Hampton *(HAM)*

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Subregional description and biodiversity values

Description and area

The bioregion is dominated by quaternary marine dune systems on a coastal plain of the Eucla Basin, backed by stranded limestone scarp. Areas of marine sand are also perched along the top edge of the scarp. Various mallee communities dominate the limestone scree slopes and pavements, as well as the sandy surfaces. Alluvial and calcareous plains below the scarp support eucalypt woodlands and Myall open low woodlands. There are no subregional divisions and the area of HAM is 1, 229, 189 ha.

Dominant land use

Mainly (xi) (see Appendix B, key b) UCL and Crown reserves, and (xiii) conservation.

Continental Stress Class

The Continental Stress Class for HAM is 6.

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

Rare features:
Extensive karst features including underground network of caves, blowholes and subterranean streams. The limestone caves of the Eucla Basin are one of the largest karst systems in the world. They contain a unique stygofauna and a number of threatened invertebrates (Gondwanan relicts), and sub-fossil remains.

Centres of endemism:
If the slopes of the Hampton escarpment are included in the region, high levels of endemism are found in stygofauna of karst systems that extend back under the NUL2 subregion. Dispersal mechanisms between individual aquifer systems are limited, and faunas have evolved in isolation (e.g. *Tartarus mullamullangensis, Tartarus nurinensis*. Coastal dunes of the region support three endemic reptile species (*Pseudemoia baudini Lerista arenicola* and *L. baynesi*) and one endemic sub-species of reptile (*Ctenotus brooksi euclae*). A variety of coastal dune plants also occur nowhere else: *Scaevola crassifolia, Atriplex cinerea* and *Euphorbia paralais* (Keighery, Robinson and Downing 1987).

Refugia:
- Karst features provide refugia for a largely unknown fauna.

High Species and Ecosystem Diversity:
- Stygofauna
- Coastal dune communities of the Roe Plain

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

The subregion is covered by the South Coast Regional Management Plan (Department of Conservation and Land Management 1992), which provides an overview of biota, addresses land and wildlife conservation issues, but was generalised in its attention to detail. The reviews and strategies therein (for reserve system development or management of weeds, fire, feral animals, mining, ecosystem rehabilitation & disease quarantine) do not address the specific needs of the bioregion. Interim management guidelines exist for the two major reserves in this bioregion – Eucla (Department of Conservation and Land Management 1996a) and Nuytsland (Department of Conservation and Land Management 1997).

Wetlands

Wetlands of National significance (DIWA listings)

There are no wetlands of National Significance listed for HAM.

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 Processes[6]
Weebubbie Cave	31 300' S 128 400' E	B19	ii	iv	vi	i	xii (uncontrolled recreational use)
Nurina Cave	32 000' S 127 000 E	B19	ii	iv	vi	i	xii (uncontrolled recreational use)
Winbirra Cave	31 400' S 128 300' E	B19	ii	iv	vi	i	xii (uncontrolled recreational use)
Pannikin Plains Cave – Nuytsland Nature Reserve	32 000' S 126 100' E	B19	ii	iii	vi	i	xii (compaction via public visitation; earth bund constructed during natural flood event), v (rabbits, foxes and cats)

[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

There is no true riparian vegetation within HAM.

Ecosystems at risk

Threatened ecological communities (TECs)

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

Other ecosystems at risk

Beard Veg Assoc	Description	Status	NVIS[1]	Condition[2]	Trend[3]	Reliability[4]	Threatening Processes[5]
47	Shrublands; tallerack mallee-heath	V	29	Unknown	iii	ii	v (rabbits, cats, dogs), xii
129	Bare areas; drift sand	V	41	Unknown	vi	ii	v (rabbits, cats, dogs), xii
1241	Succulent steppe; bluebush	V	N/A	Unknown	iv	ii	iv (sheep), v (rabbits, cats, dogs), xii

[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 2 (BIRDS)					
Acanthiza iredalei iredalei	V	ii	iv	ii	iv (sheep & rabbits), vi (Wards Weed)
Leipoa ocellata	V	Unknown	vi	Unknown	v (foxes), ii, xii (reduction in species richness of communities), possibly vii
***Thalassarche cauta*	V	ii	v	iii	xii (commercial fishing)
SCHEDULE 1; RARE/LIKELY TO BECOME EXTINCT, DIV 7 (ARACHNIDS)					
Tartarus murdochensis	V	Unknown	vi	ii	xii (habitat disturbance due to recreation)
Tartarus nurinensis	V	Unknown	vi	ii	xii (habitat disturbance due to recreation)
Tartarus thampannensis	V	Unknown	vi	ii	xii (habitat disturbance due to recreation)

Species	Status	Condition[1]	Trend[2]	Reliability[3]	Threatening Processes[4]
SCHEDULE 1: RARE/LIKELY TO BECOME EXTINCT, DIV 8 (CRUSTACEANS)					
Abelaioscia troglodytes	V	Unknown	vi	ii	x (changed hydrology in caves), xii (habitat disturbance due to recreation)

Species marked with **asterisks indicate these species are occasional visitors to the subregion.
[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

Name	Status	Condition[1]	Trend[2]	Reliability[3]	Threatening Processes[4]
PRIORITY 1					
Thysanotus baueri	1	iii	iv	iii	xii (likely to be poorly collected rather than rare)
PRIORITY 2					
Acrotriche patula	2	iii	iv	iii	xii (mining)
Phlegmatospermum eremaeum	2	unknown	iv	ii	vi (Ward's weed), v (rabbits)

[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

Beard Veg Assoc	Ecosystem Description	IUCN Reserves	Non-IUCN Reserve	CALM Purchased Lease	Priority
42	Shrublands; mallee & acacia scrub on south coastal dunes	X			
47	Shrublands; tallerack mallee-heath	X			
122	Succulent steppe with open low woodland; *Acacia papyrocarpa* over saltbush & bluebush	X			
125	Bare areas; salt lakes				
129	Bare areas; drift sand	X			
289	Succulent steppe; saltbush & bluebush				
515	Shrublands; mallee scrub, blue mallee (*Eucalyptus socialis*)	X			
1241	Succulent steppe; bluebush				
1515	Shrublands; mallee scrub *Eucalyptus gracilis*	X			

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

Competing Land Uses: The subregion is currently largely held in reserves and pastoral leases

Economic Constraints: High costs associated with the remoteness of the subregion have lead to severe financial constraints.

Bioregional and subregional priority for reserve consolidation

The bioregional priority for HAM is Class 4 (see Appendix D, and Appendix C, rank 4) indicating that 11% of bioregion is in CALM reserves (10%-15%).

Reserve management standard

Class	Purpose	Name	Category	Reserve Management[1]
A	Primitive Area for the Preservation and Study of Flora, Fauna, Geological and Anthropological Features	Nuytsland Nature Reserve	Nature Reserve	i - ii
A	Conservation of Fauna and Flora and Recreation	Eucla National Park	National Park	i - ii

[1]Appendix C, rank 5

Off reserve conservation

Priority species or groups and existing recovery plans

Species	Species Recovery Plan	General Recovery Plans
CWR mammals	Some have specific recovery plans but not all	Action Plan for Australian Marsupials and Monotremes; Action Plan for Australian Rodents
Acanthiza iredalei iredalei	No	Action Plan for Australian Birds
Leipoa ocellata	Malleefowl Preservation Society have current Action Plan and ongoing research	Action Plan for Australian Birds

[1]Appendix B, key e

Appropriate species recovery actions

Species	Recovery Actions[2]	Recovery Notes
CWR mammals	xiii, vi, vii, ix, xii	Need capacity building in pastoral industry to optimise chenopod grassland biomass and productivity by minimizing loss of mineral-A soil horizon and leaf-litter layer, indigenous grasses, shrub layer and tree regeneration through close-order husbandry of sheep herds and use of fire. Research into controlling the weed *Carrictua annua* (Wards Weed) is needed. monitoring of rabbit numbers following the population reduction caused by Callicivirus. Fire protection of existing reserves is essential. Need to construct a list of the original mammal fauna of the region using exposed sub-fossil deposits and historical records so that re-introduction programs to reconstruct CWR mammal communities can have a scientific basis.
Acanthiza iredalei iredalei	xiii, vi, vii, ix, xii	As above.
Leipoa ocellata	xiii, vi, vii, ix, xii	As above.

[1]Appendix B, key e; [2]Appendix B, key h

Ecosystems and existing recovery plans

Ecosystem	Threatening Processes[1]	Specific Recovery Plan	General Recovery Plans
Chenopod communities	vi (accelerating weed colonization, especially by Wards Weed *Carrictua annua*), xii (reduction in species richness of communities)	No	No

[1]Appendix B, key e

Appropriate ecosystem recovery actions

Ecosystem	Recovery Actions[1]	Recovery Notes
Chenopod communities	xiii, vi, vii, ix, xii	See appropriate species recovery actions above.

[1]Appendix B, 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.

Conservation actions as an integral part of NRM

Existing NRM actions

Legislation: Relating to conservation, environmental protection, pastoral activities and mining in place. Sandalwood Act is applicable but outdated and ineffective in its protection of Sandalwood populations. It requires repeal and incorporation as the Wildlife Conservation Act into a new comprehensive biodiversity conservation Act.

Threat Abatement Planning: Some rabbit and fox controls applied however limited access means that there is limited effect and action are mostly confined to areas used for pastoral activities; Some bushfire preventative action is taken.

Industry Codes of Practice: Mining Industry is involved in limestone quarrying activities on Hampton Escarpment.

Feasible opportunities for NRM

Incentives: Pastoral leases in good condition could be converted to conservation estate.

Legislation: Wildlife Conservation Act and Sandalwood Act are both outdated and need to be repealed. More wide-ranging and comprehensive legislation is required.

Institutional Reform: Pastoral leases in good condition could be converted to conservation estate.

Threat Abatement Planning: More comprehensive controls need to be developed for foxes, rabbits and cats.

Codes of Practice: There is a need to develop codes of practice and standards of management for pastoral lands.

Capacity Building: Closer liaisons need to be developed with community groups and land holders on issues, e.g. pastoral industry; There is further scope for the Macro Corridor project is used as a tool to be used to identify strategic landscape level connectivity.

Other Planning Opportunities: Closer liaisons with local governments are also required for relevant issues.

Other: Establishment of conservation areas to fully represent salient features of the Hampton landscape and the Roe Plains are highly desirable. Fauna species such as Pygmy possums (*Cercartetus concinnus*) occur in the coastal mallee scrubs and low woodlands which represents the extreme eastern occurrence of this species, and Major-Mitchell Cockatoos (*Cacatua leadbeateri*) occur in district populations south of Mundrabilla also in coastal woodlands; Costs associated with the establishment of National Parks or nature reserves are not high, however on-going management initiating and commitments will be difficult due to remoteness of the area.

Impediments or constraints to opportunities

Financial constraints and high costs associated with the remoteness of the subregion will have an impact on the extent of NRM actions applied in this subregion. There is very little infrastructure in the bioregion, i.e. there are only several roadhouses and stations, no towns.

Subregions where specific NRM actions are a priority to pursue

(see Appendix C, rank 7)

HAM is not divided into subregions.

Data gaps

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

Vegetation and Regional Ecosystem Mapping: No regolith mapping available and vegetation map resolution is 1:250 000 at best.

Systematic Fauna Survey: No systematic quadrat-based fauna survey. Data is confined to bird atlas, specific threatened bird distributions and limited monitoring sites for mammals (e.g. Hooper and Wells, 1987).

Floristic Data: No systematic quadrat-based flora survey. Most reserves don't have long-term survey data on species presence or absence; data is confined to specific threatened flora, and a few large reserves.

Ecological and Life History Data: There is little data on habitat requirements of virtually all invertebrate species, most ephemeral plants (except some DRF), persisting CWR mammals and uncommon vertebrate and plant species. There is no data to provide a regional context on life history (including population-trend) of most species, including foxes.

Other Priority Data Gaps Include:

- No quantitative data on the effect of exotic predators, weed colonisation, and fire.

Sources

References cited

No.	Author	Date	Title	Publication Details	Pub. Type
090	Benshemesh, J.	(2000).	National Recovery Plan for Malleefowl.	Department of Environment and Heritage, South Australia.	R
236	Department of Conservation and Land Management	(1997).	Interim Management Guidelines for Nuytsland Nature Reserve.	CALM, South Coast Region.	R
234	Department of Conservation and Land Management	(1996a).	Interim Management Guidelines for Eucla National Park.	CALM, South Coast Region.	R
298	Garnett, S.T. and Crowley, G.M.	(2000).	The Action Plan for Australian Birds.	Environment Australia, Canberra.	R
364	Hooper, G. and Wells, B.	(1989).	Western Pygmy Possum Survey 1987. In:Eyre Bird Observatory Report 5 1986-1987.	RAOU Report No. 66.	R
720	Keighery, G.J., Robinson, A.C. and Downing, B.H.	(1987).	Vegetation. In A Biological Survey of the Nullarbor Region, South and Western Australia in 1984 (eds N.L. McKenzie & A.C. Robinson).	Department of Environment and Planning, South Australia, 39-102	R
452	Lee, A.K.	(1995).	The Action Plan for Australian Rodents	Environment Australia - Biodiversity Group, Threatened Species and Communities Section	B
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

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

Other relevant publications

See reference numbers 013, 033, 034, 075, 112, 230, 261, 293, 308, 409, 410, 457, 496, 519, 549, 563, 564, 565, 566, 567, 629, 632, 671 and 717 in Appendix A.