

**Scientific Officer's  
Report:**

Submission to Review  
of the Reserve  
Classification System

Threatened flora of the  
Willunga Basin

**Conservation Biology  
Grant Report:**

Ecotourism as a means  
of encouraging  
ecological recovery and  
conservation in the  
Flinders Ranges, South  
Australia

NCSSA 2005 Biological  
Survey of Mt Bold  
Reservoir Reserve

NCSSA major concerns include

- Native vegetation, threatened species and habitats
- Protecting all forms of life (biodiversity) on land and in the oceans
- Park dedication, management and legislation
- Education about biodiversity to all sections of the community
- Cooperation with other conservation groups

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## Around NCSSA

### Departures

Our Scientific Officer Nicole Lewis has left us to take up a job with SA Water. However she will continue to assist us with *Xanthopus* and Members Activities. She is taking up chairing the CCSA's Native Vegetation Action Group. We thank her for all of her work for us in the Scientific Officer role.

Rick Davies has resigned from the Committee as he has headed north to Alice Springs to undertake a post-doctoral research project.

### General Meetings of the Society

The two-monthly meetings are going well ~ David Paton gave a very thought-provoking presentation on the state of the Coorong at the May meeting with an excellent roll-out.

At the July meeting we will have Aaron Machado talking about *Project Dolphin Safe* and *SA Seabird Rescue*. He may be bringing a special guest of the feathered variety (Denise the cormorant). More information on the programs can be obtained through the website [www.projectdolphinsafe.com](http://www.projectdolphinsafe.com)

### Bushland Condition Monitoring Manual

A *Bushland Condition Monitoring Manual* for vegetation communities for coastal vegetation of the Southern Mount Lofty Ranges has been completed and printed.

Training workshops were held at various coastal locations during April & May.

If you are interested in learning to use the Monitoring Manual contact Janet Pedler or Sue Graham at our office on 8232 7650 or email [training@ncssa.asn.au](mailto:training@ncssa.asn.au)

### NEW MLR Eastern Flanks Grassy Ecosystems Officer

The Society has received funding from both the Murray Darling Basin and the Adelaide and Mount Lofty Ranges Natural Resource Management Boards to continue the Eastern Flanks Grassy Ecosystems Project.

The focus of the project is the Monarto - Rockleigh - Palmer area with sites extending North to Springton, West to Brukunga, East to the flats of the River Murray and South to Langhorne Creek.

Bill New has come on board as the Grassy Ecosystem Extension Officer and will work in this role to promote the recognition, protection and management of grassy ecosystems in the Eastern Flanks region of the Mount Lofty Ranges.

Grassy ecosystems in the Eastern Mount Lofty Ranges are under threat and are extremely vulnerable to degrading influences through inappropriate management. However this region offers huge scope to promote grassy ecosystem recognition, protection and management.

## NCSSA people

### Management Committee

President Helen Vonow  
Vice-President Misch Benito  
Secretary Katie Fels  
Assistant Secretary Peter Tucker  
Treasurer Richard Winkler

### General committee

Spencer Burgstad, Michelle Denny, Allan McIlwee, Caroline Wilson, David Moyle (co-opted)

### Staff

Scientific Officer Vacant  
Administrative Manager Elizabeth Lonie  
Biodiversity Extension Manager Tim Milne  
Temperate Woodland Campaigner Penny Paton  
Mokota Project Officer Meg Robertson  
Eastern Flanks Grassy Ecosystems Officer Bill New  
Threatened Plant Action Group Coordinator Tim Jury  
Biodiversity Extension Officer Sue Graham  
Bushland Condition Monitoring Project Officer Sonia Croft  
Bushland Condition Monitoring Manual Trainer Janet Pedler

Grassy ecosystems support a large diversity of herbaceous plants such as lilies and orchids, including rare and threatened species of flora and fauna.

Grassy ecosystems provide land management benefits of soil and water quality protection and offer productive, low input pastures with appropriate time managed grazing.

Bill can be contacted at the Mt Lofty Ranges Catchment Centre, at Mt Barker on 8391 7500 or by email: [bill.new@ncssa.asn.au](mailto:bill.new@ncssa.asn.au)

#### Threatened Plant Action Group

TPAG has had several working bees in recent months, including two in Belair National Park to protect *Pterostylis cucullata*. For information on forthcoming working days contact Tim Jury on 8232 4088 OR check out the NCSSA website for details.

#### Mt Lofty Ranges Bird Survey

Tina Bentz coordinated last years survey and has entering all of the collected data from the 492 surveys. These consisted of 164 sites surveyed three times from

September 2005 to the end of January 2006. Tina also worked with Brian Knill and Max Possingham to update the database and and validate survey data from previous years. We are currently seeking funding to continue this project later this year.

#### New NCSSA Website

Our website is now in a new, updated format ~ but with the same address as before: <http://www.ncssa.asn.au/>

### NATURE CONSERVATION SOCIETY - SCIENTIFIC OFFICER

We are recruiting for a Scientific Officer. Position duties include conducting research into current nature conservation issues, preparation of submissions, lobbying of relevant agencies, media work, public liaison and project development.

#### Requirements;

- degree in biology, ecology, natural resource management or equivalent experience
- understanding of principles of ecology and nature conservation/biodiversity conservation
- understanding of relevant government agencies, programs and funding opportunities
- high level organisational and time management skills
- initiative and self-motivation

The position is ongoing and being offered as 0.6 FTE (22.5 hours per week) with continuation subject to the successful completion of a 6 month probationary period, satisfactory annual review of performance and available funding.

A salary commensurate with skills and experience will be negotiated in the range \$40626 - \$49433 pa, adjusted to hours worked.

Further information and job specifications can be obtained from our website [www.ncssa.asn.au](http://www.ncssa.asn.au).

Applications, addressing the Job and Person specifications, should be forwarded by email [ncssa@ncssa.asn.au](mailto:ncssa@ncssa.asn.au) or

### Death and Taxes

the only future certainties someone once said.

But there is a way of keeping your hard-earned cash out of the hands of that Tax Mob  
... and reduce your taxable income as well. **Donate it to NCSSA!**

Donations to the NCSSA are fully tax-deductible and will contribute to the ongoing work of the Society.

You've still got plenty of time to work out how much you can give to bring you into a lower tax bracket!

### XANTHOPUS

The views presented in this newsletter are not necessarily those of the NCSSA

**Copy deadline** for the Winter edition is **1st August 2006**.

Contributions in a variety of formats will be considered, but electronic submissions are preferred.

Editorial Team for this issue: Misch Benito, Mel Kovac, Nicole Lewis and Helen Vonow.

get a grip

## HANDS ON ACTIVITIES FOR MEMBERS

### Volunteers Needed for Wombat surveys

Elisa Sparrow is a PhD student at the University of Adelaide (one of our Conservation Biology Grant recipients) and her project involves catching common and southern hairy-nosed wombats in SA and occasionally Vic.

She has an absolute multitude of field work to do in the next couple of years and is always looking for (and needing) more volunteers.

There are two different types of trips 1. catching wombats at - Swan Reach (Murraylands) and Kulpara (Yorke Peninsula) AND 2. setting up hair tapes over wombat burrows and check pit-fall traps (for other small mammals) in Southeast of SA - Salt Creek and Kingston area.

If you are interested or would like further information contact Elisa Sparrow email: [elisa.sparrow@adelaide.edu.au](mailto:elisa.sparrow@adelaide.edu.au) or phone: (08)8303 3997 (w)

## Coming Up:

### Bird Identification Workshop (MLR Grassy Woodland Network)

**Happy Valley Reservoir on Wednesday 14th June, 9.30am to 3pm.**

Workshop will be cancelled if there is heavy rain the day before or the day of the workshop, with a back-up date of July 5th. Numbers are limited so contact Penny Paton soon if you are interested ~ email on [paton@chariot.net.au](mailto:paton@chariot.net.au) OR phone 8344 8891.

### Activities of the Threatened Plant Action Group (TPAG)

Come and be involved in some **hands~on** action to help threatened plants and vegetation communities recover with the Threatened Plant Action Group. Training and some tools are provided on the day. Everyone Welcome. For information on upcoming events please contact Tim Jury by phone 08 8232 4088 or email [tpag@ncssa.asn.au](mailto:tpag@ncssa.asn.au)

### Biology Society (BSSA) meeting August 10th

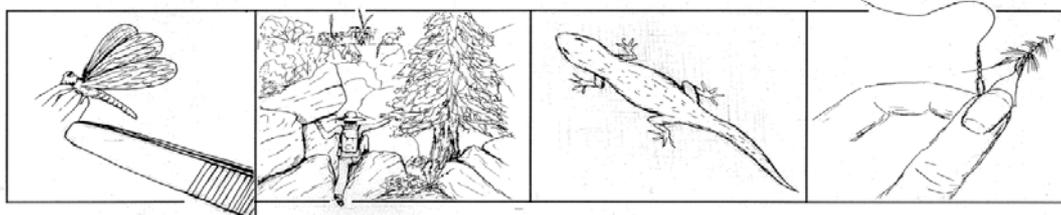
Dr Rob Morrison (OAM; Flinders University; Royal Zoological Society) will speak on "Extinction as a Fashion Statement". For further details contact Tina Bentz via email at [tina.bentz@adelaide.edu.au](mailto:tina.bentz@adelaide.edu.au)

### Mutton Cove in August (Date to be announced)

Aaron Machado from the *Project Dolphin Safe* and *SA Seabird Rescue* will speak at our general meeting on July 6th 2006. You can join Aaron at Mutton Cove near St Kilda for a mangrove walk, bird watching and other interesting activities. If you are interested in participating in this activity, please register your interest with the NCSSA office on (08) 8223 6301.

### Beachcombing in October

Marine Biologists Caroline Wilson and Katie Fels would enjoy your company when they conduct a beachcombers walk along an Adelaide beach in October. To register your interest, contact the office on (08) 8223 6301. More details will be in the next issue of *Xanthopus*.



## Why you need a horse pick...

MLR Grassy Woodland Network continues in 2006....

Thanks to all who have supported the Network over the last year and a bit. I look forward to working with you again in 2006. We have a bird identification workshop to look forward to in June and another newsletter shortly after that.

With winter approaching and wet weather upon us already, it's time to get out the Pc (*Phytophthora cinnamomi*) kit so that we who love the bush are not guilty of spreading this dangerous fungus. To make yourself a cheap but effective kit you will need methylated spirits, a stout scrubbing brush and a spray bottle and, if you get a spray bottle with the same sized lid as the meths, there is no need to transfer meths – just screw the spray top onto the meths bottle. Thanks to Ann Prescott for the suggestion of adding a horse pick to the kit – if you have boots like mine with deep tread, the pick can be used to dig out bits of stick and dirt that are hard to remove with the brush. Ann suggests using the pick (available at horse supply stores) to get rid of wet mud from tread at the end of the day so you don't carry Pc away with you.

On reading the Newsletter of the *Gippsland Plains Conservation Management Network* (CMN), I was reminded that all grassy woodlands wherever they are in temperate Australia suffer from very similar threats. The CMN Ranger had established 30 fenced plots to test the effects of grazing by rabbits, hares, kangaroos and cattle on the shrub layer in Red Gum woodland. The author pointed out that in one remnant in Gippsland there was one sole surviving Red Bottlebrush, whereas usually in Red Gum there are clumps of this plant. She wondered why this one plant which was flowering and producing seed and was fenced from stock was not regenerating. Similar questions have occurred to me in relation to silver banksia *B. marginata* in woodlands in the Mt Crawford area that are not grazed by stock – for several years now I have observed seedlings in winter that 'disappear' within a few months. And on looking at the habitat, there are quite a few large trees of banksia but no young plants at all. So without intervention, there will come a time when these woodlands will be devoid of banksias and a very important component of the habitat will be lost.



*Banksia marginata*. Photo: Paton collection

Several experiments on DEH and Forestry SA land have demonstrated that fencing from kangaroos and, in one case, watering over summer, have allowed banksia seedlings to survive. This shows that we need to look more closely at our remnants so that we can start to see these more subtle changes, examine the reasons for them and then devise methods to counteract them. Weed control may not be enough to ensure that bushland remnants continue to function in the way they were intended. Using the banksia example, many bird species, particularly honeyeaters, depend on this summer and autumn flowering banksia to provide food resources at this time of the year. And there would be other animals that are reliant on this species too as well as plants that would be affected by its loss from the system. By becoming more observant when you are in the bush, and it's easy if you know the area well (as most bushcarers do, especially from ones hands and knees!), you will start to see these patterns emerging and be better placed to tackle them.

If you'd like to join the Network, please phone Penny on 08 8344 8891 or email her on [paton@chariot.net.au](mailto:paton@chariot.net.au). There is no charge and you will receive 3 newsletters per year as well as workshop opportunities.

Penny Paton  
NCSSA Temperate Woodlands Campaigner



M O U N T L O F T Y R A N G E S  
G R A S S Y W O O D L A N D N E T W O R K

## Scientific Officer's Report: Submission to Review of the Reserve Classification System

### A Park by any other name ...

*In late 2005, the South Australian Department for Environment and Heritage made good the Labor Government's election promise of 2003 and put out a Discussion Paper for public comment: a Review of the reserve classification system. This article is a précis of the main points of the submission made by your Society.*

The NCSSA supports the proposed Framework in principle, and particularly appreciates the Department's attempts to increase clarity of what forms and level of exploitative access applies to public reserves under the *National Parks and Wildlife Act*. It is noted however that the Review is restricted to considerations of whether mining access is allowed, or not.

In the view of the NCSSA, this is a regrettable omission in the terms of the review – a lost opportunity, if you will – as other forms of access, for example particular types of recreational use, also have serious consequences for reserves in categories where maintaining ecological integrity and conservation is the key purpose for the reserve's designation (i.e. those classified as World Conservation Union (IUCN) Categories Ia-III).

The NCSSA supports:

- the increased protection for several specific Recreation Parks where their natural values and current uses are such that it is appropriate for them to be re-classified as Conservation Parks, and
- the attempt to align, to a limited extent, South Australia's reserve system categories to those of the IUCN Protected Area Management categories. It is acknowledged that given this element of the review is currently a retrospective exercise, complete consistency with IUCN categories will be problematic.

Support for the Framework in principle is accompanied by several caveats, key points of concern being as follows:

- Iconic National Parks being 'down-graded', in the public mind, to the new category of 'Nature Parks' due to continued mining access;
- The category of Conservation Park being 'polluted' by having to absorb the category of 'Recreation Parks' (to be revoked);
- The failure of the Framework to distinguish between IUCN Categories Ia and III Conservation Parks;
- The limited scope of the Review and the Review's failure to address forms of recreational use/access where these are incompatible or inconsistent with conservation Objectives, and

- The Review's failure to address and provide clear guidance on forms of extraction other than mining within reserves, for example the recreational or commercial shooting and harvesting of game species.

The NCSSA's submission on the Discussion Paper also included specific comments on selected reserve reclassifications proposed as part of the review:

- Angove, Cobbler Creek, Ferguson and Shepherds Hill: We support the designation of parts of Angove, Cobbler Creek, Ferguson and Shepherds Hill as Conservation Parks. The designation of these reserves to a high-level conservation category is considered problematic as the bulk of these areas would require fairly intensive remedial works to bring them into line with the characteristics of conservation parks (eg due to severe degradation, heavy weed infestations).
- Anstey Hill: Likewise, areas of Anstey Hill are to remain open for access to existing quarries for historic building restoration purposes. These areas should be defined and 'split' off from the 'Conservation Park' areas (an option allowed for under the proposed Framework). Additionally, areas of this reserve are accessible for downhill and off-track mountain bike riding and racing. As this is considered to be a recreational use that is inimical to conservation objectives, these areas too should be defined and downgraded in conservation status.
- Deep Creek: Support the 'elevation' of Deep Creek Conservation Park to National Park, however caveats around appropriate and compatible recreational uses, eg such as those described above, within this reserve still apply.
- Lake Frome, Nullarbor, Simpson Desert and Yellabinna: Support that via their being listed as 'Nature Parks', future grazing access in four Regional Reserves (Lake Frome, Nullarbor, Simpson Desert and Yellabinna) may be disallowed. This of course assumes that given both 'Nature Parks' and 'Regional Reserves' under the review are said to be equivalent with IUCN Category VI, grazing will not at some later point be reinstated as an acceptable use within 'Nature Parks'.
- Lower Glenelg River, Penambol and Seal Bay: We support Lower Glenelg River, Penambol and Seal Bay being reproclaimed as Conservation Parks once existing mining rights lapse. This is assuming the areas in question are either minimally degraded or sufficiently rehabilitated (at the expense of mine operators) to resume as Conservation Parks.

- **O'Halloran Hill:** O'Halloran Hill is not considered to be in a condition acceptable for designation as a Conservation Park. It could however be included as a IUCN Category IV if the name of this reserve category (proposed to be 'Game Reserve') was changed to more appropriately reflect the objectives of the IUCN Definition. Also, given that areas of this reserve are to remain open for access to existing quarries for historic building restoration purposes, it may be more appropriately designated 'Nature Park' or 'Resource Park', or these areas should be 'split' off (extraction is extraction, no matter what the purpose, as seen currently in Seal Bay Conservation Park).
- **Para Wirra and Sturt Gorge:** Support the upgrading of Sturt Gorge and Para Wirra particularly reflecting the high conservation values of these reserves. Sturt Gorge is only suitable for walking as far as recreation goes, and unlike Para Wirra does not have tennis courts etc. Walking is generally considered an acceptable form of public access and recreation in both Conservation and National Parks.
- **Onkaparinga River:** Support the upgraded protection to parts of Onkaparinga River, however caveats around appropriate and compatible recreational uses within this reserve will apply.

Instead of merely accepting retention of the *status quo* in terms of current mining access, the NCSSA calls on the Government to seek to have mining access revoked when re-proclaiming the following parks: Gawler Ranges and Mount Remarkable, Dutchman's Stern, Gum Lagoon, Mokota, Mount Billy, Mount Brown, Pureba, Talisker, Tallaringa, Torrens Island, Yellabinna, and Yumbarra, as these reserves are considered to contain conservation &/or cultural values of national and international significance and should therefore be protected from mining access.

**Nicole Lewis, Scientific Officer**  
**scientific@ncssa.asn.au**

***No Species Loss - A Biodiversity Strategy for South Australia 2006-2016*** (Draft for Public Review)  
 - a briefing for non-government organisations, 26 June at 2pm

*No Species Loss - A Biodiversity Strategy for South Australia 2006-2016* is an overarching, State-wide strategy that is intended to sit alongside South Australia's *Strategic Plan*, the *State Natural Resources Management Plan* and the Metro, Outer Metro and Regional Planning Strategies. It is expected to be delivered on by State Government, Regional Natural Resources Management Boards and Groups and the community generally.

Interestingly, the document concedes that, conceivably, "legislation with stronger provision for protecting and conserving biodiversity would assist biodiversity conservation in resource and land use planning and decision making, and integrate biodiversity considerations into other policies and legislation."

This is something that the NCSSA, in conjunction with The Conservation Council of South Australia (CCSA) and other CCSA member groups has been working towards for some time. Natural Resources Management in the State is legislated for, as is Development Planning at the State and Local Government levels. While aspiring to similarly binding legislation aimed at protecting the State's remaining biological diversity is applauded, the NCSSA might simultaneously contend that, in an age of rapid climate change, extinction debt, burgeoning development and the push to grow our population and further exploit the State's natural resources generally, this is already long overdue. While biodiversity conservation remains policy rather than law, it will retain its status as 'poor cousin' to social, economic and political mandates.

CCSA will be hosting a presentation on *No Species Loss - A Biodiversity Strategy for South Australia 2006-2016* (Draft for Public Review) on Monday 26 June from 2 - 3.30pm. The meeting will be held at the Conservation Centre and the presenter will be Graeme Moss from the Department for Environment and Heritage. There will be time for questions and discussion in this 1.5 hour timeframe. The briefing is specifically for non-government organisations.

If you wish to attend, please RVSP by phoning CCSA's front desk on 8223 5155 by **Wednesday 21 June**.

Copies of the document are available from the Conservation Centre, Department for Environment and Heritage offices or electronically from [www.environment.sa.gov.au/biodiversity/bio\\_strategy.html](http://www.environment.sa.gov.au/biodiversity/bio_strategy.html)

Submissions can be sent to [nospeciesloss@saugov.sa.gov.au](mailto:nospeciesloss@saugov.sa.gov.au) or Attention: Graeme Moss, Department for Environment and Heritage, GPO Box 1047 Adelaide SA 5001, or made online ([www.environment.sa.gov.au/Survey/no\\_species\\_loss.html](http://www.environment.sa.gov.au/Survey/no_species_loss.html)).

**Reminder: Formal submissions on this draft Strategy are due on 2 June 2006**

# Threatened flora of the Willunga Basin:

## Introduction

Native biota and ecosystems of peri-urban Adelaide are under increasing threat from habitat fragmentation, degrading processes, inadequate management, and insipid legislation. The threatened flora of the Willunga Basin south of Adelaide is symptomatic of the broader biodiversity decline occurring throughout the greater metropolitan area and is discussed below as an example.

The Willunga Basin is a readily definable district in the Adelaide and Mount Lofty Ranges bioregion. It spans the coastal plain, alluvial outwashes, and dune fields south from the Onkaparinga River to the Sellicks Hill Range including the foothills and ranges from Blewitt Springs to Willunga (see Twidale 1988). The basin has distinctive peri-urban land use patterns, being well known for its orchards and horticulture although in recent times has become increasingly dominated by vineyards and residential subdivisions.

The proportion of native vegetation remnant in the basin is chronically low, with just 1447 hectares remaining (5.5%) in the Hundred of Willunga. Only 39.5% of this is protected (DEH 2001). The majority of surviving patches are small, degraded, & mostly confined to the coastline, ranges, watercourses, and roadsides. The Onkaparinga River Reserve, Aldinga

Scrub Conservation Park, and small patches along the Sellicks Hill Range contain the last substantial remnant natural ecosystems and form core biodiversity areas for the district.

Aside from some patch-based activities by community groups and landholders there are no active threatened species recovery programs at a sub-regional level within the basin. A preliminary and provisional list is provided here to prompt discussion and development of a more comprehensive inventory.

Threatening processes are summarised and several required steps for recovering threatened or declining flora are recommended. 'Threatened flora' refers here to both individual plant species and plant communities considered to have significantly declined and/or that are at risk of local extinction in the Willunga Basin over the next 50 years.

## Threatened plant species

A preliminary list of plant species considered to be particularly threatened in the Willunga Basin is provided in Table 1. While these species compiled here are considered threatened at varying national, state or regional scales their listing here is based on their potential for local extinction and loss from the basin if existing threats remain unaddressed.

#	Species		Conservation status		
	Common name	Botanical name	AUS	SA	SL
1	Plains beard-orchid	<i>Calochilus cupreus</i>		R	E
2	Coast helmet orchid	<i>Corybas despectans</i>			R
3	Aldinga dampiera	<i>Dampiera lanceolata var. intermedia</i>	E	V	V
4	Short-leaf donkey orchid	<i>Diuris brevifolia</i>		R	R
5	Lance beard-heath	<i>Leucopogon lanceolatus</i>		U	R
6	Rock logania	<i>Logania saxatillis</i>		R	R
7	Nardoo	<i>Marsilea drummondii</i>			E
8	Silver daisy bush	<i>Olearia pannosa ssp. pannosa</i>	V	V	V
9	Sticky daisy bush	<i>Olearia passerinoides ssp. glutescens</i>		R	V
10	Pale leek-orchid	<i>Prasophyllum pallidum</i>	V	V	V
11	Golden Spray	<i>Viminaria juncea</i>		R	R
12	Pink zieria	<i>Zieria veronicea</i>		R	R

E: Endangered, V: Vulnerable, R: Rare (see Turner 2001 for conservation status descriptions)

**Table 1: Provisional list of threatened plant species for the Willunga Basin**

## A parable for peri-urban biodiversity decline

These plant species are either rare or have significantly declined throughout the district. Populations of *Aldinga dampiera* are small, isolated and almost surrounded by residential gardens. Plains beard orchid is down to just a handful of individuals at Aldinga Scrub. Recent searches in Manning Reserve have failed to relocate any short-leaf donkey orchids or golden spray. Pink zieria is not particularly abundant anywhere in the state (Kraehenbuehl 1966), and a small population of less than 50 plants is all that is left in one habitat fragment at Douglas Scrub. While more abundant in other parts of the region some species such as Lance beard-heath hang on as a few scattered individuals along degraded watercourses and Sticky daisy-bush remains only as a tiny occurrence at Aldinga. Other species listed here may be under less immediate threat but certainly have been reduced in distribution and abundance by habitat destruction. The majority of extant populations are small, isolated or occur in degraded habitat and will require active monitoring and management to persist into the future.



The *Aldinga dampiera* *Dampiera lanceolata* var. *intermedia* Photo: Tim Jury

### Threatened plant communities

As remnancy is chronically low in the basin all remaining native vegetation is of value and is threatened to some degree. The following plant communities have been particularly reduced in area and condition.

#### Box grassy woodlands (Grey box, Mallee box, Peppermint box)

Small remnants of mallee box, grey box and peppermint box woodlands still remain in the basin. Before European settlement box grassy woodlands occupied the more fertile, heavier textured soils along the eastern Adelaide plains and foothills (Kraehenbuehl 1996). These woodlands have been preferentially cleared for rain-fed agriculture throughout South Australia and with only 5% of remaining examples relatively unmodified, are among the states most threatened ecosystems (Davies 1999, Turner 2001).

The Willunga basin occurrences form the southern extent of distribution for these communities in the Lofty Block, with several remnants remaining from Blewitt Springs through to Willunga and Sellicks Hill.

The majority of remnants are on private land including: Dyson's scrub along Commercial Road; along Maslins Beach Road off South Road; Bell's scrub off South Road; and east of the Aldinga aerodrome at the corner of Colville and Ryan Roads.

#### Riparian and wetland communities (Red gum, Manna gum, Silky tea tree)

The few small remaining wetlands in the basin include small areas of Red gum/lignum along the north western end of Aldinga Scrub, the 'Washpool', and a small patch of Silky tea-tree shrubland along California Road, the last remaining lowland type of this community on the Adelaide Plains (Shields *per com.* 2004).

#### Other woodland communities (Pink gum, Drooping sheoak)

Other woodland communities, such as Pink gum woodlands in the Aldinga scrub, are also thought to be threatened by a lack of seasonal flooding, as well as by weed invasion, poor tree health, and possibly by a high parasite load from mistletoes (Ward 2005).

Drooping sheoak woodlands on stabilised coastal dunes in the district are also poorly conserved and under threat from weed invasion and mining.

Box grassy woodlands, Pink gum woodlands, and Silky tea-tree shrublands are listed as threatened ecosystems for South Australia (DEH 2003), and are conservation priorities for the Adelaide metropolitan region (Turner 2001). A major concern is that despite their recognition state listings as yet confer no legal protection and much of the metropolitan area is exempt from clearance controls under the *Native Vegetation Act*, as is land subject to mining tenements. Thus current prospects for long-term protection appear rather bleak.

### Threatening processes

The Willunga basin has steadily become more urbanised as Adelaide continues to sprawl south. Parts of the basin, such as Aldinga Beach, have been controversially designated as metropolitan 'growth areas' and are currently being targeted for residential development (see *Xanthopus* 2003). This development poses numerous threats for the adjoining Aldinga Scrub Conservation Park, including intensified recreation pressure, increased incursion by domestic predators and escaping garden plants. In other parts of the basin residential areas continue to encroach on habitat remnants and water catchment areas.

## Threatened flora of the Willunga Basin... cont.

The increasing residential population is escalating the demand for public infrastructure such as roads and other facilities, resulting in further clearance of remnant vegetation (i.e. along roadsides). For example, about one third of a two hectare patch of Grey box woodland, to the north at the corner of Beach Road and the Southern Express-way, was recently destroyed when a commercial warehouse was constructed there.

Most native vegetation remnants are located on private land and have no secure protection from future clearance. Patches of box woodlands behind the Victory Hotel at Sellicks Hill and along Maslin Beach Road remain under potential threat of vegetation clearance for mining operations.

Resurgence in commercial olive plantations is also increasing pressure on remnants. Failure to buffer Aldinga and Douglas scrubs from this incompatible land use has resulted in the imposition of large sources of weed propagules right next to these important habitat remnants.

Expanding vineyard development continues to increase groundwater use, reduce downstream flows, and modify catchment hydrology. Wetlands lower in the catchment now receive far less water recharge and their resilience and viability as functional ecosystems is becoming increasingly tenuous.

Weed invasion and feral herbivore threats are attendant on most patches of threatened flora habitat, particularly for smaller remnants or degraded transportation corridors subject to recurrent disturbance. Ongoing habitat degradation through invasion by serious environmental weeds continues unchecked for many remnants as does grazing pressure in declining woodland fragments on private property.

The degree to which threatened flora will persist in this increasingly hostile landscape with escalating threats is dependent on active management intervention. On-ground management and revegetation programs need to consider more thoroughly the existing type and configuration of biodiversity assets that remain in the basin. Management efforts should focus on rehabilitating surviving remnants rather than opportunistic tree planting motivated more by aesthetic factors than habitat restoration objectives.

Actions required to abate threatening processes and to restore and expand habitat remnants include: minimum-disturbance pest management; patch buffering and enlargement through strategic revegetation; and reconnection where possible with

nearby fragments. Regeneration of understorey diversity through exclusion of livestock grazing and control of competing weed growth will be essential for recovering threatened woodland communities on private land. Environmental and landform gradients need to be carefully considered to reflect local variation for reinstated native vegetation (see Turner 2003).



Mallee box (*Eucalyptus porosa*)-Peppermint box (*E. odorata*) woodland on Sellicks Range Photo: Tim Jury

### Steps toward recovery

Steps required for the recovery of threatened species and communities include the following.

- Develop effective working partnerships between landholders, community groups & agencies.
- Identify & prioritise an agreed list of threatened flora in the basin (preferably as part of a broader inventory of biodiversity assets).
- Assess the status of remaining populations and condition of habitats.
- Determine recovery actions, implement & monitor.
- Protect & rehabilitate surviving remnants of threatened plant communities.
- Work with public & private landholders to recover threatened flora.
- Integrate with existing community efforts and revegetation programs wherever possible.
- Target funding investment more strategically at threatened biodiversity.
- Strengthen land use planning and initiate hard zoning to protect biodiversity assets.

### Facing the future

Like other state capitals, Adelaide is exerting an increasingly ominous influence on the surrounding coastline and hinterland. This growing footprint

means that far stronger planning controls and mitigative management are urgently required to limit current and future impacts. Ecological managers, planners and conservationists need to more keenly anticipate the high future likelihood of native vegetation destruction in peri-urban areas and take decisive action to prevent it from happening. We cannot merely rely on current legislation, unsympathetic urban planning, market forces, or the narrow economic focus of incumbent governments to address the problem.

We also need to adjust our views on nature reserves. The small size and degraded condition of surviving remnants means that few would be considered for reserve acquisition. However their value as reference communities and seed sources is incalculable. We need a new reserve type such as a 'greenbank' for the dedication of smaller land parcels to retain pre-European vegetation and biotic components, guaranteeing resources that can be drawn upon in the future for reconstructing natural ecosystems. There remains an urgent need here for a much stronger role by governments in incorporating biodiversity conservation into green space planning with tenure arrangements that ensure protection in perpetuity.

Overarching biodiversity conservation strategies need to give greater consideration to the human and financial resources required to effect successful implementation. Strengthening current vegetation clearance controls is also urgently needed to protect threatened flora and ecosystems in South Australia. Threatened ecosystem remnants are generally small and in poor condition, factors often misused to justify their clearance. Clearance exemptions can hasten the destruction of threatened ecosystems and clearly obstruct their recovery. If biodiversity conservation planning fails to address these issues it risks deteriorating into a largely aspirational or academic exercise.

In the Willunga basin community goodwill in undertaking the hard work required to repair remnant natural ecosystems is being somewhat undermined by a lack of sympathetic urban planning and adequate, long-term protection for remnant vegetation. Such impediments can erode public confidence in conservation programs and induce frustration or burn-out for hard working groups and individuals ~ hindering the implementation of recovery actions.

There is an inescapable link between increasing landscape modification, ecosystem stress and species extinctions. There is little point lamenting biodiversity and species loss if we are not prepared to undertake the necessary actions, at all levels, to halt and reverse the decline. Despite current efforts

biodiversity assets in Adelaide's peri-urban areas are continuing to dwindle. Everyone bears responsibility for their ongoing protection, from all levels of government to the private sector and general public.

We must act with far more urgency and determination to maintain native biota and ecosystems in peri-urban areas like the Willunga basin. If we ignore the precarious plight of threatened species and habitat remnants we effectively consign ourselves to a future with few conservation options. Aside from being imprudent, this would also mean consciously depriving future generations of restoration capacity. Considering the emphasis now on environmental education it's unlikely that inertia will be easily forgiven.

### Acknowledgements

This article summarises presentations given to *Willunga Trees for Life* and the *Friends of Aldinga Scrub* during 2006. Thanks to Carol Shields, Robert Bates, Joe Quarmby, Cathy Houston and the above groups for threatened flora information. Tim Milne and Helen Vonow provided useful editorial comments. TPAG is supported by NCSSA, SA DEH, Friends of Parks Inc and receives funding for program coordination through the Adelaide & Mount Lofty Ranges NRM Group.

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NCSSA CONSERVATION BIOLOGY  
GRANT REPORT:

## Ecotourism as a means of encouraging ecological recovery and conservation in the Flinders Ranges, South Australia

Ecotourism is more than just nature-based tourism; it is ecologically and economically sustainable tourism that involves education and interpretation of the natural and cultural environment (Ecotourism Australia 2005). Well-managed ecotourism can also benefit conservation (Preece & van Oosterzee 1995; Department of Conservation 2005). Some of Australia's most pressing conservation problems occur in pastoral regions, especially with vegetation clearance being traditionally regarded as a necessary precursor to successful pastoral development (Jennings *et al.* 1989). These outback regions are being increasingly promoted as tourist destinations, and consequently, the need for the tourism and conservation industries to work together has become widely acknowledged in recent years.

This research explores the relationships between pastoralism, ecotourism and conservation in the Flinders Ranges to examine the potential for landholders to enter the ecotourism industry. Visitors to the central and northern Flinders Ranges were surveyed, and local landholders and tourism operators were interviewed. Visitors (primarily surveyed at Wilpena, Parachilna and Blinman) completed one of two surveys – an Opinion Survey to examine the tourism market and expectations of tourists, or an Awareness Survey to evaluate their knowledge of the region and the level of interest in incorporating environmental interpretation into their holidays. The following describes a small portion of the findings.

### Visitor Characteristics

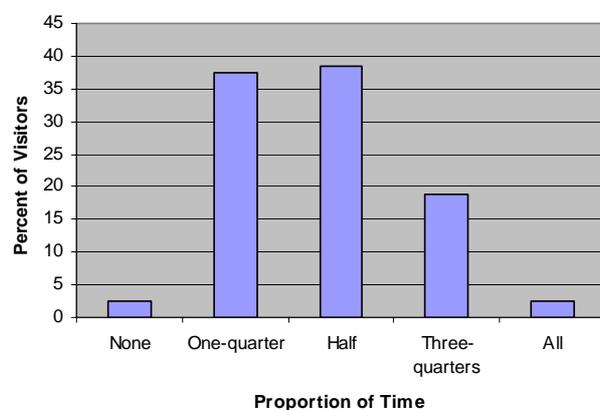
Around 50 % of the respondents were residents of South Australia, 20 % were from Victoria, 15 % were from other regions of Australia and 13 % were from overseas. Almost 60 % were repeat visitors. The most common reasons for visiting the Flinders Ranges were for camping, the landscape, nature and the outback. More than 20 % of respondents claimed to spend at least three-quarters of their holiday viewing plants and animals, and almost another 40 % at least half of their holiday (Figure 1).

### Visitor Opinions and Environmental Awareness

A park ranger was the most popular choice for a tour guide, and ecologists and local landholders were also favoured. The most important factor in choosing a tourism operator was location, followed by the activities offered and recommendations from other people. Less important were price and 'environmentally-friendliness'. However, more than half of the respondents said they would spend extra time finding an environmentally-friendly tourism operator if they were easily recognizable (e.g. a logo).

Overall, visitors claimed to have a high level of environmental care, with over half declaring they cared 'a lot' and a quarter caring 'moderately'. Most respondents claimed that they would like to do more to help the environment, but over half stated they did not have enough time, or found it too hard or expensive. Self-assessment questions regarding different ways to reduce impacts revealed that many tourists diverged from marked roads and tracks (>25 %), removed plant material from national parks (>15 %), did not read about reducing damage and did not dispose of litter correctly. Interestingly, those aged 25 years and under believed they cared more about the environment than other people, but this group actually had the lowest average level of care of all age groups. Additionally, those tourists who admitted to causing the most environmental impacts still claimed they cared more about protecting the environment than other people.

**Figure 1: Proportion of time spent specifically viewing plants and animals while holidaying in the Flinders Ranges**



Despite large interpretative signs at Wilpena Pound, it was primarily South Australians who had heard of the conservation program *Operation Bounceback*, and generally it was those who were 36 years old and over. Most South Australians had heard of it through the local media, and almost no interstate/overseas visitors had heard of it via the interpretive signs. The majority of respondents were aware the yellow-footed rock wallaby is endangered, goats are culled in the region and that overgrazing by domestic stock degrades native vegetation. A lower proportion of respondents were aware that the indigenous people of the Flinders Ranges are known as the Adnyamathanha people.

A small proportion of visitors (12-20 %) believed all

## NCSSA CONSERVATION BIOLOGY GRANT REPORT cont.

national parks are untouched by humans, kangaroos are locally endangered and Salvation Jane is not a weed. Age noticeably influenced the number of questions answered correctly, with people 35 years old and under answering fewer correct than those 36 years old and over. Over 80 % of respondents stated that they would like to learn more about the environment.

The survey results are contradictory, because visitors claim to be environmentally conscious but their actions often suggest otherwise. It appears that, for example, people want more environmental education or interpretive signs, but they do not read them, and that while they propose they want to leave minimal impacts, using an environmentally-friendly tourism operator is of low priority. Duffy (2002) agrees a common complaint among rangers is that tourists do not heed their environmental advice. It is clear visitors to the Flinders Ranges want to see and experience the local plants and animals, but this research suggests the market is for nature-based tourism rather than true ecotourism. Indeed there are a few operators who attract more environmentally conscious visitors than other operators, who describe very minor negative impacts from their guests, and firmly believe conservation efforts can be increased through ecotourism in the region. Overall however, visitors often seem to think that while they are on holiday, they can forget about the everyday problems they face at home as the very nature of being on a holiday means they can 'get away from it all' and act as they please. Operators, especially those with a passion for conservation rather than those diversifying purely for financial reasons, can contribute to local

conservation efforts, but education is needed to help change tourist attitudes if ecotourism is to achieve its philosophy.

Further analysis with landholder and operator interviews will help assess the feasibility of true ecotourism in the Flinders Ranges, with the aim to help improve both conservation efforts and visitor experiences. With the current trend in rural change towards greater multifunctionality, landholders need to diversify. If managed correctly, ecotourism could potentially help the local community achieve greater environmental and economic sustainability.

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## NCSSA Conservation Biology Grant

These grants aim to extend the excellent work undertaken by research students on aspects of the biodiversity of South Australia. Previous grants have contributed to research into diverse topics including studies of the ecology of single species and assemblages (eg. systematics and phylogeography of stone geckos; and guanophillic arthropod ecology and conservation in bat caves), interactions between ecosystem components (eg mistletoes in Pink Gum Woodlands; and the importance of hypogeal fungi in the diet of bettongs) and the effects of human interactions with biodiversity in South Australia (eg. ecotourism as a means of encouraging ecological recovery and conservation - see this issue of *Xanthopus*).

The 2006 Conservation Biology Grants were awarded at the May General meeting of our society. The standard of applications was very high and student membership for one year was awarded to all applicants.

### 2006 Conservation Biology Grant recipients:

Diane Colombelli-Negrel, Flinders University

*Video monitoring of nest predation events in the Superb Fairy-wren Malurus cyaneus*

Annette Scanlon, University of South Australia

*The diet and activity of Adelaide City's urban insectivorous bat populations and habitat management for conservation*

Jackie Watts, University of Adelaide

*Comparing biodiversity monitoring methodologies*

## NCSSA 2005 Biological Survey of Mt Bold Reservoir Reserve

Our Spring Survey in 2005 was a biological survey in Mount Bold Reservoir Reserve. We received funding for this project from SA Water and the Adelaide and Mount Lofty Ranges Natural Resources Management Board. This is a summary of the findings from the soon to be published report by survey co-ordinator Dr. Leanne Pound.

The Mount Bold Reservoir Reserve, consisting of 5544ha, is located within the southern Mount Lofty Ranges. It contains the largest reservoir in South Australia and is managed by SA Water. Catchment management is the primary focus and public access to the reserve is restricted. More than half of the reserve consists of remnant vegetation in moderate to excellent condition ~ as such it is considered to be a significant area of remnant vegetation within the southern Mount Lofty Ranges.

Sixteen survey sites were established in a variety of vegetation and habitat types, and conducted using the Biological Survey of South Australia methodology. All 16 sites were surveyed for vegetation and bird species. Only 13 sites were surveyed

for mammals, reptiles and invertebrates, due to inclement weather including hailstorms. Sites were selected within the survey area with the aim of representing the major landforms and plant associations, including both the dominant and the less common vegetation types. The aim was to select representatives of these vegetation types in their most undisturbed condition to best illustrate species diversity.

Several of the survey sites had Messmate Stringybark (*Eucalyptus obliqua*) as a dominant species within the overstorey. This species was present either as a sole dominant or with other species including Pink Gum (*Eucalyptus fasciculosa*) and Cup Gum (*Eucalyptus cosmophylla*). *Eucalyptus obliqua* dominant vegetation associations are the most common associations within the reserve and are considered to be reasonably conserved within South Australia (Neagle 1995).

- 355 plant species were recorded, of which 252 were native and 103 introduced. 34 species had a conservation rating at either the State or regional level including Coral Fern (*Gleichenia microphylla*), Ploughshare Wattle (*Acacia gunnii*), Candlebark Gum (*Eucalyptus dalrympleana* ssp. *dalrympleana*), Twisted Sun-orchid (*Thelymitra flexuosa*) and Spoon-leaf Spyridium (*Spyridium spathulatum*).
- 19 mammal species were recorded including 12 native and seven introduced species, through capture or direct observation. Species included: Bush Rat (*Rattus fuscipes*), Western Grey Kangaroo (*Macropus fuliginosus*), Common Brushtail Possum (*Trichosurus vulpecula*), Koala (*Phascolarctos cinereus*) and seven bat species were recorded with the Anabat bat detector. One species of national conservation significance, Southern Brown Bandicoot (*Isodon obesulus*), was caught at one site. This species is considered to be nationally endangered and also has a State conservation rating of vulnerable.
- 18 native reptile species and three native amphibian species were recorded during the survey either through capture, active searching or by sound. No reptiles or amphibians with a National or State conservation rating were recorded. Species included: Common Froglet (*Crinia signifera*), Brown Tree Frog

(*Litoria ewingii*), Common Scaly-foot (*Pygopus lepidopodus*) Lined Worm-lizard (*Aprasia striolata*), Tawny Dragon (*Ctenophorus decresii*), White's Skink (*Egernia whitii*), Marbled Gecko (*Christinus marmoratus*), Eastern Bearded Dragon (*Pogona barbata*), and Little Whip Snake (*Suta flagellum*).

- 75 bird species were recorded during the survey, of which 73 species were native and two were introduced. Four species recorded had a State conservation rating: rare Shining Bronzecuckoo (*Chrysococcyx lucidus*), Bassian Thrush (*Zoothera lunulata*), vulnerable Rare Yellow-tailed Black-cockatoo (*Calyptorhynchus*) and Crested Shrike-tit (*Falcunculus frontatus*). Eleven species recorded had a regional conservation rating and a further 12 species are considered to be declining in the Mount Lofty Ranges. During the survey the Elegant Parrot was observed at three survey sites with a pair observed feeding and entering a hollow of a dead eucalypt.
- 41 invertebrate species were collected during the survey. 39 were native species, one was an introduced species and another is considered likely to be introduced. No species of conservation significance were recorded.
- 26 species of macrofungi were recorded, all of which are native species. 15 of these species are mycorrhizal species and a further seven species are saprobic. No species of conservation significance were recorded.



Elegant Parrot (*Neophema elegans*). Photo by Jim Spiker

Mount Bold Reservoir Reserve contains at least three vegetation associations of conservation significance and areas of remnant vegetation in pristine condition, devoid of introduced plant species. It also contains areas of remnant vegetation that have been degraded through invasion by introduced plant species and several introduced fauna species. Weed invasion and feral animal presence are considered to be two of the major threats to the biodiversity within Mount Bold Reservoir Reserve. *Phytophthora* is also considered to be a major threat to the health of native vegetation.

To conserve and maintain the existing biodiversity it is recommended that:

- Further survey work is undertaken at various times of the year and in different locations, to acquire additional information on the biodiversity and threats present to aid management decisions.
- Monitoring to be undertaken to determine if there are any changes to both flora and fauna species over time.
- Continue management activities including revegetation work and preventing the spread of *Phytophthora* and weed species.
- Targeted feral animal control to continue with control efforts increased and additional methods used if necessary.
- Weed control targeting key weed species be implemented and continued over time.

A big thank-you to all those who participated in the survey ~ we could not have done it without you! Come hail or sunshine, your valiant efforts were greatly appreciated, and we would love to see you again at future surveys.

We will be printing and launching the report in the near future, and it will be available for purchase from the NCSSA office.

Neagle, N. (1995). *An update of the conservation status of the major plant associations of South Australia*. Department of Environment and Natural Resources South Australia, Adelaide, S.A.

# WALKS with NATURE

*Walks with Nature* is a program of free public nature walks held in Parks and other areas close to Adelaide. They are coordinated by the Nature Conservation Society of South Australia, and historically have entailed five walks held monthly through winter and spring. The walks programs is coordinated and run entirely by volunteers, and fuelled by your desire to get amongst and learn more about your environment.

*Walks with Nature* is undergoing some major changes this year. To satisfy insurance requirements, we will be introducing a pre-registration system accessible online (or mailed out to you upon request). This process will ensure we know about your requirements for the walk, and can thus tailor our selected path accordingly. An accurate idea of people attending will also mean group size is more easily regulated, and also the opportunity to organise a departure time prior to your arrival (that's right – no more waiting around for leaders or more walkers to arrive before you head off!). People that turn up on the day without pre-registering may still be able to be accommodated, but please be aware that this will create time delays and will mean that the process runs a little less smoothly. Most importantly, due to the time and effort required to get each walk up and running, NCSSA has made the regrettable decision to reduce our number of walks from 5 to 2 per year.



This year's Walks With Nature program will begin on Sunday September 10, in conjunction with the *Great Australian Bushwalk (GAB)*, and conclude on Sunday November 19. The GAB is a mass nation-wide celebration of walking in Australia's spectacular and treasured natural areas; a day for the whole community to get together to socialise, exercise and realise the importance of their natural environment. Last year's event down at Deep Creek Conservation Park was a great success so come along and join the rest of the nation in this mammoth walking event!

Locations and routes of both walks are yet to be finalised, so watch this space for exciting updates! As with previous years, a volunteer will be at the walk start to meet, greet and organise you between 10.00 am and 12:00pm on the day. The walks will lead off every 10-15 minutes and take around 2 to 3 hours. All walks will be advertised in the Sunday Mail the weekend before each event, and directions will be available through the NCSSA office and on the website ([www.ncssa.asn.au](http://www.ncssa.asn.au)).

For more information on the walks, contact Katie Fels (Walks Coordinator) on 0414 293 603 or via [katie.fels@earthtech.com.au](mailto:katie.fels@earthtech.com.au), or the NCSSA office on 8223 6301.

## We need you !

We are always looking for walk leaders to turn up on the day and help enthusiastic walkers to discover natural wonders along the way. If you know a little about plants, birds, insects, tracks, scats or any other aspect of natural history that you'd like to share with a captive audience, then this exciting opportunity is for you!

There are also many other ways in which you can help us. In addition to walk leaders, we require people to organise participants and leaders at the walk departure site, keep check of departing groups, and even assist walkers to purchase NCSSA paraphernalia (i.e. exciting publications, memberships etc.).

All positions are volunteer based but vitally important to the running of each walk. Please contact Katie (as above) as she will be happy to discuss the many roles and their individual requirements with you further.

# **GENERAL MEETINGS**

will held on the first Thursday  
of every second month at the

Conservation Centre Meeting Rooms  
120 Wakefield Street  
Adelaide

**7:00 pm (front door open at 6:45pm)**

## **Upcoming meetings:**

**Thursday July 6th** Aaron Machado "Project  
Dolphin Safe and SA Seabird Rescue"

**Thursday Sept 7th** Annual General Meeting  
and Threatened Species Day.

Tim Jury - Threatened Plant Action Group