

Great Victoria Desert 2 (*GVD2 – Great Victoria Desert Central subregion*)

BRAD BARTON AND MARK COWAN
SEPTEMBER 2001

Subregional description and biodiversity values

Description and area

Arid active sand-ridge desert with extensive dune fields of deep Quaternary aeolian sands overlying Permian strata of the Gunbarrel Basin. Landforms consist of salt lakes and major valley floors with lake derived dunes. Sand plains with extensive seif dunes running east west, occasional outcropping (breakaways) and quartzite hills provide minor relief.

Vegetation is primarily a Tree steppe of *Eucalyptus gongylocarpa*, Mulga and *E. youngiana* over hummock grassland dominated by *Triodia basedowii* on the aeolian sands. The *Acacia* dominates colluvial soils with *Eremophila* and *Santalum* spp., halophytes are confined to edges of salt lakes and saline drainage systems. The climate is arid, with summer and winter rain averaging 150 –180mm. Subregional areas is 14, 286, 995ha.

Dominant land use
(see Appendix B, key b)

Category	Description	Percentage of Subregion
x	Aboriginal Reserve	7.36
xiii	Conservation Reserves	9.11
ix	Grazing - Freehold	1.02
ix	Grazing - Leasehold	3.39
xv	Lakes and Major Watercourses	0.19
xi	Unallocated Crown Land and Crown Reserves	78.92

Continental Stress Class

The Continental Stress Class for GVD2 is 5.

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

Ecosystem at Risk in GVD2:

Yellow sandplain communities of the Great Victoria Desert Very - diverse mammalian and reptile fauna, distinctive plant communities (D. Pearson pers. comm.) Threats are from mining, extensive summer wildfires, feral predators and rabbits.

Vertebrates at Risk:

Princess Parrot (*Polytelis alexandrae*), Slender-billed Thornbills (*Acanthiza iredalei iredalei*), Mulgara (*Dasyercus cristicauda*) and Great Desert Skink (*Egernia kintorei*).

Flora at Risk:

Flora at risk includes: *Conospermum toddii*, *Calytrix warburtonensis*, *Dampiera ramosa*, *Dicrasyllis nicholasii*, *Eremophila aureivisca* ms, *Eremophila undulata*, *Labichea deserticola*, *Micromyrtus helmsii*, *Olearia arida*, and *Ptilotus stipitatus*.

Ecosystems Have Greater Than 85% of Their Area Confined to the Great Victoria Desert 2 Subregion:

Beard Veg Assoc	Description
2245	Shrublands; mallee scrub (Nullarbor) <i>Eucalyptus socialis</i> , <i>E. cooperana</i> & <i>E. gracilis</i>
4621	Shrublands; mallee scrub, <i>Eucalyptus eudesmiooides</i>

Centres of Endemism:

Ramphotyphlops margaretae only current record is from Great Victoria Desert 2 subregion.

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

In 1974 the Conservation Through Reserves Committee (CTRC) made recommendations for reserves within the Deserts and Nullarbor Plain (System 12) in the CTRC Green Book (Environmental Protection Authority 1974).

Recommendations for reservation by the CTRC in GVD2 (Nature Reserve, Plumridge Lakes Nature Reserve, Neale Junction Nature Reserve, Yeo Lake Nature Reserve, Great Victoria Desert Nature Reserve) were implemented, and proposed Lake Throssell Nature reserve is still pending. The subregion is covered by a CALM Regional Management Plan, published in 1994, that provides an overview of the regions biota, addresses land and conservation issues, but was written to cover a third of WA and therefore was generalised in its attention to detail (Department of Conservation and Land Management 1994b). The reviews and strategies therein

(for reserve development or management of weeds, feral animals, fire, mining, ecosystem rehabilitation & disease quarantine) do not address the specific needs of the subregions, or even bioregions, individually.

The Spinifex Agreement – signed between the State of Western Australia and the Pila Nguru (Aboriginal Corporation) is likely to influence biodiversity planning and management in GVD2.

Wetlands

Wetlands of National significance (DIWA listings)

Name and Code	Description ¹	Condition ²	Trend ³	Reliability ⁴	Threatening Processes ⁵
Yeo Lake/Lake Throssell WA044	B8	iii	v (condition improving. Removal of stock is aiding in the recovery of the wetland system)	i	v (feral animals including rabbits, goats, foxes, cats and stray stock). Yeo Lake and Lake Throssell were old pastoral leases, Lake Throssell was never taken up or developed, Yeo Lake is now a Nature Reserve and Lake Throssell is a proposed reserve.

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

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

Name and Code	Location	Description ¹	Special Values ²	Condition ³	Trend ⁴	Reliability ⁵	Threatening Processes ⁶
Lake Rason	Eastings 640 000 Northings 6820 000, zone 52	B8	ii	iv	iv	i	v (rabbits, goats, camels, foxes, cats), xii (disturbance from mineral exploration)

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

Riparian zone vegetation

There are no identified riparian vegetation within the subregion.

Ecosystems at risk

Threatened ecological communities (TECs)

There are no Threatened Ecological Communities (TECs) in GVD2.

Other ecosystems at risk

Community	Status	NVIS ¹	Condition ²	Trend ³	Reliability ⁴	Threatening Processes ⁵
Yellow sandplain communities of the Great Victoria Desert - Very diverse mammalian and reptile fauna, distinctive plant communities (D.Pearson pers. comm.)	V	18,23,33,31 Beards 84	Unknown	iv	ii	iv, v (camel, rabbits), vii, xii (mining).

¹Appendix B, key f; ²Appendix C, rank 2; ³Appendix C, rank 3; ⁴Appendix C, rank 1

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)					
<i>Dasyercus cristicauda</i>	V	ii	vi	ii	v (cats, foxes), vii
SCHEDULE 1: RARE/LIKELY TO BECOME EXTINCT, DIV 2 (BIRDS)					
<i>Acanthiza iredalei iredalei</i>	V	ii	vi	ii	v (cats, foxes), vii
<i>Polytelis alexandrae</i>	E	ii	vi	ii	v (cats, foxes), vii
<i>Leipoa ocellata</i>	V	Unknown	iii	iii	v (foxes, cats), iii, iv
SCHEDULE 1: RARE/LIKELY TO BECOME EXTINCT, DIV 3 (REPTILES)					
<i>Egernia kintorei</i>	V	i	iii	ii	vii, v (cats and foxes)

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

Declared rare and priority flora

Species Name	Status	Condition ¹	Trend ²	Reliability ³	Threatening Processes ⁴
DECLARED RARE FLORA					
<i>Conospermum toddii</i>	E	i	iv	iii	vii, v, iv (camels & rabbits)
PRIORITY 1					
<i>Eremophila aureivisca</i> ms	1	ii	vi	ii	vii, v, iv (camels & rabbits)
<i>Labichea deserticola</i>	1	ii	vi	ii	vii, v, iv (camels & rabbits)
<i>Micromyrtus helmsii</i>	1	ii	vi	ii	vii, v, iv (camels & rabbits)
<i>Ptilotus stipitatus</i>	1	ii	vi	ii	vii, v, iv (camels & rabbits)
PRIORITY 2					
<i>Calytrix warburtonensis</i>	2	ii	vi	ii	vii, v, iv (camels & rabbits)
<i>Dampiera ramosa</i>	2	ii	vi	ii	vii, v, iv (camels & rabbits)
<i>Dicrastylis nicholasii</i>	2	ii	vi	ii	vii, v, iv (camels & rabbits)
<i>Eremophila undulata</i>	2	ii	vi	ii	vii, v, iv (camels & rabbits)
<i>Olearia arida</i>	2	ii	vi	ii	vii, v, iv (camels & rabbits)

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

Analysis of appropriate management scenarios

Reservation priorities of ecosystems

Beard Veg Assoc	Ecosystem Description	IUCN I-IV	Non IUCN Reserve	CALM Purchased Lease	Priority
18	Low woodland; mulga (<i>Acacia aneura</i>)	X			M
19	Low woodland; mulga between sandridges				H
24	Low woodland; <i>Allocasuarina cristata</i>				H
39	Shrublands; mulga scrub				L
45	Shrublands; mallee scrub (Great Victoria Desert)	X			L
46	Shrublands; mallee scrub (e=?)				L-M
84	Hummock grasslands, open low tree & mallee steppe; marble gum & mallee (<i>Eucalyptus youngiana</i>) over hard spinifex <i>Triodia basedowii</i> between sandhills	X			M
85	Hummock grasslands, open low tree & mallee steppe; marble gum & mallee (<i>Eucalyptus youngiana</i>) over hard spinifex on sandplain	X			L
86	Hummock grasslands, open low tree steppe; mulga, <i>Allocasuarina cristata</i> & hard spinifex between sand ridges	X			H
92	Hummock grasslands, sparse tree steppe; bloodwood over hard spinifex <i>Triodia basedowii</i>				L

Beard Veg Assoc	Ecosystem Description	IUCN I-IV	Non IUCN Reserve	CALM Purchased Lease	Priority
95	Hummock grasslands, shrub steppe; acacia & grevillea over <i>Triodia basedowii</i>				L
96	Hummock grasslands, shrub steppe; acacia species (+grevillea) over <i>Triodia basedowii</i> often between sandridges				L
107	Hummock grasslands, shrub steppe; mulga and <i>Eucalyptus kingsmillii</i> over hard spinifex				L
109	Hummock grasslands, shrub steppe; <i>Eucalyptus youngiana</i> over hard spinifex				L
110	Hummock grasslands, shrub steppe; red mallee over spinifex <i>Triodia scariosa</i>	X			M
125	Bare areas; salt lakes	X			L
128	Bare areas; rock outcrops				L
139	Hummock grasslands, patchy shrub steppe; mulga over hard spinifex on laterite				L
236	Hummock grasslands, shrub steppe; mulga and mallee (marble gum) over hard spinifex				H
239	Hummock grasslands, open medium tree & mallee steppe; marble gum (<i>E. gonglocarpa</i> & mallee (<i>Eucalyptus youngiana</i>) over hard spinifex <i>Triodia basedowii</i> between sandhills	X			M
252	Hummock grasslands, shrub steppe; mulga and mallee over soft spinifex				H
289	Succulent steppe; saltbush & bluebush				H
389	Succulent steppe with open low woodland; mulga over saltbush				L
441	Succulent steppe with open low woodland; mulga & sheoak over bluebush				L
442	Low open woodland; mulga & <i>Allocasuarina cristata</i>	X			L
676	Succulent steppe; samphire	X			L
1239	Hummock grasslands, open medium tree & mallee steppe; marble gum & mallee (<i>E. youngiana</i>) over hard spinifex <i>Triodia basedowii</i> on sandplain	X			L
1446	Succulent steppe with scrub; mulga over bluebush				L
2245	Shrublands; mallee scrub (Nullarbor) <i>Eucalyptus socialis</i> , <i>E. cooperana</i> & <i>E. gracilis</i>	X			L
4621	Shrublands; mallee scrub, <i>Eucalyptus eudesmioides</i>	X			L
	Yellow sandplain communities of the Great Victoria Desert - Very diverse mammalian and reptile fauna, distinctive plant communities (D.Pearson pers. comm.)	X			H

Subregional constraints in order of priority (see Appendix B, key g)

Other Subregional Constraints: These are primarily resource related in terms of management and research.

Competing Landuses: In particular prospective exploration and mining leases.

Bioregional and subregional priority for reserve consolidation

Overall 9.4% of GVD is reserved in IUCN I-IV reserves and the bioregion is IBRA reservation Class 5 (i) (see Appendix D, and Appendix C, rank 4). GVD1 has 7.8%, GVD2 has 10.3%, and GVD3 has 8.4% areas within IUCN I-IV reservations. Threatening processes exist

(such as changed fire regimes, feral predators, feral herbivores, mining interests and inadequate knowledge). Subregional bias is minimal with 7.8% of GVD1 and 35% of GVD1 vegetation systems in IUCN reserves. GVD2 is considered Class 4.

Reserve management standard

The overall reserve management standard for GVD2 is (ii) Fair (see Appendix C, rank 5), indicating that biodiversity values and management issues are poorly identified, and some resource degradation is occurring though it is retrievable. Some feral predator control occurs through aerial dog baiting programs, but this is limited to pastoral areas. Wildfire management is non-existent, and the impact of feral herbivores is unknown. Mining exploration activities are supervised.

Class	Purpose	Name	Category	Reserve Management Rank ¹
A	Conservation of Flora and Fauna	Neale Junction Nature reserve	Nature Reserve	ii-iii
A	Conservation of Flora and Fauna	Plumridge Lakes Nature Reserve	Nature Reserve	ii-iii
A	Conservation of Flora and Fauna	Yeo Lake Nature Reserve	Nature Reserve	ii-iii
A	Conservation of Flora and Fauna	Great Victoria Desert Nature reserve	Nature Reserve	ii-iii

¹Appendix C, rank 5

Off reserve conservation

Priority species or groups and existing recovery plans

Species	Specific Recovery Plan	General Recovery Plan
<i>Conospermum toddii</i>	No	No
<i>Polytelis alexandrae</i>	No	Action Plan for Australian Birds
<i>Acanthiza iredalei</i>	No	Action Plan for Australian Birds
<i>Leipoa ocellata</i>	Yes - Malleefowl Preservation Group have current Action Plan and ongoing research	Action Plan for Australian Birds
<i>Dasyercus cristicauda</i>	Yes - National Threatened Species Recovery team.	Action Plan for Australian Monotremes and Marsupials
<i>Egernia kintorei</i>	Yes - National Threatened Species Recovery team.	Action Plan for Australian Reptiles

Appropriate species recovery actions

In GVD2, there is a need for fire management (ix) to reduce the impact of large intense, summer wildfires. Further research (xii) required to determine species

status, distribution and gain increased knowledge of subregion. Feral animal control (vii) would assist with CWR species recovery.

Species	Recovery Actions ¹	Recovery Descriptions
<i>Conospermum toddii</i>	i, iii, ix?, xii, vii	Habitat retention through reserves and protection on other state lands. Research to confirm status and species requirements. Fire management and feral grazing animal control may be necessary.
<i>Dasyercus cristicauda</i>	iii, vii, ix, xii	Habitat protection on other state lands, further research into the species ecology. Feral predator control and fire management are important.
<i>Polytelis alexandrae</i>	vii, ix, xii	Feral predator control important, further research into species ecology and habitat requirements is needed. Fire management may be necessary
<i>Acanthiza iredalei</i>	vii, ix, xii	Feral predator control important, further research into species ecology and habitat requirements is needed. Fire management may be necessary
<i>Egernia kintorei</i>	ix, vii, i, ii, xii	Fire management and feral animal control is very important. Habitat retention and protection through reserves and on other lands is required. Continued research on the species ecology is required.

¹Appendix A, key h.

Ecosystems and existing recovery plans

Ecosystem	Specific Recovery Plan	General Recovery Plan
Yellow sandplain communities of the Great Victoria Desert	No	No

Appropriate ecosystem recovery actions

Ecosystem	Recovery Actions ¹	Recovery Descriptions
Yellow sandplain communities of the Great Victoria Desert	i, iii, ix, vii, xii	Habitat retention through reservation or protection on other state lands. Fire management, feral animal control and further research are additional requirements.

¹Appendix A, key h.

Subregion priority for off reserve conservation

The subregional priority for off park conservation is (iv) (see Appendix C, rank 6), indicating that limited off park measures are required, capacity exists and some achieved biodiversity gains have been observed. There are no major conflicting land uses as much of GVD2 is UCL, Aboriginal Reserve or Conservation Reserve. Mineral exploration and possible mine establishment is considered the main conflicting land use.

Conservation actions as an integral part of NRM

Existing NRM actions

Industry Codes of Practice: Mining industry.

Feasible opportunities for NRM

Legislation: Including duty of care for leasehold and other lands.

Threat Abatement Planning as Part of NRM: e.g. Vegetation and threatened species management plans, pest management, fire management plans.

Capacity Building Required With Community, Landholders, Industry and Institutions

Impediments or constraints to opportunities

A number of impediments exist including the Land Administration Act and the operations of the Pastoral Land Board, CTR is limited through mining leases and tenements. There is a need to increase awareness of conservation values through education of various industries (particularly mining and pastoral) and the public in general. Limited financial resources are also a major constraint.

Subregions where specific NRM actions are a priority to pursue

The NRM priority for GVD2 is (iv) (see Appendix C, rank 7), indicating that NRM instruments are in place with some achieved biodiversity outcomes.

Data gaps

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

Vegetation and Regional Ecosystem Mapping: Regolith mapping is unavailable at better than 1:250 000 resolution.

Systematic Fauna Survey: There has been no systematic biological survey of the subregion although there has been some assessment of biota on proposed and current reserves and there have been a number of localised studies with some being both intensive and long term. This particularly relates to work on reptile ecology by Eric Pianka (Pianka 1996) and McKenzie and Burbidge's work (1979) that compiled a basic species inventory for a number of reserves and proposed reserves.

Floristic Data: There is little fine scale floristic data available for the subregion as a whole.

Ecological and Life History Data: Reports on the ecological requirements and a recovery plan have been produced for the and Great Desert Skink (McAlpin 2001). There are few data on habitat requirements of virtually all invertebrate species, most ephemeral plants, persisting CWR mammals and uncommon vertebrate and plant species. There are no data to provide regional context on life history (including population trend) of any species.

Other Priority Data Gaps Include:

- No quantitative data on the affect of exotic predators, introduced herbivores or weed colonisation.

Source

References cited

No.	Author	Date	Title	Publication Details	Pub. Type
764	Baker, L.M. and Johnson, K.A.	(undated).	Draft Recovery Plan for the Mulgara (<i>Dasycerus cristicauda</i>)	Conservation Commission of the Northern Territory	O
090	Benshemesh, J.	(2000).	National Recovery Plan for Malleefowl.	Department of Environment and Heritage, South Australia.	R
181	Cogger, H., Cameron, E., Sadlier, R. and Egger, P.	(1993).	The Action Plan for Australian Reptiles.	Australian Nature Conservation Agency, Canberra.	R
231	Department of Conservation and Land Management	(1994b).	Goldfields Region Management Plan 1994-2004. Management Plan No. 27.	Department of Conservation and Land Management.	R
271	Environmental Protection Authority	(1974).	Conservation Reserves in Western Australia - Report of the Conservation through Reserves Committee to the Environmental Protection Authority "CTRC Green Book".	Environmental Protection Authority, Perth.	R
298	Garnett, S.T. and Crowley, G.M.	(2000).	The Action Plan for Australian Birds.	Environment Australia, Canberra.	R
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
484	McAlpin, S.	(2001).	A Recovery Plan for the Great Desert Skink (<i>Egernia kintorei</i>) 2001-2011.	Arid lands Environment Centre.	R
490	McKenzie, N.L. and Burbidge, A.A. (eds)	(1979).	The Wildlife of some existing and proposed reserves in the Gibson, Little Sandy and Great Victoria deserts.	Western Australian Wildlife Research Bulletin 8.	J
552	Pianka, E.R.	(1996).	Long-Term Changes in Lizard Assemblages in the Great Victoria Desert, Dynamic Habitat Mosaics in Response to Wildfires.	Academic Press.	B

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

Other relevant publications

See reference numbers 040, 062, 075, 081, 098, 101, 107, 133, 166, 172, 241, 268, 272, 278, 288, 306, 370, 547, 561, 649, 685 and 686 in Appendix A.