Ord Victoria Plains 2 *(OVP2 – South Kimberley Interzone subregion)*

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Subregional description and biodiversity values

Description and area

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 3, 540, 414ha.

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 eastern OVP2 subregion comprises a gently undulating, elevated erosional plain, drained southward into the desert by Sturt and Wolfe Creeks, and separated from the dissected valley of the Ord River by steep breakaways. Much of the plateau is covered by cracking clay plains developed over Antrim Plateau volcanics, although large areas a covered by thick laterite that has been partly dissected to form mesas, and is mainly covered by extensive desert sand plains. The subregion is more dissected at the western end, which is drained westwards by the headwaters of Christmas Creek, a tributary of the Fitzroy River. The South Kimberley Interzone subregion experiences a lower rainfall than the Ord subregion.

Broad scale vegetation mapping of the area describes the following components:

- *Astrebla pectinata* (barley Mitchell grass) closed-tussock grassland +/- low trees.
- *Eucalyptus microtheca* (coolibah) and/or *Eucalyptus spp.* +/- *Excoecaria parvifolia* (gutta percha) grassy low woodland.
- *Eucalyptus dampieri* (pindan bloodwood) low open-woodland with *Acacia spp.* Shrubs and *Triodia pungens* (soft spinifex) and *Triodia bitextura* (curly spinifex) hummock grasses.
- *Eucalyptus brevifolia* (snappy gum) low open-woodland with *Triodia spp.* (spinifex) hummock grasses or sometimes a hummock grassland without trees.
- *Eucalyptus pruinosa* (silver box) +/- *Bauhinia cunninghamii* (bauhinia) low open-woodland +/- a shrub layer and tussock grasses or *Triodia spp.* (spinifex)
- *Acacia ancistrocarpa* (Fitzroy wattle) and/or *Acacia eriopoda* (pindan wattle) and/or *Acacia monticola* (red wattle) tall shrubland with *Triodia intermedia* (winged spinifex) and *Triodia pungens* (soft spinifex) hummock grasses.
- *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.
- *Triodia pungens* (soft spinifex) and/or *Triodia schinzii* (feathertop spinifex) hummock grassland wooded with low trees and *Acacia spp.* Shrubs.
- *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).
- *Eucalyptus dampieri* (pindan bloodwood) low open-woodland with *Triodia pungens* (soft spinifex) and/or *Triodia intermedia* (winged spinifex) hummock grasses.
- *Eucalyptus brevifolia* (snappy gum) low open-woodland with *Triodia pungens* (soft spinifex) and/or *Triodia bitextura* (curly spinifex) hummock grasses and/or tussock grasses.
- *Acacia ancistrocarpa* (Fitzroy Wattle) and/or *Acacia eriopoda* (pindan wattle) open-shrubland 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.

Dominant land use

The dominant land uses in OVP2 are (ix) Grazing – Native pastures (see Appendix B, key b), (x) Aboriginal reserves, (xi) UCL and Crown reserves.

Continental Stress Class

The Continental Stress Class for OVP2 is 4

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

Paruku Wetland Complex:
Lake Gregory (which qualifies to be placed on the register as a wetland of international importance) is part of that complex. This lake is significant for a range of criteria under the Ramsar convention. This large inland lake is fed by the ephemeral Sturt Creek.

Lake Willson:
This is an important drought refuge towards the west of the subregion fed by creeks starting in the Gardiner Range.

Gardiner Range:
The Gardiner Range is a little studied area that has permanent springs within it.

Grasslands:
In the east of the subregion there are vast tracts grassland on cracking soil plains.

Centres of Endemism:
There are no endemic aspects yet identified (though there may be endemic *Triodia* sp.)

Refugia:
The Paruku wetlands, Lake Willson and various soaks provide important refuges in this arid area.

High Species and Ecosystem Diversity:
The Paruku wetlands are an area of high diversity for waterfowl.

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

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. Some limited documentation of Lake Gregory and its surrounds has occurred.

There has been no systematic review of biodiversity but it is apparent that there are on-going changes to the status of fauna 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.

Wetlands

Wetlands of National significance (DIWA listings

Name and Code	Condition[1]	Trend[2]	Reliability[3]	Threatening Process[4]
Lake Gregory System WA096	iii	vi	ii	iv

[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

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

Name	Location	Description[1]	Special Values[2]	Condition[3]	Trend[4]	Reliability[5]	Threatening Process[6]
Lake Wilson		B6	ii, iii, iv	iii	vi	ii	iv
Various soaks in the Gardiner Range		B17	ii	iii	vi	i, ii	vii, iv
Sturt Creek	Running from the Northern Territory Border to Lake Gregory	B2	ii	ii	iii	ii	iv, x

[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

Name	Condition[1]	Trend[2]	Reliability[3]	Threatening Processes[4]
All fringing vegetation of riparian zones	iii	iii	ii	vii, iv, v (introduced herbivores), x

[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)

There are no Threatened Ecological Communities (TECs) in OVP2.

Other ecosystems at risk

Ecosystem	Status	NVIS[1]	Condition[2]	Trend[3]	Reliability[4]	Threatening Process[5]
Lake Wilson wetland community on edge of the Tanami Desert	V	42	Unknown	vi	i, ii	iv
Assemblages of the Lake Gregory Wetland System (Paruku Wetlands).	V	42	Unknown	iii	iii	iv
Assemblages of permanent/ephemeral wetlands, damplands, and riparian habitat of the southern 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

[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

Species	Status	Condition[1]	Trend[2]	Reliability[3]	Threatening Processes[4]
SCHEDULE 1; RARE/LIKELY TO BECOME EXTINCT, DIV 1 (MAMMALS)					
Macrotis lagotis	V	Unknown	vi	ii	vii, xii (possibly predation)
Schedule 1; Rare/likely to become extinct, Div 2 (Birds)					
Erythrura gouldiae	E	Unknown	iii.	ii	vii
SCHEDULE 4; OTHER SPECIALLY PROTECTED FAUNA. DIVISION 2 (BIRDS)					
Crocodylus johnstoni	S4	Unknown	iv	iii	Unknown threatening processes
OTHER SPECIES AT RISK WITHIN THE SUBREGION					
Lagorchestes conspicillatus	Near threatened	Unknown	vi	Unknown	Unknown threatening processes
Falco hypoleucos	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
Phaps histrionica	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

Declared rare and priority flora

Species Name	Status	Condition[1]	Trend[2]	Reliability[3]	Threatening Processes[4]
PRIORITY 1					
Trianthema kimberleyi	1	Unknown	vi	Unknown	Unknown threatening processes
PRIORITY 2					
Kohautia australiensis	2	Unknown	vi	Unknown	No known threatening processes, plant is parasitic and can be hard to find

[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

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

Beard Veg Assoc	Description	Area (Ha.)
41	Shrublands; teatree (*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

Beard Veg Assoc	Description	Area (Ha.)
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
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

Beard Veg Assoc	Description	Area (Ha.)
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
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 following ecosystems subject to some level of threat are either not reserved within the South Kimberley Interzone subregion or are poorly represented. Equally the lack of study in some areas precludes statements about the level of reservation:

Assemblages of permanent/ephemeral wetlands, damplands, and riparian habitat of the Kimberley region.
Lake Wilson wetland community on edge of the Tanami Desert
Assemblages of the Lake Gregory Wetland System.

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

Subregional constraints in order of priority

(see Appendix B, key g)

Competing Land Uses: Particularly 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.

Bioregional and subregional priority for reserve consolidation

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.

Reserve management standard

The overall reserve management standard for OVP2 is ranked at 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.

Estate	Rank[1]	Issues
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	ii	No major environmental issues identified. Formalised campground. Ranger and volunteer campground host presence during the tourist season.

[1]Appendix C, rank 5

Off reserve conservation

Priority species or groups

- 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.
- 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.

Existing species recovery plans

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).
Paruku Wetlands Management Plan

Appropriate species recovery actions

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

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

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.

Capacity Building: 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. Minimise loss of the mineral A horizon and protection of organic layers.

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.

Ecosystems and appropriate recovery actions

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.

Subregion priority for off reserve conservation

The subregional priority for off park conservation for much of the subregion (ii) (see Appendix C, rank 6), indicating that a large off park effort needed, resource constraints and limited community capacity exists.

Conservation actions as an integral part of NRM

Existing NRM actions

Legislation: Pastoral lease inspections are undertaken by the Department of Agriculture and lease holders 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. Participation of all levels of government with Traditional owners in the management of Paruku wetlands.

Integration with Property Management Planning, Catchment Planning and Landcare: Land Conservation

District Committees provide an opportunity for integration of land management activities.

Feasible opportunities for NRM

Environmental Management Systems and Ecologically Sustainable Product Marketing: 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.

Threat Abatement Planning as Part of NRM: Environmental planning across tenure (weeds, fire and feral animals) involving Traditional owners.

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.

Impediments or constraints to opportunities

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.

Subregions Where Specific NRM Actions are a Priority to Pursue

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.

Data gaps

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

Vegetation and Regional Ecosystem Mapping: Much finer scale (at 100,000:1 or better) vegetation and regional ecosystem mapping are 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 Data 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.

Sources

References cited

No.	Author	Date	Title	Publication Details	Pub. Type
132	Burbidge, A.A., McKenzie, N.L. and Kenneally, K.F.	(1991).	Nature Conservation Reserves in the Kimberley Western Australia.	Department of Conservation and Land Management.	R
714	Dostine, Peter	(1998).	Gouldian finch recovery plan, Erythrura gouldiae	Parks & Wildlife Commission of the Northern Territory, Darwin	R
258	Duncan, A., Barry Baker, G. and Montgomery, N.	(1999).	The Action Plan for Australian Bats.	Environment Australia.	R
298	Garnett, S.T. and Crowley, G.M.	(2000).	The Action Plan for Australian Birds.	Environment Australia, Canberra.	R

No.	Author	Date	Title	Publication Details	Pub. Type
483	Maxwell, S., Burbidge, A.A. and Morris, K. (eds).	(1996).	The 1996 Action Plan for Australian Marsupials and Monotremes. Wildlife Australia Endangered Species Program Project Number 50.	Environment Australia, Canberra.	R
556	Portlock, C., Graham, G., Done, C., Gilmour, J. and Williamson, J.	(2001).	Kimberley Region Draft Regional Management Plan. (Unpubl)	Department of Conservation and Land Management.	R

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

Other relevant publications

See reference numbers 094, 100, 118, 173, 268, 333, 551, 626, 634, 635, 636, 637, 648, 674, 692 and 693 in Appendix A.