed as often lateritised upland sand plains with sparse trees. This component recurs as the Sturt Plateau Region in central Northern Territory.

The Ord subregion is comprised of a major river system draining low-lying plains and hilly tracts northwards via the Ord River. The average annual rainfall is between 500 and 800 mm. Phanerozoic strata of the Ord Basin strata have been well exposed, including sandstones, limestone and volcanics.

Broad scale vegetation mapping of the area describes the following components:
- *Eucalyptus microtheca* (coolibah) and / or *Eucalyptus spp.* +/- *Excoecaria parvifolia* (gutta percha) grassy low woodland.
- *Astrebla pectinata* (barley Mitchell grass) closed-tussock grassland +/- low trees.
- *Dichanthium fecundum* (curly bluegrass) and *Chrysopogon fallax* (golden beard grass) tussock grassland sparsely wooded with low trees.
- *Eucalyptus brevifolia* (snappy gum) low open-woodland with *Triodia spp.* (spinifex) hummock grasses or sometimes a hummock grassland without trees.
- *Triodia pungens* (soft spinifex) and / or *Triodia intermedia* (winged spinifex) and / or *Triodia bitextura* (curly spinifex) hummock grassland wooded with *Eucalyptus spp* or *Bauhinia cunninghamii* (bauhinia) low trees.
- *Eucalyptus pruinosa* (silver box) +/- *Bauhinia cunninghamii* (bauhinia) low open-woodland +/- a shrub layer and tussock grasses or *Triodia spp.* (spinifex)
- *Eucalyptus spp.* grassy woodland
- *Eucalyptus terminalis* (desert bloodwood) low open-woodland with *Sehima nervosum* (white grass) and *Chrysopogon fallax* (golden beard grass) tussock grasses +/- *Triodia spp.* (spinifex).
- *Eucalyptus opaca* (plains bloodwood) and *Eucalyptus chlorophylla* (shiny-leaved box) sparse low-open woodland with tussock grasses or a *Triodia pungens* (soft spinifex), *Triodia intermedia* (winged spinifex) hummock grassland wooded with *Eucalyptus brevifolia*.
- *Triodia wiseana* (limestone spinifex) open-hummock grassland wooded with low trees of *Terminalia spp.* or *Adansonia gregorii* (boab).
- *Astrebla lappacea* (curly Mitchell grass) and / or *Astrebla pectinata* (barley Mitchell grass) tussock grassland sparsely wooded with *Acacia spp.* low trees.
- *Enneapogon purpurascens* (nine-awn grass) tussock grassland.
- *Eucalyptus spp., Eucalyptus miniata* (Northern woollybutt) +/- *Eucalyptus tetrodonta* (Darwin stringybark) open-woodland with *Triodia bitextura* (curly spinifex) and *Sorghum spp.* (sorghum) grasses.
- *Eucalyptus dampieri* (pindan bloodwood) low open-woodland with *Triodia pungens* (soft spinifex) and / or *Triodia intermedia* (winged spinifex) hummock grasses.
- *Triodia pungens* (soft spinifex) and / or *Triodia intermedia* (winged spinifex) hummock grassland sparsely wooded with low trees.
- *Eucalyptus brevifolia* (snappy gum) low open-woodland with *Triodia pungens* (soft spinifex) and / or *Triodia bitextura* (curly spinifex) hummock grasses and / or tussock grasses.
- *Triodia wiseana* (limestone spinifex) and *Triodia intermedia* (winged spinifex) hummock grassland sparsely wooded with *Eucalyptus brevifolia* (snappy gum) low trees.
- *Eucalyptus brevifolia* (snappy gum) low open-woodland with *Triodia bitextura* (curly spinifex) hummock grasses +/- *Enneapogon spp.* (nine-awn grass) short-tussock grasses or sometimes a grassland without trees.

Northern Territory:
The Ord subregion lies between the Victoria River District and the Ord River catchment, containing drainage for both catchments. It contains Cambrian

volcanics and sedimentary rocks from the Wiso and Ord Basins respectively. The climate is monsoonal with annual average rainfall varying from 400 to 800mm south to north. Elevation varies between 100 and 450m, with a minor range up to 400m separating the Victoria and Ord River catchments. Major drainage includes the West Baines and Negri Rivers and Stirling, Mistake and Blackfellow Creeks. Vegetation includes a variety of grassland (*Triodia* spp., *Enneapogon purpurascens*, *Chrysopogon fallax*, and *Dichanthium fecundum*) and low open woodland (*Eucalyptus terminalis* and *E. chlorophylla*) with grass understorey. Soils in the subregion are predominantly shallow loams, clays, and sands, with some deep loams covering the Ord Basin.

Dominant land use

Western Australia:
The dominant landuses are (ix) Grazing – Native pastures (see Appendix B, key b), (xi) UCL and Crown reserves, and (vii) Mining.

Northern Territory:
No information supplied.

Continental Stress Class

The Continental Stress Class for both the West Australian and Northern Territory components of OVP1 is 6.

Known special values in relation to landscape, ecosystem, species and genetic values

Western Australia:

Rare Features:
- The structure of the Bungle Bungle range within the Purnululu National Park.
- The Osmand Ranges and the springs within them
- The enormous, man-made freshwater Lake Argyle. The islands within this lake have been previously described as providing an outdoor laboratory to investigate evolutionary processes and other changes over time. This has also been acknowledged with its Ramsar listing.
- Geology of interest associated with the Halls Creek Fault.

Centres of Endemism:
- A species of skink *Lerista bunglebungle* has been described within this subregion.
- Rainforest patches are particularly important to invertebrates such as Camaenid land snails and annelids. Camaenid land snails have a large number of endemic species and some endemic genera showing strongly localised patterns of endemism. All the rainforest patches studied to date have endemic earthworm species associated with them.

Refugia:
'Dry' rainforest patches provide dry season refuges. Riparian zones, whilst degraded, are important. Lake Argyle itself, with its river red gum (*Eucalyptus camaldulensis*) woodland is acknowledged as being important for birds. Further research is required to define the extent to which various islands of vegetation such as springs function as refuges.

High Species and Ecosystem Diversity:
Rainforests are defined by their vegetation associations and are resource centres for a variety of faunal taxa that are either directly linked to rainforests or are more widely ranging species that are dependent on them. Examples include fruit pigeons and flying foxes.

Northern Territory:
Endemism:
Some endemism is associated with Bungle Bungle sandstone massif (e.g. *Lerista bunglebunglensis* and several plant species) (Woinarski 1992).

Rare Features:
Many localised rare species are associated with Bungle Bungle ranges (Woinarski 1992).

Refugia:
The Bungle Bungle massif is considered a significant refuge (Morton *et al.* 1995).

Existing subregional or bioregional plans and/or systematic reviews of biodiversity and threats

Western Australia:
The CTRC report in 1974 (System 7) formed the basis of the Department's publication "Nature Conservation Reserves in the Kimberley" (Burbidge *et al.* 1991) which has itself been incorporated in a Departmental Draft Regional Management Plan (Portlock *et al.* 2001). These reports were focused on non-production lands and those areas not likely to be prospective for minerals. Action statements and strategies in the draft regional management plan do not go to the scale of subregion or even bioregion. There have been specific flora and fauna studies of the Purnululu National Park and associated Conservation Park. Previous rainforest studies are applicable (McKenzie *et al.* 1991).

There has been no systematic review of biodiversity but it is apparent that there are on-going changes to the status of fauna (particularly mammals) and plant taxa. There is reasonable evidence about continuing loss of species and changes to assemblages at the landscape level which are affecting vegetation structure (e.g. loss of shrub layer), composition (e.g. perennial vs. annual grasses), vegetation cover, leaf litter, and organics in the upper soil horizon. Flow-on effects and other factors (e.g. exotic predators) affect fauna. Work to date has been of a general nature.

Northern Territory:
Management Issues Paper Completed for NT - General description of issues, and summary of information, but not a strategy for implementation of enhanced conservation management (Kraatz 2000).

Reservation priorities identified for WA portion of bioregion (Burbidge *et al.* 1991)

Options considered for balancing increased alienation of lands for horticulture with enhanced reservation - Part of inter-governmental EIS process for Lower Ord.

Recently established Ord Bonaparte Project will consider broad-scale management and planning issues - Project only recently commenced, and ambit still somewhat unresolved.

Wetlands

Wetlands of National significance (DIWA listings

Western Australia:

Name and Code	Condition[1]	Trend[2]	Reliability[3]	Threatening Process[4]
Lake Argyle WA097	iii	vi	iii	xii (excessive siltation), iv, vi (extent of which has not been documented but including Parkinsonia)

[1]Appendix B, key d; [2]Appendix C, rank 2; [3]Appendix C, rank 3; [4]Appendix C, rank 1; [5]Appendix B, key e

Northern Territory:
No information supplied.

Wetlands of subregional significance (in addition to the DIWA listed wetlands)

Western Australia:
There have been no wetlands of subregional significance identified to date.

Northern Territory:

Name and Code	Location	Description[1]	Special Values[2]	Condition[3]	Trend[4]	Reliability[5]	Threatening Process[6]
Negri River	Not stated	B1	Not stated	iii	vi	Not stated	Not stated
Stirling Creek	Not stated	B2	Not stated	iii	vi	Not stated	Not stated
West Baines River	Not stated	B1	Not stated	iii	vi	Not stated	Not stated

[1]Appendix B, key d; [2]Appendix B, key c; [3]Appendix C, rank 2; [4]Appendix C, rank 3; [5]Appendix C, rank 1; [6]Appendix B, key e

Riparian zone vegetation

Western Australia:

Name	Condition[1]	Trend[2]	Reliability[3]	Threatening Processes[4]
Ephemeral Creek Lines	i	iii	iii	vii, iv, v (feral herbivores), x

[1]Appendix C, rank 2; [2]Appendix C, rank 3; [3]Appendix C, rank 1; [4]Appendix B, key e

Northern Territory:

Name	Condition[1]	Trend[2]	Reliability[3]	Threatening Processes[4]
Ephemeral Creek Lines	ii	iii	Not stated	vii, x (impoundments associated with the Ord Irrigation Area have drastically altered river flows, leading to major changes in riparian vegetation (Start and Handasyde 2002)), ix (likely to be increased salinity associated with expansion of Ord River scheme), vi (riparian systems have attracted many serious weed infestations, including noogoora burr, bellyache bush, castor oil plant), v (large numbers of feral animals, especially donkeys, degrading some parts of catchment), iv (A century of grazing pressure led to massive degradation (denudation of vegetation; extreme erosion) of riparian areas and alluvial basins in the Ord system. Large tracts of pastoral properties were compulsorily de-stocked; recovery has been gradual).

[1]Appendix C, rank 2; [2]Appendix C, rank 3; [3]Appendix C, rank 1; [4]Appendix B, key e

Ecosystems at risk

Threatened ecological communities (TECs)

Western Australia:
There are no Threatened Ecological Communities (TECs) in OVP1.

Northern Territory:
No information supplied.

Other ecosystems at risk

Western Australia:

Ecosystem	Status	NVIS[1]	Condition[2]	Trend[3]	Reliability[4]	Threatening Processes[5]
Assemblages of permanent/ephemeral wetlands, damplands, and riparian habitat of the Kimberley region.	V	15, 38, 42	Unknown	iii	ii	iv, vii
Widespread vegetation types and widespread threats such as changed fire regimes.	V	11	Unknown	vi	ii	Threats apply on a case by case basis
Plant assemblages of sand plain seepage areas between/near sandstone ridges.	V	38	Unknown	vi	i	iv, vii
Fire sensitive plant assemblages on vertical sandstone surfaces.	V	43	Unknown	vi	i	vii

[1]Appendix B, key f; [2]Appendix C, rank 2; [3]Appendix C, rank 3; [4]Appendix C, rank 1; [5]Appendix B, key e

Northern Territory:

Ecosystem	Status	NVIS[1]	Condition[2]	Trend[3]	Reliability[4]	Threatening Processes[5]
Monsoon rainforest patches generally	V	Not stated	Not stated	iii	Not stated	vii (degradation of rainforest patches by increased incidence and penetration of hot fires), vi (infestation of rainforest patches by a range of exotic weed species), v (pigs, cattle and buffalo)

[1]Appendix B, key f; [2]Appendix C, rank 2; [3]Appendix C, rank 3; [4]Appendix C, rank 1; [5]Appendix B, key e

Species at risk

Fauna

Western Australia:

Species	Status	Condition[1]	Trend[2]	Reliability[3]	Threatening Processes[4]
SCHEDULE 1; RARE/LIKELY TO BECOME EXTINCT, DIV 2 (BIRDS)					
Erythrura gouldiae	E	Unknown	iii	ii	vii
Malurus coronatus coronatus	V	Unknown	vi	ii	vii, iv
SCHEDULE 4; OTHER SPECIALLY PROTECTED FAUNA. DIVISION 2 (BIRDS)					
Tadorna radjah	S4 (State)	Unknown	vi	Unknown	Unknown threatening processes
SCHEDULE 4; OTHER SPECIALLY PROTECTED FAUNA. DIVISION 3 (REPTILES)					
Crocodylus johnstoni	S4 (State)	Unknown	vi	Unknown	Unknown threatening processes
Crocodylus porosus	S4 (State)	Unknown	vi	Unknown	Unknown threatening processes

Species	Status	Condition[1]	Trend[2]	Reliability[3]	Threatening Processes[4]
OTHER SPECIES AT RISK WITHIN THE SUBREGION					
Lagorchestes conspicillatus	Near threatened	Unknown	vi	Unknown	Unknown threatening processes
Macroderma gigas	Near threatened	Unknown	vi	Unknown	Unknown threatening processes
Heteromunia pectoralis	Near threatened	Unknown	vi	Unknown	Unknown threatening processes
Ardeotis australis	Near threatened	Unknown	vi	Unknown	Unknown threatening processes
Neochmia ruficauda	Near threatened	Unknown	vi	Unknown	Unknown threatening processes

[1]Appendix C, rank 2; [2]Appendix C, rank 3; [3]Appendix C, rank 1; [4]Appendix B, key e

Northern Territory:

Species	Status	Condition[1]	Trend[2]	Reliability[3]	Threatening Processes[4]
SCHEDULE 1; RARE/LIKELY TO BECOME EXTINCT, DIV 2 (BIRDS)					
Erythrura gouldiae	E	ii	iii	Not stated	vii, iv (vegetation change through extensive pastoralism)
Malurus coronatus coronatus	V	iii	iv	Not stated	x (impoundments may be improving habitat quality for this species), vi (many riparian areas in this subregion are now heavily infested with weeds. Studies currently underway to determine whether this is detrimental or beneficial for Purple-crowned Fairy-wren), iv (riparian areas are increasingly excluded from stock, providing some reverse of vegetation degradation, and improvement in habitat quality for PCFW).

[1]Appendix C, rank 2; [2]Appendix C, rank 3; [3]Appendix C, rank 1; [4]Appendix B, key e

Declared rare and priority flora

Western Australia:

Species Name	Status	Condition[1]	Trend[2]	Reliability[3]	Threatening Processes[4]
PRIORITY 1					
Nicotiana heterantha	1	Unknown	vi	Unknown	Unknown threatening processes
PRIORITY 2					
Blumea pungens	2	Unknown	vi	Unknown	Unknown threatening processes
Boronia minutipinna	2	Unknown	vi	Unknown	Unknown threatening processes
Eucalyptus ordiana	2	Unknown	vi	Unknown	Unknown threatening processes
Grevillea psilantha	2	Unknown	vi	Unknown	Unknown threatening processes
Livistona victoriae	2	Unknown	vi	Unknown	Unknown threatening processes
Triodia bunglensis	2	Unknown	vi	Unknown	Unknown threatening processes
Triumfetta aspera	2	Unknown	vi	Unknown	Unknown threatening processes
Blumea pungens	2	Unknown	vi	Unknown	Unknown threatening processes

[1]Appendix C, rank 2; [2]Appendix C, rank 3; [3]Appendix C, rank 1; [4]Appendix B, key e

Northern Territory:

Species Name	Status	Condition[1]	Trend[2]	Reliability[3]	Threatening Processes[4]
Platysace saxatilis	V	iv	vi	Not stated	No known threatening processes, though it is a cliff face species susceptible to rock falls and other stochastic events

[1]Appendix C, rank 2; [2]Appendix C, rank 3; [3]Appendix C, rank 1; [4]Appendix B, key e

Analysis of appropriate management scenarios

Reservation priorities of ecosystems

Western Australia:

The following Ord Victoria Plains bioregion vegetation associations are not reserved anywhere within the bioregion:

Beard Veg Assoc	Description	Area (Ha.)
41	Shrublands; tea tree (*Melaleuca spp.*) scrub.	1,028
61	Grasslands, tall bunch grass savannah woodland, coolibah over ribbon grass (*Chrysopogon spp.*).	1,203

65	Grasslands, tall bunch grass savannah, sparse low tree, *Terminalia* spp; Mitchell grass (*Astrebla pectinata)*.	39,750
77	Grasslands, curly spinifex (*Triodia bitextura*) and short grass low tree savannah; snappy gum (*Eucalyptus brevifolia*) over *Enneapogon spp.* and curly spinifex (*Triodia bitextura*).	7,139
78	Hummock grasslands, low tree steppe; eucalypts over soft spinifex (*Triodia pungens*).	357,813
81	Hummock grasslands, low tree steppe; snappy gum (*Eucalyptus brevifolia*) over soft spinifex (*Triodia pungens*).	86,874
101	Hummock grasslands, shrub steppe; *Acacia spp.*. over soft spinifex (*Triodia pungens*).	362,198
116	Hummock grasslands, sparse low tree steppe; mixed low trees over *Triodia wiseana*.	21,101
117	Hummock grasslands, grass steppe; soft spinifex (*Triodia pungens*).	4,924
126	Bare areas; freshwater lakes.	105,231
157	Hummock grasslands, grass steppe; *Triodia wiseana*.	4,123
565	Hummock grasslands, low tree steppe; bloodwood over soft spinifex (*Triodia pungens*).	36,631
699	Shrublands, pindan; *Acacia eriopoda* shrubland with scattered low bloodwood (*Eucalyptus spp*.) and roughleaf bloodwood (*Eucalyptus setosa*) over soft (*Triodia pungens*) and curly (*Triodia bitextura*) spinifex on sandplain.	2,853
700	Shrublands, pindan; *Acacia eriopoda* shrubland with scattered low bloodwood (*Eucalyptus spp*.) and roughleaf bloodwood (*Eucalyptus setosa*) over soft (*Triodia pungens*) and curly (*Triodia bitextura*) spinifex between dunes.	30,921
703	Hummock grasslands, low tree steppe; snappy gum (*Eucalyptus brevifolia*) over winged spinifex (*Triodia intermedia*).	26,604
705	Hummock grasslands, sparse tree steppe; snappy gum (*Eucalyptus brevifolia*) and bloodwood (*Eucalyptus spp*.) and roughleaf bloodwood (*Eucalyptus setosa*) over spinifex and winged spinifex (*Triodia intermedia*).	86,201
706	Grasslands, tall bunch grass savannah, Mitchell and ribbon/blue grass (*Astrebla spp./Chrysopogon spp./Bothriochloa spp.*).	19,421
707	Grasslands, tall bunch grass savannah sparse low tree; bauhinia (*Bauhinia cunninghamii*) and coolibah (*Eucalyptus spp*.) over ribbon/blue grass (*Chrysopogon spp./Bothriochloa spp*.) on black soil.	75,759
709	Hummock grasslands, shrub steppe; *Acacia spp.* over winged spinifex (*Triodia intermedia*) on stony laterite.	13,837
722	Shrublands, pindan; *Acacia spp*. and *Acacia eriopoda* shrubland with sparse low bauhinia (*Bauhinia cunninghamii*) and bloodwood (*Eucalyptus spp*.) over ribbon grass (*Chrysopogon spp*.) and curly spinifex (*Triodia bitextura*).	7,963
724	Hummock grasslands, shrub steppe; *Acacia spp*. over winged spinifex (*Triodia intermedia*).	12,946
725	Hummock grasslands, shrub steppe; *Acacia spp*. and pindan wattle (*Acacia tumida*) over soft spinifex (*Triodia pungens*).	129,346
726	Grasslands, tall bunch grass savannah low tree; boab (*Adansonia gregorii*), bauhinia (*Bauhinia cunninghamii*) and beefwood (*Grevillea striata*) over Mitchell and ribbon/blue grass (*Astrebla spp./Chrysopogon spp./Bothriochloa spp*.) on black soil.	23,356
727	Hummock grasslands, low open tree and shrub steppe; bloodwood (*Eucalyptus spp*.), Ranji bush (*Acacia pyrifolia*) over soft spinifex (*Triodia pungens*).	122,210
728	Grasslands, short bunch grass savannah low tree and acacia thicket; bauhinia (*Bauhinia cunninghamii*) and *Acacia spp*. over *Aristida spp*. short grasses on river flats.	9,287
729	Hummock grasslands, low tree steppe; bauhinia? (*Bauhinia cunninghamii*) and beefwood? (*Grevillea striata*) over soft spinifex (*Triodia pungens*).	16,344
730	Shrublands, pindan; *Acacia spp*. and *Acacia eriopoda* shrubland with sparse low bauhinia (*Bauhinia cunninghamii*) and *Grevillea spp*. over soft spinifex (*Triodia pungens*) and winged spinifex (*Triodia intermedia*).	16,840
731	Hummock grasslands, low tree steppe; snappy gum (*Eucalyptus brevifolia*) over soft spinifex (*Triodia pungens*) and winged spinifex (*Triodia intermedia*).	183,487
733	Hummock grasslands, shrub steppe; silverleaf box (*Eucalyptus pruinosa*) over soft spinifex (*Triodia pungens*).	8,640
746	Hummock grasslands, low tree steppe; bloodwood (*Eucalyptus spp*.) over *Triodia wiseana*.	47,806
802	Grasslands, high grass savannah woodland; Darwin box (*Eucalyptus tectifica*) and cabbage gum (*Eucalyptus grandifolia*) over mixed/white grass (*Sehima nervosum*) on basalt and dolerite.	76
Beard Veg Assoc	Description	Area (Ha.)
808	Grasslands, curly spinifex (*Triodia bitextura*), low tree savannah; snappy gum (*Eucalyptus brevifolia*) over curly spinifex (*Triodia bitextura*).	340
811	Grasslands, high grass savannah low tree; Mt House box (*Eucalyptus argillacea*) and bloodwood (*Eucalyptus spp.*) over white grass (*Sehima nervosum*) on rolling basalt country.	38,982
815	Grasslands, tall bunch grass savannah, sparse low tree, *Terminalia spp*.; Mitchell (*Astrebla spp*.) and blue grass (*Bothriochloa spp*.) on basalt.	50,507
816	Grasslands, short bunch grass savannah, low tree, Mt House box (*Eucalyptus argillacea*) and bloodwood (*Eucalyptus spp*.) over arid short grass (*Enneapogon spp*).	95,137
818	Hummock grasslands, low tree steppe; snappy gum (*Eucalyptus brevifolia*) over *Triodia inutilis*.	34,880
819	Grasslands, tall bunch grass savannah low tree; cabbage gum (*Eucalyptus grandifolia*) and silverleaf box (*Eucalyptus pruinosa*)over *Aristida spp*. and ribbon grass (Chrysopogon spp.) on sandy plains.	51,807
820	Grasslands, high grass savannah sparse low tree; snappy gum (*Eucalyptus brevifolia*) over upland tall grass and curly spinifex (*Triodia bitextura*) on granite.	5,489
825	Grasslands, high grass savannah woodland; cabbage gum (*Eucalyptus grandifolia*) and *Eucalyptus greeniana* over upland tall grass and curly spinifex (*Triodia bitextura*) on basalt.	24,010
827	Hummock grasslands, low tree steppe; *Terminalia spp.* over *Triodia wiseana* on limestone.	91,291
830	Mosaic: Grasslands, short bunch grass savannah, low tree, Mt House box (*Eucalyptus argillacea*) and bloodwood (*Eucalyptus spp*.) over *Enneapogon spp.* short grass / Hummock grasslands, open low tree-steppe; snappy gum (*Eucalyptus brevifolia*) over *Triodia wiseana* / Grasslands; high grass savannah, white grass (*Sehima nervosum*).	175,560
831	Hummock grasslands, sparse tree steppe; snappy gum (*Eucalyptus brevifolia*) over winged spinifex (*Triodia intermedia*) and *Triodia inutilis*.	404,315
833	Grasslands, short bunch grass savannah sparse low tree; scattered snappy gum (*Eucalyptus brevifolia*) over arid short grass on plains.	40,471
834	Grasslands, tall bunch grass savannah, Mitchell (*Astrebla spp*. and blue grass (*Bothriochloa spp*.).	8,620
842	Mosaic: Grasslands, short bunch grass savannah, low tree, Mt House box (*Eucalyptus argillacea*) and bloodwood (*Eucalyptus spp*.) over *Enneapogon spp.* short grass/Hummock grasslands, open low tree-steppe; snappy gum (*Eucalyptus brevifolia*) over *Triodia wiseana* and winged spinifex (*Triodia intermedia*).	264,058
843	Hummock grasslands, grass steppe; curly spinifex (*Triodia bitextura*) on shale.	22,413
844	Grasslands, high grass savannah low tree; *Melaleuca spp.* over upland tall grass.	2,733

846	Grasslands.	95,905
847	Hummock grasslands, sparse tree steppe; snappy gum (*Eucalyptus brevifolia*) and bloodwood (*Eucalyptus spp.*) over soft spinifex (*Triodia pungens*).	74,988
848	Hummock grasslands, low tree steppe; Eucalypts over curly spinifex (*Triodia bitextura*) on laterite sand plains.	237,462
850	Grasslands, tall bunch grass savannah, Mitchell (*Astrebla spp.*) and blue grass (*Bothriochloa spp.*).	331,815
851	Hummock grasslands, sparse tree steppe; snappy gum (*Eucalyptus brevifolia*) and bloodwood (*Eucalyptus spp.*) over *Triodia wiseana* and winged spinifex (*Triodia intermedia*) on basalt and dolerite.	116,346
861	Grasslands, tall bunch grass savannah low tree; Darwin box (*Eucalyptus tectifica*) and bloodwood (*Eucalyptus spp.*) over *Aristida spp.* and ribbon grass (*Chrysopogon spp.*) on sandy plain	118,346
868	Grasslands, curly spinifex (*Triodia bitextura*) and short grass low tree savannah; snappy gum (*Eucalyptus brevifolia*) and bloodwood (*Eucalyptus spp.*) over *Enneapogon spp.* and curly spinifex (*Triodia bitextura*) on granite	12,901
872	Hummock grasslands, sparse tree steppe; snappy gum (*Eucalyptus brevifolia*) over *Triodia wiseana* and winged spinifex (*Triodia intermedia*) on basalt and dolerite.	3,574
873	Mosaic: Grasslands, short bunch grass savannah low tree; snappy gum (*Eucalyptus brevifolia*) over *Enneapogon spp.* short grass on plains / Hummock grasslands, grass steppe; soft spinifex (*Triodia pungens*) and *Triodia wiseana*; soft spinifex (*Triodia pungens*) and winged spinifex (*Triodia intermedia*).	80,306
875	Mosaic: Hummock grasslands, open low tree steppe; snappy gum (*Eucalyptus brevifolia*) over soft spinifex (*Triodia pungens*); soft spinifex (*Triodia pungens*)/ Hummock grasslands, grass steppe; *Triodia wiseana*, winged spinifex (*Triodia intermedia*) on laterite.	251,753
876	Hummock grasslands, shrub steppe; *Acacia spp.* and pindan wattle (*Acacia tumida*) over *Triodia spp.* and winged spinifex (*Triodia intermedia*) on sandplain.	54,369
878	Hummock grasslands, sparse tree steppe; snappy gum (*Eucalyptus brevifolia*) and bloodwood (*Eucalyptus spp.*) over soft spinifex (*Triodia pungens*) and winged spinifex (*Triodia intermedia*).	68,717
879	Grasslands, short bunch grass savannah low tree; bauhinia (*Bauhinia cunninghamii*) over gulf feathertop wiregrass (*Aristida pruinosa*) short grasses on plains	69,299
881	Grasslands, curly spinifex (*Triodia bitextura*), low tree savannah; bauhinia (*Bauhinia cunninghamii*) over *Plectrachne spp.*	25,729
882	Hummock grasslands, sparse tree steppe; snappy gum (*Eucalyptus brevifolia*) over winged spinifex (*Triodia intermedia*).	37,799
883	Grasslands, curly spinifex (*Triodia bitextura*), low tree savannah; bloodwood (*Eucalyptus spp.*) over curly spinifex (*Triodia bitextura*).	1,015
Beard Veg Assoc	Description	Area (Ha.)
894	Sedgeland; sedges with low tree savannah woodland; coolibah and Darwin box (*Eucalyptus tectifica*) over spinifex.	44,700
899	Mosaic: Grasslands, short bunch grass savannah low tree; snappy gum (*Eucalyptus brevifolia*) over Enneapogon spp. short grass on plains/Hummock grasslands, grass steppe; winged spinifex (*Triodia intermedia*).	51,028

The only ecosystem that is subject to some level of threat and is not reserved or is poorly represented is:

Assemblages of permanent/ephemeral wetlands, damplands, and riparian habitat of the Kimberley region.

More work is required on the identification of threatened ecosystems within this subregion.

Northern Territory:

Veg Number	Description	Area (Ha.)
15	*E. tectifica* (Northern Box), *E. latifolia* (Round-leaved Bloodwood) woodland with Sorghum grassland understorey.	0
22	*E. terminalis* (Bloodwood), *E. chlorophylla* (Box) low woodland with *Sehima nervosum* (White Grass), *Chrysopogon fallax* (Golden Beard Grass) grassland understorey.	0
23	*E. pruinosa* (Silver Box) low woodland with *Eulalia aurea* (Silky Browntop), *Sehima nervosum* (White Grass) grassland understorey.	0
33	*E. dichromophloia* (Variable-barked Bloodwood) low open-woodland with *Plectrachne pungens* (Curly Spinifex) open-hummock grassland understorey.	0
37	*E. brevifolia* (Snappy Gum) low open-woodland with *Plectrachne pungens* (Curly Spinifex) hummock grassland understorey.	0
38	*E. brevifolia* (Snappy Gum) low open-woodland with *Triodia pungens* (Soft Spinifex) hummock grassland understorey.	0
88	Triodia (Spinifex) hummock grassland.	0
91	*Triodia wiseana* (Limestone Spinifex) hummock grassland with *Terminalia arostrata* (Nutwood) low open-woodland overstorey.	0
97	Astrebla (Mitchell Grass), mixed species grassland with scattered trees and shrubs.	0
98	*Chrysopogon fallax* (Golden Beard Grass), *Dichanthium fecundum* (Bluegrass) grassland.	0
99	*Enneapogon purpurascens* (Nine Awn Grass) grassland.	0

Subregional constraints in order of priority

(see Appendix B, key g)

Western Australia:

Economic Constraints: Land prices for pastoral leases.

Competing Land Uses: Particularly for pastoral production.

Other: Our knowledge of biodiversity patterns across the subregion's landscape does not have enough resolution to accurately define all acquisition priorities on the ground.

Northern Territory:

No information supplied.

Bioregional and subregional priority for reserve consolidation

Western Australia:
The Ord Victoria Plains bioregion has a ranking priority under the preliminary bioregional NRS priorities of 3 (see Appendix D, and Appendix C, rank 4). It can also be argued that there is a bias in the reserve system because some ecosystems not reserved are those that are being grazed and have been grazed the longest and are often burnt the most often. The reserve selection process has also been biased in the past. For example the original interest in the Purnululu area was as a result of tourism interest in the Bungle Bungle Range. Biological assessment of the area occurred later.

Northern Territory:
No information supplied.

Reserve management standard

Western Australia:
The overall reserve management standard is fair (ii).

Estate	Rank[1]	Issues
NATIONAL PARKS		
Purnululu	ii	Regular cattle and donkey controls are implemented. Permanent ranger presence. Prescribed burning both aerial and hand undertaken.
CONSERVATION PARKS		
Purnululu	ii	Regular cattle and donkey controls are implemented. Permanent ranger presence. Prescribed burning both aerial and hand undertaken.
OTHER RESERVES		
Wolfe Creek Meteorite Crater	iii	No major environmental issues identified. Formalised campground. Ranger and volunteer campground host presence during the tourist season.

[1]Appendix C, rank 5

Northern Territory:
No information supplied.

Off reserve conservation

Priority species or groups

Western Australia:
- Threatening processes operate from the species to landscape level.
- Extinctions have occurred within the critical weight range mammals in this subregion.
- Action is required to identify appropriate fire regimes.
- The effect of fire and cattle on granivorous birds and savannah composition and structure is of concern.
- Changed grassland structures are of concern.
- There is evidence that changes have, and continue, to occur for the balance between annual and perennial grasses.
- Landscape level threatening processes also bring about changes to the organic profile layer in soils, water infiltration rates and surface flow velocity after rain.
- Impacts on rainforest patches of inappropriate fire regimes and specifically rainforest fire / cattle interaction is of concern.
- There have been changes to riparian zones due to the impact of changed fire regimes, grazing and the indirect effects from changed hydrology.
- Action is required to identify what is at risk and components of the biota at most risk then recommend and research appropriate management.
- Little is known of the distribution, status and impact of weed species.

Northern Territory:
No information supplied.

Existing species recovery plans

Western Australia:
The Action Plan for Australian Bats
The Action Plan for Australian Birds 2000
Action Plan for Australian Marsupials and Monotremes
Gouldian Finch Recovery Plan.
Draft Kimberley Region Management Plan (various strategies).
Purnululu National Park Management Plan

Northern Territory:
No information supplied.

Appropriate species recovery actions

Western Australia:
Habitat Retention Through Reserves: The continued implementation of reservation proposals is important.

Weed Control: Need to define weeds priorities both in an agricultural resource sense and an environmental sense. Resources required for already identified State and regional weed strategies.

Feral Animal Control: Removal of feral stock from conservation estate and management of stock on other lands. E.g. close order husbandry of cattle herds to prevent overgrazing. Eradication of feral animals especially cattle, donkeys and pigs.

Fire Management: Move to biodiversity driven approaches to fire management strategies. Avoid frequent, broad scale, hot, late dry-season burning in savannah.

Capacity Building Required: Need organisational responsibility for coordinating management efforts across tenure and management responsibilities. Local adoption of strategies. Capacity building in pastoral industry and

Aboriginal groups to optimise biodiversity and savannah productivity.

Northern Territory:

Species	Recovery Actions[1]	Recovery Description
Erythrura gouldiae	xii, ix, i	Capacity building with stakeholders - most Gouldian Finch occurrence is likely to be off-reserves; maintenance of these populations will require some input from landholders, in the form of improved pastoral and fire management. Fire management re-institution of fine-scale patchy early dry season burning reduction in extensive hot late dry season burns. Habitat retention through reserves - reservation of important sites may reverse vegetation change through grazing pressure.

Species	Recovery Actions[1]	Recovery Description
Malurus coronatus coronatus	xiii, v, i, vi, xiv	Capacity building with stakeholders - as above. Fencing – exclosure fencing of riparian strips. Habitat protection on private lands. Weed control impact of (major infestations of) weeds currently is unclear. Research underway. If detrimental, then major weed reduction may be required.
Platysace saxatilis	xiv, x	Research - into the status of the population and further survey required. Translocation - collection of propagation material and translocation to a Botanic Gardens would assist in protecting this species.

[1]Appendix B, key h.

Ecosystems and appropriate recovery actions

Western Australia:
This is a general savannah issue and fire is the main driver in addressing this. The next most important, and linked, issue is grazing. Actions that are required are linked to management research and better coordinated efforts between Government agencies, the pastoral grazing industry, Traditional owners and the broader community.

Northern Territory:
No information supplied.

Subregion priority for off reserve conservation

Western Australia:
The subregional priority for off park conservation is (ii) (see Appendix C, rank 6), indicating that a large off park effort is needed, resource constraints and limited community capacity.

Northern Territory:
Major off-park issues relate to management of fire, ferals and weeds. Some integrative capacity exists among landholders (in the NT sector) through the Victoria River District Conservation Association (collection of landholders), and through coordinated feral control measures. The recently established Ord-Bonaparte Project may deliver further integrated management.

Conservation actions as an integral part of NRM

Existing NRM actions

Western Australia:
Legislation: Pastoral lease inspections are undertaken by the Department of Agriculture and leaseholders notified of any problems via the Pastoral Lands Board. Final scenario is that the Commissioner for Soil Conservation can institute formal proceedings if issues are not being addressed. The last is rarely undertaken.

Threat Abatement Planning as Part of NRM: Concerted and coordinated effort by the Department of Agriculture in the control of donkeys.

Capacity Building: Land Conservation District Committees established and provide a venue for discussion on conservation matters.

Integration With Property Management Planning, Catchment planning and Landcare: Land Conservation District Committees provide an opportunity for integration of land management activities.

Northern Territory:
Other: Monitoring programs established on all pastoral leaseholds.

Threat Abatement Planning: Some regional fire management, monitoring and control through regional offices of Bushfires Council; Some catchment-wide weed management programs underway, but to be effective, this will need more resources and integration.

Integration with Landcare, Catchment & Property Planning: VRD Conservation Association (Landcare group) established and actively involved in some NRM issues. Some riparian exclosure fencing undertaken.

Capacity Building with Stakeholders: Project underway to educate landholders about PCFW and desirability of maintaining good quality riparian habitat.

Feasible opportunities for NRM

Western Australia:
Threat Abatement Planning as Part of NRM: Research is needed on the mechanism and impacts of threatening processes. Outputs of this should assess potential cost / effective solutions. There has been some development in the co-ordination of multiple research initiatives and communication of this.

Legislation: Improved implementation of existing legislation.

Environmental Management Systems and Ecologically Sustainable Product Marketing: Environmental planning across tenure (weeds, fire and feral animals).

Capacity Building: Improved communication required between all stakeholders and an acknowledgement of differing land management objectives.

Other Planning Opportunities: Shire plan incorporating biodiversity objectives incorporating an acknowledgement of the worth of the natural environment e.g. tourism including the cost of management (e.g. making national parks accessible).

Integration With Property Management Planning, Catchment Planning and Landcare: Development of catchment and regional plans involving all stakeholders.

Northern Territory:

Threat Abatement Planning: Scope for greater capacity for broad-scale management of fire, ferals and weeds.

Incentives: Possibility for conservation agreements on pastoral lands, including incentives to maintain lightly-grazed (water-remote) areas.

Other Planning Opportunities: Conservation planning for the Ord & Victoria bioregions proposed.

Integration with Landcare, Catchment & Property Planning: Some major pastoral landholders are proposing to work with conservation agencies to develop NRM planning on properties.

Industry Codes of Practice: Conservation plan for pastoral industry being formulated (NT sector).

Impediments or constraints to opportunities

Western Australia:
A limited financial resource is a major constraint. The number of people available to implement strategies is a constraint. There is a need to increase awareness of conservation values throughout the community.

Northern Territory:
No information supplied.

Subregions where specific NRM actions are a priority to pursue

Western Australia:
Continued efforts are important amongst land managers for a more coordinated approach to land management would be for the priority. This is due to differing and potentially competing land uses, the increase in multiple land uses and landscape threats. The NRM rank for the bioregion is (ii) (see Appendix C, rank 7), which indicates significant constraints to integrate conservation as part of production or development system. Whilst data is limited it appears that the Ord subregion is a higher priority for action due to past deterioration than the South Kimberley Interzone subregion.

Northern Territory:
Major NRM issues relate to management of fire, ferals and weeds. Some integrative capacity exists among landholders (in the NT sector) through the VRD Conservation Association (collection of landholders), and through coordinated feral control measures. The recently established Ord-Bonaparte Project may deliver further integrated management.

Data gaps

Gaps in data needed for the identification of biodiversity values and management responses

Western Australia:
Vegetation and Regional Ecosystem Mapping: Much finer scale (at 100,000:1 or better) vegetation and regional ecosystem mapping required for most of the widespread surfaces. This needs to align with soil maps and environmental geology maps and these do not yet exist at better than 1:250 000 scale.

Systematic Fauna Survey: No systematic quadrat based fauna and/or flora sampling program across the subregion to provide a basis for modeling species distribution or status.

Floristic Data: Data is sparse. Some potential for adapting WARMS monitoring methodology.

Ecological and Life History Data: Data is lacking on the habitat requirements of fauna species.

Other Priority Gaps:
- Further research is required on the conservation status of many fauna and flora taxa as well as the effects of threatening processes such exotic predators (cats), stock (cattle, donkeys and pigs), fire and weeds.

Northern Territory:
Other Priority Data Gaps:
- Monitoring to assess trends and responses to landscape-wide disturbance.
- Lack of detailed data on impacts of threats upon biodiversity; but some intensive studies on responses to grazing and to fire.

Floristic Data: No comprehensive systematic flora survey, but reasonable levels of more ad-hoc survey effort, especially on NT side of border.

Systematic Fauna Survey: No comprehensive systematic fauna survey, but reasonable levels of more ad-hoc survey effort, especially on NT side of border.

Vegetation and Regional Ecosystem Mapping: No vegetation mapping at scale better than 1: 1 million. Recent cross-border vegetation map integration (but at 1: 2 million scale). Land unit mapping at 1:100,000 scales for many NT properties.

Sources

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R = Report; J = Journal article; O = Other.

Other relevant publications

See reference numbers 018, 094, 100, 118, 173, 268, 551, 626, 634, 635, 636, 637, 648, 674, 692 and 693 in Appendix A.