

# watsnu



Species and Communities Branch newsletter for Threatened Species and Ecological Communities conservation  
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## Buying time for threatened flora and ecological communities.

By Renée Hartley

The flora of the South Coast is rich in diversity and endemism.

The Albany district is home to five Threatened Ecological Communities (TECs) and more than 400 species of threatened and priority flora.

Dieback disease caused by the plant pathogen *Phytophthora cinnamomi* threatens many of our species with extinction. However, efforts are being concentrated to 'buy us time' with phosphite treatment. If phosphite can prolong the survival of rare flora populations, it will enable us to make comprehensive seed collections.

By collecting seed from as many populations and individual plants as possible, the species' genetic diversity can be preserved in long-term storage for the future. The seed can also be used for translocations and scientific research, such as genetic studies and species resistance to dieback disease, salinity and waterlogging.

However, seed collection is rarely easy. In the case of the Critically Endangered *Lambertia fairallii*, Department of Conservation and Land Management (CALM) staff carried caging materials



on a long and difficult walk to a peak in the Stirling Range, to one of only three remaining populations of the species. Cages were needed to protect the seed from being eaten by birds and repeated trips were necessary to collect sufficient seed.

Similarly, time and effort has been invested into seed collection for the Endangered *Darwinia* sp. Stirling Range. The species requires close monitoring as timing must be precise to ensure that the seed is fully developed but not yet

**Above** Volunteer collecting seed of the Critically Endangered *Lambertia fairallii* on the edge of a dieback front in the Stirling Range.  
Photo – Sarah Barrett

released. This 'mountain bell' occurs at up to 900 m above sea level, and given that it may take several visits to the population, the time required is substantial.

Seed and cuttings collected in the district have been used to provide individuals for establishing new and secure seed orchards through translocations in conjunction with CALM's Science Division and the Botanic Gardens and Parks Authority. Three Critically Endangered taxa, limited to the mountain tops of the eastern Stirling Range and threatened by factors such as dieback, grazing, fire and climate change, have been established in a 'seed orchard'. Seeds of these species are particularly hard to collect due to the low number of individuals, limited seed-set and difficult location.

Through perseverance and repeated efforts, the amount of stored seed collected from Critically Endangered species such as *Dryandra montana*, *Dryandra anaton* and *Lambertia fairallii* has increased significantly and has enabled a range of *ex-situ* conservation options to be considered.

**For further information contact Renée on (08) 9842 4500 or email renee.hartley@dec.wa.gov.au**



### Inside this issue

Buying time for threatened flora and ecological communities.	1
Catching up with <i>Drakaea elastica</i>	2
Alignment of State and Commonwealth Threatened Species List	2
Recovering (Western) Australia's rich endemics	3
Priority Ecological Communities Project	3
Extra security for threatened species and communities in the Northern Agricultural Region	4
<i>Pityrodia scabra</i> – A disturbance opportunist in trouble?	4
Visit from Department of Environment and Heritage	5
Bankwest <i>Landscape</i> Conservation Visa Card – new projects	5
Wongan-Ballidu Threatened Flora Management Plan released in February 2006	6
Twenty more Interim Recovery Plans approved	6
Threatened species and communities recovery teams' summaries of 2005 annual report	7

# Catching up with *Drakaea elastica*

By Gillian Stack

The glossy-leaved hammer orchid (*Drakaea elastica*) is an intriguing plant that has a close association with a single species of thynnid wasp.

Each orchid plant has a single flower (up to four cm long) with a labellum (lip) that roughly resembles a flightless female wasp resting on a blade of grass. The labellum has glands that emit a sex attractant (pheromone) that attracts winged males of the wasp species. The wasp lands on the labellum and, as it attempts to carry it away, a hinge on the long arm between the labellum and the column brings the wasp into contact with the column of the flower. At this time the wasp either removes pollen from the anther or deposits previously acquired pollen onto the stigma, thus enabling cross pollination.

The leaf of each plant is between one and two cm wide, round to heart-shaped and laid flat on the ground. It is a distinctive glossy light green when it emerges from an underground storage tuber in May. However, it starts to yellow and shrivel by the time the plant flowers in September.

Plants are found in sandy habitat near winter-wet areas that support spearwood (*Kunzea ericifolia*) thicket or mixed banksia woodland, in patches which also support other orchid species, sometimes including other hammer orchids (eg *D. glyptodon*, *D. livida*).

*Drakaea elastica* has been recorded from 34 populations over a range of approximately 350 km, from Cataby in the north to Busselton in the south, with a cluster of populations around Capel. However, habitat is highly fragmented and subject to a range of threats including clearing for development, weed invasion and competition, grazing and soil disturbance by rabbits, kangaroos and stock, hydrological change including salinisation, disease including *Phytophthora cinnamomi*, inappropriate fire regimes, absence of pollinators or seed germination stimuli, and depletion of mycorrhizal fungi.

In 2005, a major survey effort was undertaken across the range of *Drakaea elastica* to reassess its conservation status. This monitoring was undertaken in collaboration with a number of CALM staff, and with volunteers and landowners. In addition, consultants contributed information about several new populations discovered during flora surveys of land subject to development applications.



*Drakaea elastica* or glossy-leaved hammer orchid. Photo – Andrew Brown

The assistance of all these people is gratefully acknowledged.

These survey efforts, in combination with historical data, established that almost half of the previously known populations are now presumed to be extinct due to clearing, or have contained no plants for many years. Two relatively large and robust populations are still known, and a third is small but stable (12 plants). Others are in decline, and a few require further survey to clarify their current status.

Several new populations were found during 2005, but these tend to be small and isolated. Some may be vestigial populations (for example, plants found on small areas of land subject to a development application near Capel), while others may represent germination of wind-blown seed in marginally suitable habitat, rather than robust and viable populations (for example, plants found in a large area of remnant vegetation near Gingin, widely separated from other known populations).

The species is now being considered for ranking at a higher level of threat.

For further information contact Gillian Stack on (08) 9405 5157 or email [gillian.stack@dec.wa.gov.au](mailto:gillian.stack@dec.wa.gov.au)

## Alignment of State and Commonwealth Threatened Species List

By Melanie Harding

There are currently a significant number of discrepancies between the threatened species that are listed under the Western Australian *Wildlife Conservation Act 1950* and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

For example, some species are listed under the State legislation but not under the Commonwealth's, while others are listed under both but in a different threat category.

These discrepancies can lead to inconsistencies in the advice provided by the State and Commonwealth Departments and is confusing to members of industry and the public. In an attempt to address this problem, CALM and the Commonwealth Department of Environment and Heritage (DEH) agreed to undertake a project to align the two lists, with funding assistance provided by the Commonwealth.

To enable the DEH to assess the species for listing (or delisting) under the EPBC Act, CALM is providing advice on each species in the form of a Species Profiles and Threats (SPRAT) datasheet. Information contained in the SPRAT sheet includes the species' biology, distribution, threats and recovery actions.

In January 2005 the Species Alignment Project (SAP) began.

CALM's Species and Communities Branch employed one project coordinator and three project officers to prepare the datasheets under a six month contract. There were 347 discrepancies for species, with 233 differences for threatened flora and 114 for threatened fauna listed at that time. Another 140 species were listed under the Wildlife Conservation Act but not the EPBC Act, 31 were listed under the EPBC act but not the Wildlife Conservation Act, and 171 were included on both lists but under a different rank. An additional five WA fauna species were nominated by the public for listing under the EPBC Act, and also required SPRAT sheets.

Ninety two SPRAT sheets were submitted to the DEH during 2005. To date, the Commonwealth's Threatened Species Scientific Committee has made recommendations on nominations for amendments to the EPBC Act for about 40 WA species that were part of the SAP. However these recommendations have not yet resulted in formal changes to the EPBC list of threatened species. It is anticipated that changes to the list will start to occur in the near future.

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# Recovering (Western) Australia's rich endemics

By Craig Douglas

Interim Recovery Plans (IRPs) are being prepared for a number of Declared Rare Flora (DRF) found in the wheatbelt using funding from the Natural Heritage Trust.

These include the Critically Endangered *Daviesia cunderdin*, *Cyphanthera odgersii* subsp. *occidentalis* and *Gastrolobium glaucum* in CALM's Merredin District, the Endangered *Banksia cuneata* in CALM's Narrogin District and the Vulnerable *Acacia lanuginophylla* with populations in the Merredin and Katanning Districts.

*Gastrolobium glaucum* and *Acacia lanuginophylla* exemplify the impact a lack of disturbance can have on species that germinate following disturbance such as fire. Surveys show that during the late 1980s and early 1990s, *Gastrolobium glaucum* totalled approximately 1127 plants. This has decreased to a current estimate of 178 plants. Similarly, since 1991 the number of mature *Acacia lanuginophylla* plants in wild populations has decreased from more than 10,000 to 5483 plants. Reductions in both these species are mainly due to senescence and poor recruitment resulting from the lack of disturbance events such as fire.



Successful recovery actions completed under the previous plan for *Daviesia cunderdin* include an experimental burn of dead plants at the single natural population. This resulted in germination of soil-stored seed and increased the population size from five to nine plants. The research action was accompanied by weed control.

High rainfall throughout the wheatbelt, great conditions for DRF!! Photo – Craig Douglas

In 2005, a translocation conducted by CALM staff and local volunteers, using funds from a World Wide Fund for Nature Fund grant, resulted in the establishment of 13 translocated plants of *D. cunderdin* in a secure, fenced area of private property. Recovery actions are continuing, with further plantings at the translocation site scheduled for the coming winter.

Land clearing in WA's wheatbelt during the past century has reduced the area of *Banksia cuneata* habitat to about seven per cent of its original size. Recently, species in *Banksia* subgenus *Isostylis*, including *B. cuneata*, have been the focus of major research into pollination biology and population dynamics, fire response, and intra and inter species genetic diversity.

This research has provided valuable information for the management of this species. The main threats are poor seed set due to a lack of suitable habitat for honeyeaters which pollinate the flowers and poor recruitment due to competition from weeds, predation by rabbits and a lack of disturbance such as fire.

Weed and rabbit control are high priorities identified in the IRP. The construction of a vegetation corridor linking three *Banksia cuneata* populations is proposed and will hopefully reduce the threat of inbreeding. This will aid in the preservation of the type population by creating additional habitat for seedlings to establish and by increasing pollinator presence at the population.

For further information contact Craig Douglas on (08) 9405 5172 or email [craig.douglas@dec.wa.gov.au](mailto:craig.douglas@dec.wa.gov.au)

## Priority Ecological Communities Project

By Monica Batista

In addition to the database of threatened ecological communities (TECs), CALM's Species and Communities Branch maintains a list of all, and database records of many, Priority Ecological Communities (PECs).

These communities require further work to determine their status.

A new project is underway to collect information about a series of PECs that are viewed by staff from CALM's regions and districts as being of the highest concern.

The project will seek information from CALM district and regional staff, and other people with detailed knowledge about the status of PECs. Other information will then be gathered from available literature such as flora and vegetation reports.

Where there is thought to be sufficient information, data for the PECs are then entered onto the Department's database, including mapped boundaries. Information on these communities will then be presented to the TEC Scientific Committee for endorsement of the recommended priority status.



Priority ecological Community, Red Morrel Woodland, Goomalling. Photo – Vanessa Malcolm

In order for an ecological community to be considered as a PEC there are a number of information requirements that need to be met. This includes location information and descriptive species lists. Regional staff, community groups and consultants have valuable knowledge about ecological communities and the success of this project will rely on collaboration with those people.

For further general information on TECs or PECs please visit our website at: [http://www.dec.wa.gov.au/plants\\_animals/watscu/index.html](http://www.dec.wa.gov.au/plants_animals/watscu/index.html)

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# Extra security for Threatened Species and Communities in the Northern Agricultural Region

By Benson Todd

Threatened species and communities in the Northern Agricultural Region will be afforded some extra security under a new and exciting project aptly titled 'Back from the Brink'.

'Back from the Brink' is a three-year project funded by the Natural Heritage Trust and National Action Plan for Salinity and Water Quality, administered by the Northern Agricultural Catchment Council and implemented by CALM's Moora District and the Midwest Region.

The Northern Agricultural Region stretches from Guilderton in the south to Kalbarri in the north and Dalwallinu and Mullewa in the east, encompassing both the Moora and Geraldton CALM Districts and small portions of the Swan Coastal and Merredin Districts. It is internationally renowned for its high level of biodiversity, which includes 130 species of Declared Rare Flora (DRF), 27 species of threatened fauna and 19 TECs.



*Grevillea calliantha*, one of the many species to benefit from 'Back from the Brink.'  
Photo – Gina Broun.

'Back from the Brink' will implement a suite of recovery actions for threatened flora, fauna and ecological communities. Most of these recovery actions will be drawn from the 11 endorsed IRPs and several draft IRPs for TECs, 37 endorsed IRPs for DRF and three endorsed Recovery Plans (RPs) for fauna. In

addition, urgent actions for threatened and priority species without RPs will be implemented.

Recovery actions will include seed collection, weed control, survey and monitoring, translocations, education and capacity building, habitat reconstruction and fencing. These actions will be carried out across all land tenures in conjunction with relevant landowners and managers, resulting in increased security for threatened species and communities and a greater level of community capacity to manage these species and communities.

**For further information contact Benson Todd on (08) 9652 1911 or email [benson.todd@dec.wa.gov.au](mailto:benson.todd@dec.wa.gov.au)**

## *Pityrodia scabra* – A disturbance opportunist in trouble?

By Mia Morley

The wheatbelt species *Pityrodia scabra*, commonly known as Wyalkatchem foxglove, is under extreme threat.

The species was first collected by S. B. Rosier in 1959 and was declared as Rare Flora in 1990. As its common name suggests, the species is found in the Shire of Wyalkatchem.

A translocation of 119 seedlings and cuttings to two locations was undertaken in 1990. However by 2000, most of these plants had senesced. Currently, only two populations containing a total of five extant plants exist in the wild and just six cultivated plants are held at the Botanic Gardens and Parks Authority.

Threats to *Pityrodia scabra* will be addressed in an IRP which is in its late draft. Threats include lack of suitable disturbance by fire or physical disturbance, weed invasion, rabbits, road and rail maintenance, poor genetic diversity and habitat clearance.

Senescence of plants and subsequent proliferation from soil stored seed following events such as fire are natural processes in many wheatbelt species listed as Rare Flora. These natural processes have been greatly impacted by broad-scale land clearing and decline of natural disturbance events including fire.



*Pityrodia scabra*. Photo – Andrew Brown

The lack of knowledge regarding the historical distribution of these species, whether they were historically rare or widespread, and the processes that maintained the populations is something which may never be fully understood. This lack of knowledge can cause major problems in making decisions on the future management of these species.

Disturbance events responsible for germination of soil-stored seed are often difficult to manage as they have the capacity to destroy populations through the death of mature plants and weed invasion.

Hopefully, through the preparation and implementation of IRPs and ongoing research, the best ways and means of managing species such as this

disturbance opportunist will be able to be defined.

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# Visit from Department of Environment and Heritage

By Val English

Staff from the Species Listing, Recovery and Policy section of the Commonwealth Department of Environment and Heritage (DEH), based in Canberra, met with members of CALM's Species and Communities Branch to discuss a series of issues in April 2006.

Site visits were also conducted to some areas where Commonwealth funds have been used for recovery work on threatened species and communities. The major threats, how recovery is being tackled and other issues were considered at all of the sites visited.

DEH provides funding support for a series of WA recovery planning projects. Issues discussed in the meetings with CALM staff included the species alignment project – which is aimed at better aligning the State and Commonwealth threatened species lists, indigenous consultation in recovery planning, determining priorities for the preparation of recovery plans, assessing habitat critical to the survival of species and communities, the implementation of recovery plans, assessing the success of recovery actions and future funding.

The group inspected a series of threatened ecological communities where recovery actions are being implemented through Natural Heritage Trust (NHT) programs with funds administered through the Swan Catchment Council. These included fencing, monitoring and weed control projects at the Critically Endangered



DEH and DEC staff view the mound springs. Photo – Val English

The role of Botanic Garden and Parks Authority in research and recovery programs for threatened orchids, and its role in providing CALM and recovery teams with advice on weed control (and also providing propagates of a range of threatened plant species for translocations) was discussed before visiting the habitat of a Critically Endangered orchid, *Caladenia huegelii* in Jandakot.

The large number of people and organisations that are involved in the recovery of a threatened species and the importance in CALM staff coordinating these people and groups to provide the best and most efficient conservation outcome were discussed.

At the *Caladenia huegelii* site issues of the numerous threats to listed species that are found in the generally small bush remnants in the metropolitan area was discussed. Recovery actions that have been put in place to protect and recover the species were then reviewed.

The visit provided a very useful opportunity for exchange of information between CALM and DEH staff who are involved in recovery planning and on-ground recovery of threatened species and communities.

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organic mound springs, and the Perth to Gingin Ironstone association. Project officers funded through NHT, who are based at CALM's Swan Coastal District, discussed the on-ground work that has been completed through the projects. Species and Communities Branch staff provided information about the community description, history of the sites, and threats.

The main habitat for the Critically Endangered western swamp tortoise at Ellen Brook Nature Reserve was also visited. An area of land recently acquired to extend the available habitat, and the massive new fox proof fencing project enclosing the new land and replacing the old fox proof fence, were examined at the site with the Chair of the Western Swamp Tortoise Recovery Team. The group also examined new pond habitat that is being built for the tortoise in the reserve.

## Bankwest Landscape Conservation Visa Card – new projects

CALM has continued to receive funding from the Bankwest *Landscape Conservation Visa Card* trust fund to aid in the recovery of threatened species and threatened ecological communities. In 2005-06, a total of \$22,700 was allocated. Successful projects are listed below.

The ecology of the tree-stem trapdoor spider, *Aganippe castellum* in the eastern WA wheatbelt.

Peter Mawson

Processing frozen carcasses of threatened cockatoo (Carnaby's, Baudins' and forest red-tailed black cockatoo) and corella (Muir's) species currently held in the WA Museum freezer.

Peter Mawson

Susceptibility to *Phytophthora cinnamomi* of key species in the Montane Community of the Stirling Range National Park.

Bryan Shearer

Captive breeding of the central rock-rat *Zygomys pedunculatus*.

Keith Morris and Helen Robertson

Confirming the taxonomic status of *Banksia brownii*.

Alan Danks / Margaret Byrne

Promoting awareness of threatened ecological communities through interpretive signage at high recreational use reserves.

Mia Morley

Analyses of water samples collected at Kachana Springs, Kimberley Region.

Jill Pryde

Sorting and identification of plant specimens from TEC monitoring sites.

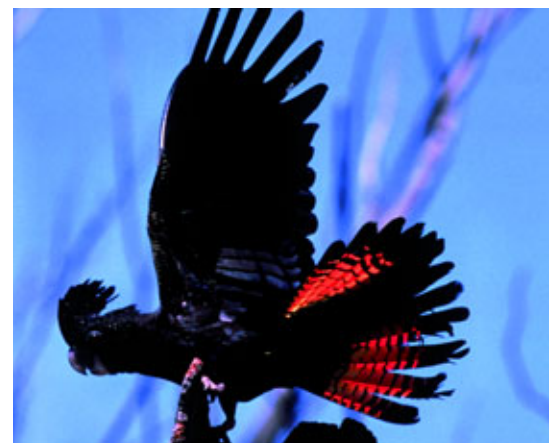
Jill Pryde



Left *Aganippe castellum* (female).

Illustration – Brad Durrant

Below *Calyptorhynchus magnificus naso* (Forest Red-tailed Black Cockatoo). Photo – Babs and Bert Wells/DEC



# Wongan-Ballidu Threatened Flora Management Plan released in February 2006

CALM has now prepared 10 threatened and priority flora management plans under the Wildlife Management Programs series.

Completed plans include those for CALM's Swan (as Northern Forest Region and Metropolitan Region) and Central Forest Regions (now South West Region) and for the Districts of Merredin, Albany, Esperance, Moora, Narrogin, Katanning and Geraldton. A plan for CALM's Warren Region is in the process of being approved.

The Shire of Wongan-Ballidu contains an unusually high number of threatened flora taxa that are largely restricted to the area, so the decision of preparing a plan for an area defined by local government boundaries rather than CALM boundaries was made. Most of these flora species are restricted to specific habitats associated with the unusual greenstone Wongan Hills formation, with a few others restricted to remnant sandplain areas.

This plan provides a brief description of the appearance, distribution, habitat and conservation status of flora declared as rare under the Western Australian *Wildlife Conservation Act 1950* (Threatened Flora) and poorly known (Priority Flora) flora restricted to the Shire of Wongan-Ballidu. It recommends research and management actions necessary to ensure their continued survival. By ranking the Declared Rare Flora in priority order, resources can be allocated to plant taxa that are most urgently in need of attention.

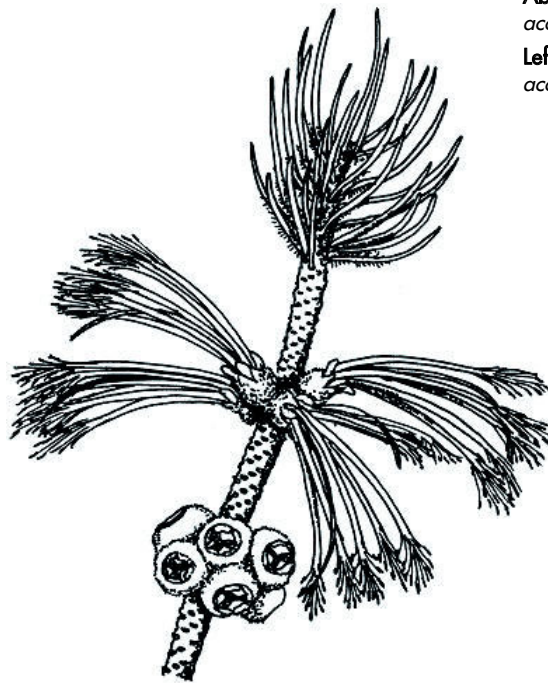
Funds to prepare this plan were provided by the Commonwealth's Natural Heritage Trust with 16 Rare flora species and 12 Priority flora species dealt with in the plan.

The photo above is of Piawanning clawflower (*Calothamnus accedens*) which was presumed to be extinct during development of this plan because the only known population at that time had been destroyed during road works. In 2004, the species was rediscovered and, although outside the Shire of Wongan-Ballidu, several populations are now known from the Shires of Moora and Victoria Plains, to the west of Wongan-Ballidu.



**Above** Piawanning Clawflower (*Calothamnus accedens*). Photo – Rosemarie Rees

**Left** Piawanning Clawflower (*Calothamnus accedens*). Illustration – Susan Patrick





# Twenty more Interim Recovery Plans approved

Twenty IRPs, including 17 for flora and three for TECs have been approved by the Director of Nature Conservation.

Some of these plans have been updated to include new information. Most of the plans were written with the assistance of Natural Heritage Trust funding and will be sent to the Commonwealth Department of Environment and Heritage for adoption under the *Environment Protection and Biodiversity Act 1999*.

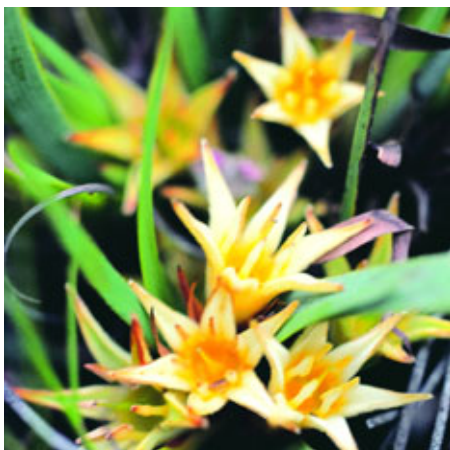
Number	Recovery plan	Author
<b>TECs</b>		
198	Assemblages of Organic Mound (Tumulus) Springs of the Swan Coastal Plain	Rachel Meissner, Val English and John Blyth
215	Shrubland Association on Southern Swan Coastal Plain Ironstone (Busselton area) (Southern Ironstone Association) updated	Rachel Meissner, Val English
217	Scott River Ironstone Association	Robyn Luu, Val English
<b>Flora</b>		
209	Long-sepalled Daviesia, <i>Daviesia megacalyx</i>	Renée Hartley and Sarah Barrett
210	Feather-leaved banksia, <i>Banksia brownii</i>	Sandra Gilfillan and Sarah Barrett
211	Grass conostylis, <i>Conostylis misera</i>	Renée Hartley and Sarah Barrett
212	Tufted plumed featherflower, <i>Verticordia plumosa</i> var. <i>ananeotes</i>	Heather Taylor, Val English, Andrew Webb
213	Dunsborough spider orchid, <i>Caladenia viridescens</i> updated	Julie Patten, Andrew Webb, Andrew Batty
214	Bussell's spider orchid, <i>Caladenia busselliana</i> updated	Julie Patten, Andrew Webb, Andrew Batty
216	Naturaliste Nancy, <i>Wurmbea calcicola</i>	Heather Taylor, Val English, Andrew Webb
218	Boscabel conostylis, <i>Conostylis setigera</i> subsp. <i>dasys</i> updated	Bethea Loudon
219	Green flowered emu bush, <i>Campion eremophila</i> , <i>Eremophila virens</i>	Julie Patten, Kate Brunt, Andrew Brown
220	Wagin banksia, <i>Banksia oligantha</i>	Julie Patten, Kim Kershaw, Bethea Loudon
221	Sprawling spiky adenanthos, <i>Adenanthos pungens</i> subsp. <i>effusus</i> updated	Heather Taylor, Bethea Loudon, Andrew Brown
222	Hairy phalanx grevillea, <i>Grevillea dryandroides</i> subsp. <i>hirsuta</i>	Kate Brunt, Kim Kershaw, Andrew Brown, Greg Durell
223	Small two-coloured kangaroo paw, <i>Anigozanthos bicolor</i> subsp. <i>minor</i>	Julie Patten, Ryan Butler, Gillian Stack, Andrew Brown
224	Corrigin grevillea, <i>Grevillea scapigera</i> updated	Julie Patten, Kim Kershaw, Greg Durell, Bob Dixon, Andrew Brown
225	Bailey's symonanthus, <i>Symonanthus bancroftii</i> updated	Heather Taylor, Kim Kershaw, Andrew Brown
226	Badgingarra box, <i>Eucalyptus absita</i>	Gina Broun
227	Hidden beard heath, <i>Leucopogon obtectus</i>	Ben Bayliss, Heather Taylor, Gina Broun, Andrew Brown

Copies of the plans will be placed on DEC's NatureBase web site and also the Wildlife Sciences Library at Woodvale. However you can request a copy from Jill Pryde by email at [jill.pryde@dec.wa.gov.au](mailto:jill.pryde@dec.wa.gov.au)

**Below far left** Grass conostylis (*Conostylis misera*).

**Below left** Feather-leaved banksia (*Banksia brownii*). Photos – Stephen Hopper

**Below** Naturaliste Nancy (*Wurmbea calcicola*). Photo – Andrew Brown



# Threatened Species and Communities recovery teams' summaries of 2005 annual report

Recovery team Chairs are responsible for writing annual reports on recovery action progress specified in Recovery Projects (RPs) or Interim Recovery Projects (IRPs). Reports received are forwarded to the Department's Corporate Executive and to the Conservation Commission of Western Australia.

Part of the summaries from these reports are reproduced below. Annual reports are placed in the Department's Wildlife Sciences Library at Woodvale or can be requested by emailing [jill.pryde@dec.wa.gov.au](mailto:jill.pryde@dec.wa.gov.au) or the authors direct.

Note:

(CR) = Critically Endangered  
(EN) = Endangered  
(VU) = Vulnerable

## FLORA AND COMMUNITIES

### By Gina Broun for the Moora District Threatened Flora and Communities Recovery Team

A total of 77 species of DRF exist in the Moora District, of which 28 are considered Critically Endangered, 21 Vulnerable and 28 Endangered (IUCN red list categories).

A further 305 Priority Flora species and seven TECs, of which six are ranked as Endangered and one as Vulnerable, are also in the area.

In 2005, a suite of recovery actions were implemented. Actions included carrying out surveys for unrecorded populations of threatened flora and occurrences of TECs, monitoring known natural and translocated populations of threatened flora, establishing new flora translocations, maintaining and expanding existing translocated flora populations, collecting seed and propagule, carrying out genetic research, promoting community education, liaising with land managers, procuring external funds for on-ground works, consulting with industry and developing IRPs.

### By Vanessa Clarke for the Goldfields Region Threatened Flora Recovery Team

The Goldfields Region has an IRP for *Myriophyllum lapidicola* and a full RP prepared for *Tetralochea paynterae* subsp. *paynterae* ms. This latest plan is waiting for final approval by the Director of Nature Conservation.

The *Tetralochea paynterae* subsp. *paynterae* ms RP has been developed by Portman Iron Ore Ltd in liaison with CALM, consultants and the Goldfields Region's Threatened Flora Recovery Team, as part of a Ministerial condition for the Koolyanobbing Expansion Project. Recovery actions in line with the IRP (covering a survey, population demographics, genetic studies, seed collection, trial translocation and propagation trials) were ongoing in 2005.

Recovery actions were undertaken for *Myriophyllum lapidicola* in 2005 although no new populations were identified and the known Goldfields Region populations were not relocated.



Phalanx grevillea (*Grevillea dryandroides* subsp. *dryandroides*). Photo – Anne Cochrane

### By Joel Collins for the Merredin District Threatened Flora and Communities Recovery Team

The Merredin District Threatened Flora and Communities Recovery Team held two meetings in 2005.

Rare flora management program projects funded by the Avon Catchment Council (ACC) were completed by June 2005. Actions included:

- the successful translocation of *Daviesia euphorbioides* at Hindmarsh Nature Reserve and a recruitment burn at Dowerin with 25 seedlings surviving. (Partial funding was contributed by the Commonwealth DEH bridging funds);
- 11 new DRF populations and six new populations of priority taxa surveyed;

- a Dowerin Field Days display by the Merredin CALM District;
- the completion of a *Grevillea dryandroides* subsp. *dryandroides* DRF survey at Ballidu with 17 Wongan-Hills Bushcare group volunteers; and
- the collection and curation of 12 DRF species and five priority species for the Merredin District Threatened Flora Herbarium.



Fitzgerald eremophila (*Eremophila denticulata* subsp. *trisulcata*). Photo – Andrew Brown

### By Emma Adams for the Esperance District Threatened Flora Recovery Team

Throughout the year, efforts were focused on several Critically Endangered species, including *Lambertia echinata* subsp. *echinata*, *Daviesia microcarpa* and *Eremophila lactea*.

One major discovery was a new population of *Lambertia echinata* subsp. *echinata*, which has more than doubled the number of known plants in wild populations. Surveys were also conducted for *Myoporum turbinatum*, *Anigozanthos bicolor* subsp. *minor* and *Eremophila denticulata* subsp. *trisulcata* ms. Because of a severe fire season, limited budget and a staff changeover, surveys and monitoring were not conducted as frequently as they usually would have been.

Major recovery actions implemented involved monitoring populations, surveying new areas, monitoring translocation sites, conducting disturbance trials, mapping critical habitat and reviewing IRPs. Two IRPs were drafted for *Marianthus* sp. Bremer (R. Butler) and *Adenanthos eyrei* (E. Adams) with the final versions to be completed during 2006. Two IRPs are due for review; *Eremophila lactea* and *Lambertia echinata* subsp. *echinata*. While funds have been made available for an updated IRP for *E. lactea*, no funds are currently available for updating *L. echinata* subsp. *echinata*.





*Grevillea scapigera*. Photo – Andrew Brown

### By Marie Strelein for the Narrogin District Threatened Flora Recovery Team

CALM's Narrogin District manages 10 Critically Endangered, 10 Endangered and 16 Vulnerable flora taxa, all of which are declared as Rare Flora under the *Wildlife Conservation Act 1950*.

In addition, 218 flora taxa are listed for the Narrogin District on CALM's Priority Flora List. Many of these require additional monitoring and survey to determine their threatened status.

Highlights of the program for 2005 are listed below.

- A new population of *Caladenia graniticola* (CR) was discovered in Pingaring Nature Reserve by recovery team members.
- The Weam Nature Reserve *Caladenia williamsiae* (CR) population was extended with the discovery of a new plant on the eastern edge of the reserve by volunteer Fred Hort. Members of the WA Native Orchid Study and Conservation Group assisted in conducting surveys in 2005.
- Further translocation for *Darwinia carnea* (CR) occurred in 2005 with assistance from Central South Naturalist Club Volunteers. Naturally occurring seedlings continue to appear at the translocated Shire Reserve population and a new seedling was recently discovered at Penny Block.
- The translocation program for *Grevillea scapigera* (CR) continued.
- Research posters were produced for two of Narrogin District's Critically Endangered Flora, *Grevillea scapigera* and *Rhizanthella gardneri*. The posters were presented at the 'Advances in Plant Conservation Biology' Symposium held in Perth October 2005. The *Grevillea scapigera* poster was produced collaboratively with CALM and Botanic Gardens and Parks Authority (BGPA) and funded by the Federal government through the Avon Catchments Council (ACC). The *Rhizanthella gardneri* poster was produced by CALM, BGPA and the University of WA (UWA).

- The Narrogin District, BGPA and a UWA Ecosystem Research Group PhD student are continuing to conduct scientific investigations on *Rhizanthella gardneri* (CR) and its habitat requirements.
- The translocation of *Symonanthus bancroftii* (CR) into secure sites continued in partnership with the Bruce Rock Land Conservation District Committee and BGPA with assistance from Master Gardeners and local community volunteers.



Thin-margined leucopogon (*Leucopogon marginatus*). Photo – Alanna Chant

### By Catherine Page for the Geraldton District Threatened Flora and Communities Recovery Team

There are approximately 19 IRPs for threatened flora species and four IRPs for TECs that occur in the Geraldton District. During 2005 IRPs were prepared for *Gyrostemon reticulatus*, *Leucopogon marginatus*, *Beyeria lepidopetala* and *Chorizema humile*.

Recovery actions undertaken in 2005 included extensive survey for new populations and monitoring of known populations, the successful translocation of a DRF species, a habitat species planted in an area where two DRF populations occur, genetic research into the taxonomy of four species, seed collection of five DRF and priority species, weed and feral animal control, community education and awareness, consultation with industry and liaison with land managers. These actions resulted in the discovery of two new flora species that are yet to be named, as well as the location of 11 new populations of DRF and priority species, and an increased knowledge of species' distribution, habitat and taxonomy. Increased community awareness and education has been achieved through community involvement in planting days and other recovery actions and through media releases.



*Boscabel conostylis* (*Conostylis setigera* subsp. *dasys*). Photo – Stephen Hopper

### By Bethea Loudon for the Katanning District Threatened Flora and Communities Recovery Team

Seed was collected and stored at the Department's Threatened Flora Seed Centre (TFSC) for *Acacia lanuginophylla* (VU), *Allocasuarina tortiramura* (VU), *Gastrobium lehmannii* (VU), *Goodenia integerrima* (EN), *Muehlenbeckia horrida* subsp. *abditata* and *Conostylis setigera* subsp. *dasys* (CR).

Seed was collected by the Botanic Gardens and Parks Authority (Kings Park) from *Drakaea isolata* (CR) for research and storage.

One new population was found for *Eremophila subteretifolia* (CR), two for *Austrostipa geoffreyi* (P1), two for *Acacia mutabilis* subsp. *stipulifera* (P1), one for *Acacia asepala* (P2), two for *Acacia drewiana* subsp. *minor* (P2), one for *Acacia mutabilis* subsp. *incurva* (P2), two for *Dryandra foliosissima* (P2), two for *Gastrobium rigidum* (P2), one for *Pimelea halophila* (P2), one for *Baeckea* sp. *Hyden* (P3), one for *Daviesia elongata* subsp. *implexa* (P3), three for *Dryandra fasciculata* (P3), one for *Dryandra megalotia* (P3), three for *Grevillea newbeyi* (P3), one for *Hakea brachyptera* (P3), one for *Eremophila serpens* (P4) and one for *Rinzia affinis* (P4).

Rare flora markers were erected for Priority and DRF populations that had not been previously marked. A number of markers were repositioned to incorporate extensions of populations. The *Roycea pycnophylloides* IRP was updated and draft IRPs prepared for *Acacia lanuginophylla* and *Grevillea involucrata* by the Species and Communities Branch.

A poster was produced by the Lake Bryde Recovery Catchment staff (CALM Katanning) for *Muehlenbeckia horrida* subsp. *abditata*.

A booklet on the District's DRF, developed by the Flora Conservation Officer has now been published. It provides a description of 40 species and information on their habitat for CALM staff, community members, volunteers and other agencies.



**By Kim Williams for the  
Leeuwin Root Mats Recovery  
Team**

In spite of a return to average annual rainfall in winter 2005, water levels in all four occurrences of the root mat community remained very low or non-existent for the fourth consecutive year.

The impact of this sustained reduction in water levels on the persistence of the community is not known.

Changing land use and development issues in the Augusta-Margaret River area were brought to the fore with a proposal to establish a blue gum plantation to the north-east of the Jewel/Easter Cave system. Potential impacts on the groundwater resources which may support the ecological community were raised by team members.

Rewriting and updating the IRP began in late 2005. A major focus was to improve the understanding and monitoring effort of local hydrological regimes supporting the karst communities and geographic variation in community composition.

Progress with implementation of the recovery plan continued and included:

- annual monitoring of water levels in the four caves;
- team member, Stefan Eberhard, releasing his PhD thesis *Ecology and hydrology of a water dependent ecosystem: The Jewell Karst Cave system in Western Australia*; and
- maps and hydrological notations produced over many years by cavers in the Leeuwin Naturaliste began to be digitised.

The summary of results from the trial burn and water monitoring program at Jewel-Easter Cave was completed. Results showed that under low fire intensity, there is limited benefit from carrying out fuel reduction burning to increase water infiltration into the cave system. The recovery team made the decision not to repeat the trial in other locations.



Dumping in sedgelands at Bakewell Drive, Port Kennedy. Photo – Mia Morley

**By Val English for the  
Sedgelands in Holocene  
Dune Swales Recovery Team**

Team members dealt with a series of issues in 2005 including negotiations and advice about areas that contained the sedgeland community and were the subject to reservation or development proposals.

The group worked in liaison with interested local groups, CALM's Regional Parks Unit and Swan Coastal District, and the Department of Environment in undertaking these negotiations.

Members of the recovery team provided advice and made recommendations about the management of two wetlands in Port Kennedy – managed by the City of Rockingham – containing the sedgeland community. This advice included the need for weed control, rubbish removal, improved fencing to help exclude wind-blown rubbish, and the provision of information to landholders living adjacent to the wetlands. A pamphlet was then produced about the sedgelands, and distributed to local landholders.

Team members were involved with negotiations about minimising impacts to the wetlands because of land development adjacent to the sedgeland community at Secret Harbour, and at the new Lark Hill Regional Sporting and Recreation Complex.

Agreement was reached between Landcorp and members of the recovery team about erecting a fence to help protect a Bush Forever additional site that contains the sedgeland community on Bakewell Drive, Port Kennedy. The fence will help prevent damage by four wheel drives, illegal rubbish dumping, and arson, and its installation will be coordinated by CALM's Regional Parks Unit.

The unit and the recovery team provided advice about the likely impacts of a proposed substation in Lake Walyungup and Lake Cooloongup regional parks. These sites were then excluded from the areas being considered by Western Power. The recovery team provided advice to CALM's Swan Coastal District about a residential development in Golden Bay.

Trials to control *Euphorbia terracina* were undertaken in Port Kennedy Regional Park by CALM's Urban Nature group. This project was made possible with funding assistance from the Natural Heritage Trust, received through the Swan Catchment Council.

**By Jill Pryde for the  
Lake Clifton Thrombolite  
Community Recovery Team**

Members of the recovery team continued to contribute to recovery actions in providing advice on a number of issues and continued studies affecting the Lake Clifton microbial community.

After a recommendation from the recovery team, the City of Mandurah undertook a land use survey of residential properties in the Lake Clifton Catchment area in 2005. This culminated with a Community Open day held on 26 June 2005 at the Lake Clifton-Herron Community Centre. Approximately 60 people attended. The City of Mandurah has now produced a report *Lake Clifton Land Use Survey*.

A literature review has been compiled for Yalgorup National Park.

Interim Recovery Plan No. 153 *Thrombolite (Stromatolite-like Microbialite) Community of a Coastal Brackish Lake (Lake Clifton) 2004-2009* by Robyn Luu, David Mitchell and John Blyth was endorsed by the Director of Nature Conservation.

A monitoring protocol has now been prepared and implementation is planned for 2006.

## FAUNA

**By Kim Williams for the  
Western Ringtail Possum  
Recovery Team**

Continuing land use change and development issues on the lower Swan Coastal Plain, particularly in the Bunbury to Dunsborough area, continued to occupy the team and many of its members.

These issues generated considerable impact assessment and liaison work with both State and Federal agencies. Significant time was spent assisting Commonwealth DEH staff gain a more complete understanding of these issues and possible solutions through workshops, field trips and meetings leading to the development of a DEH policy paper, which has yet to be released.





Western ringtail possum (*Pseudocheirus peregrinus occidentalis*).

Photo – Babs and Bert Wells/DEC

The recovery plan is being rewritten and updated and should be completed by late June. A contractor finalised the first draft and the team developed its intent and direction. A focus will be an improved understanding and monitoring of geographically representative populations using new methods and strategies which will minimise the impact of broadscale threats such as fire, habitat loss, disease, predation and interspecies competition.

Translocation of displaced possums from urban development in the Bunbury to Dunsborough area continued during 2005 to Leschenault Peninsula Conservation Park and Yalgorup National Park. Further insight into possible causes of the previous population collapse on Leschenault was provided by confirmation of the role of predation by pythons.

Relationships with other agencies and organisations contributing to western ringtail possum conservation were enhanced during the year through partnerships with Natural Resource Management groups, Geocatch and Leschenault Catchment councils through national hotspot projects, community workshops and faunal corridor rehabilitation projects. A joint CALM–Murdoch University project using local wildlife carer groups was also a highlight for the year.

Team members provided information about the conservation requirements of western ringtail possum sites in the Capes parks, Tuart Forest National Park and Lane Poole Reserve management planning processes. There was also a regular operational input into the preparation of a regional prescribed burn program to minimise the impact on the western ringtail possums and provide high quality habitat.

A significant improvement into the teams' understanding of western ringtail possum ecology and conservation requirements in the jarrah and eastern forest zones was gained by the completion of a PhD by Adrian Wayne.

Late in 2005 the Minister for the Environment announced that CALM would head a multi agency investigation into the adequacy of and management of the western ringtail possum habitat in the Busselton to Dunsborough area. This project has begun and will be reported on in the next annual report.



**By Jacqui Maguire, Lyndon Mutter, Gerald Kuchling, Andrew Burbidge, Glyn Gaikhorst and Rod Martyn for the Western Swamp Tortoise Recovery Team**

Implementing Western Swamp Tortoise Recovery Plan actions continues to be on schedule.

This year's highlights are listed below.

- Fifty four captive-bred tortoises were released into reserves in 2005 – 32 juveniles into Mogumber Nature Reserve, nine into Twin Swamps Nature Reserve and 13 hatchlings at Ellen Brook Nature Reserve.
- Captive-bred tortoises have been released at Mogumber Nature Reserve since 2000 to establish a third wild population. A 2002 fire had a significant impact on population but tortoises have continued to be released at the reserve each year. Because of the short time span of the release program it is not known how well the tortoises are established.
- Midland Brick is transferring 5.97 hectares of its land containing existing western swamp tortoise habitat into the Ellen Brook Nature Reserve. This is one of its commitments for the environmental management of a clay mining project (not located near the western swamp tortoise nature reserves). The transfer will be completed in mid-2006 and the area will be fenced with a fox proof fence about the same time.
- Perth Zoo now has 196 tortoises – 21 breeding males, 23 breeding females and 151 other tortoises including hatchlings, juveniles, sub-adults and non-breeding adults. Seventy-one hatchlings were obtained in 2005 from eggs laid in 2004.
- The Friends of the Western Swamp Tortoise undertook a range of initiatives including the installation of artificial aestivating tunnels at Mogumber Nature Reserve, habitat rehabilitation and revegetation works at Twin Swamps and Ellen Brook



**Top** Juvenile western swamp tortoise. Photo – Courtesy of DEC Swan Coastal District

**Above** Ellen Brook Nature Reserve. Photo – Val English

Nature Reserves, educational activities, development of interpretational signage and materials, and promotion of the Recovery Program. The group has a representative on the recovery team.

- Negotiations with the Westralian Airports Corporation continued about investigating the suitability of wetland areas within a zone designated for conservation in the northern part of Perth Airport's land. This is considered suitable for the translocation of tortoises after an inspection by the recovery team's Chief Investigator. The investigation followed hydrological monitoring carried out in winter 2005 to assess the suitability for translocation of tortoises and to establish whether artificial hydrological maintenance was required.
- A second captive breeding facility was established at Adelaide Zoo. Once facilities are deemed suitable, two pairs of breeding age tortoises will be transferred from Perth Zoo to Adelaide.
- Rainfall in 2005 was above average. Compared with 2004 the swamps retained water for longer.
- In 2005 the possible translocation site at Moore River Nature Reserve was investigated and monitored to ascertain its suitability as a translocation site. Also considered was the feasibility (and environmental acceptability) of undertaking any habitat modification.







Lancelin Island skink (*Ctenotus lancelini*).  
Photo – Magnus Petersen

**By David Pearson for the Lancelin Island skink Recovery Team**

The Lancelin Island Skink Recovery Plan (Pearson and Jones 2000) identified nine actions to improve the conservation status of the species.

The main action was monitoring, which has been carried out during the last two years.

The original population on Lancelin Island and the translocated population on Favorite Island at Jurien Bay were monitored.

Eight grids of traps were established on Lancelin Island in similar areas to those used by a previous researcher. CALM staff and others conducted this trapping. A total of 26 *Ctenotus lancelini* were captured over a five day trapping period. It was the second most abundantly captured lizard (*Morethia obscura* 46 captures, *Ctenotus fallens* 19, *Egernia multiscutata* 9), and was captured on all the grids. This trip was assisted using funds from the Bankwest Landscape Visa Card.

The examination of the genetic and conservation status of *Ctenotus* taxa closely related to *C. lancelini* has not been pursued further. Earlier work by Dr Mark Adams of the South Australian Museum indicated that *C. lancelini* warranted distinct species status and was not a form or subspecies of the widespread *C. labillardieri*. A sister taxon to *C. lancelini* was found in the Meelup and Pinjarra area but there have been no recent efforts to survey this area for further specimens.

Captive breeding was continued, with the maintenance of at least 50 adult individuals. Captive breeding at Perth Zoo drew to a close in March 2004 and most of the captive stock were released onto Favorite Island, except for a small number kept at the zoo for public display.

Other actions that are ongoing include visitor and fire management on Lancelin Island, and liaison with the local community and shire about the management of Lancelin Island.



**By Kim Williams for the Geocrinia Recovery Team**

Changing land use and development issues in the Margaret River area are beginning to threaten the survival of some *G. alba* populations.

During the course of 2005 three *G. alba* populations were threatened by viticulture proposals and associated water storage (dams), drainage and chemical use issues. These generate considerable impact assessment and liaison work with both State and Commonwealth environmental agencies. Advice and input was also provided to the WA Water Corporation and the DOE regarding potential impacts of the proposed southern extension of the Yarragadee bore project situated not far from the Blackwood River and *G. vitellina* sites. Resolution of outcomes for all these developments is still in progress.

The recovery plan is being rewritten and updated and should be completed by late June 2006. Meetings were held

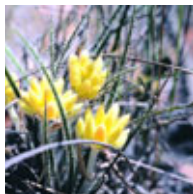
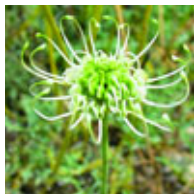
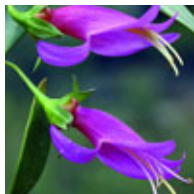


**Above** Spearwood Creek frog (*Geocrinia vitellina*).

**Below left** *Geocrinia alba* (male).  
Photos – G.Wardell-Johnson

with individual landholders who had frogs on their properties to update them on the recovery progress and determine any development intentions. A major focus in the plan will be to improve our understanding and monitoring effort of local hydrological regimes supporting frog populations and the trialling of 'genetic augmentation' techniques to inject some hybrid vigour into the smaller sized populations that are in decline.

A further translocation of *G. vitellina* to the Adelaide Creek area was undertaken following the success of the previous year's trial translocation. Despite some success the number of *G. alba* populations continues to decline each year. A further three monitoring sites were confirmed as extinct in 2005, giving a total of 22 extinctions since 1994.



**From far left** Volunteer collecting seed of the Critically Endangered *Lambertia fairallii* on the edge of a dieback front in the Stirling Range. Photo – Sarah Barrett; Fitzgerald eremophila (*Eremophila denticulata* subsp. *trisulcata*); *Grevillea scapigera*. Photos – Andrew Brown; Boscabel conostylis (*Conostylis setigera* subsp. *dasys*). Photo – Stephen Hopper.



**Department of Environment and Conservation**

The Department of Conservation and Land Management merged with the Department of Environment, forming the new Department of Environment and Conservation (DEC) on 1 July 2006.

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