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Inc. PO Box 8663, Alice Springs, NT 0871

July 2007



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# Alice Springs Field Naturalists Club 2007

## MEETINGS

7.30 pm on the second Wednesday of the month.

Venue: Olive Pink Botanic Garden, Tuncks Road

Wed July 11 . Peter Belbin on conservation in East Timor

Wed 8<sup>th</sup> August. AGM. Surprises in store from Bob Read.

Wed September 12th. Speaker Mike Green.

## TRIPS / ACTIVITIES

Fri 6-Sat 7 July. Alice Springs Show. Members' help needed in Plant Group's stall.

Thurs 12 Jul -Sun 15 July. Kings Canyon and over-night Giles Walk. Contact Bob Read on 8952 1935

Sat 28 -Sun 29 July Sat camp at Redbank Gorge for Sun climb up Mt Sonder. Contact Rosalie Breen on 8952 3409

Sat 4 - Mon 6 August Mordor Pound. Contact Bob Read on 8952 1953

## GUEST SPEAKER REPORT

### RESEARCH INTO THE CONSERVATION BIOLOGY OF THREATENED PLANT SPECIES IN SOUTH AUSTRALIA

Rick Davies

Post Doctoral Researcher-Plant Ecology  
CSIRO - Sustainable Ecosystems Alice Springs  
12 June 2007

by Bill Smyth

## OUTLINE

The talk provided definitions for "rare", "vulnerable" and "endangered" species, information on how to determine which plant species is rare or threatened, what the factors are threatening plants in South Australia and gave examples of threatened plant species research & monitoring.

## DEFINITIONS IUCN CATEGORIES ([www.redlist.org/info/categories\\_criteria.html](http://www.redlist.org/info/categories_criteria.html))

**Extinct (EX)** - No reasonable doubt that the last individual has died.

**Example:** *Senecio georgianus* - Originally spread throughout WA, SA, Vic, Tas and NSW along major rivers. Because of the clearing of river flats for agriculture the plant species was extinct by the end of the 19<sup>th</sup> Century.

**Extinct In The Wild (EW)** - Only to survive in cultivation, in captivity or as populations well outside the past range.

**Critically Endangered (CR)** - Facing an extremely high risk of extinction in the wild in the immediate future, as defined by any of the Criteria A to E.

**Example:** *Acanthocladium dockeri* Reported from the Burke and Wills expedition then not reported after 1925. Found again along roadsides in mid-north SA. Listed as critically endangered. All plants are clones so could be lost to a single disease or spray.

**Endangered (EN)** - Facing a very high risk of extinction in the wild in the near future, as defined by any of the Criteria A to E.

**Example:** *Senecio behrianus* Used to be present along the Murray River, propagated by suckers which follow water channels. Last collected in 1928 then presumed extinct. Rediscovered along irrigation ditches which replicate the natural habitat.

**Vulnerable (VU)** - Facing a high risk of extinction in the wild in the medium-term future, as defined by any of the Criteria A to E.

**Example:** *Acacia menzellii* located in Monarto and the Flinders Ranges.

**Near Threatened (NT)**

A taxon is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

**Least Concern (Lc)**

A taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category.

South Australia Rare and Threatened Species are listed in the National Parks and Wildlife Act and at [www.denr.sa.gov.au/biodiversity/threatened.html](http://www.denr.sa.gov.au/biodiversity/threatened.html) and regionally rare and threatened plants are reported in regional biodiversity plans.

**Rare** plants are those with a small population but which appear to be surviving.

Example: *Stemodia "haegii"* Rare and confined to gypsum; *Embadium johnstonii* -rare, confined to gypsum & only germinates after soaking rains.

It is inherently difficult to establish how the plants are faring as they are dependant on specific conditions. They require long term monitoring to be sure of status.

**Regionally Rare** Example: *Gahnia trifida* – rare relic outlier on mound springs in arid zone but common in south eastern Australia. Currently stable and has been isolated for 100,000 years, may be genetically distinct.

**IUCN Criteria** for the application of the critically endangered, endangered and vulnerable categories relate to:

- a) Reduction in number of populations
- b) Decline in extent of occurrence or area of occupancy
- c) Decline in total population size
- d) Absolute population size and
- e) Probability of extinction

#### **THREATS IN SA**

Weeds – enormous problem in agriculture zone eg *Brachyscome muelleri* -Endangered

- Vegetation clearance - legal & illegal
- Changes to hydrology – Salt Pipewort (*Eriocaulon carsonii*) from Hermit Hill Springs, environs Lake Eyre, SA. The type section of *Eriocaulon carsonii* has been lost due to the extinction of the bore.
- Grazing - stock, feral animals, invertebrates
- Altered fire regimes
- Collectors
- Reduced pollination – orchards dependant on specific insects, if pollinators declines affects reproduction.
- Small population size - makes the population susceptible to chance events –*Hemichroa mesembryanthea* – impacted by unnecessary road works
- Reduced genetic diversity

- inbreeding depression
- high susceptibility to pathogens
- reduced ability to adapt to changing environments eg to a hotter climate.

*Brachyscome muelleri* – confined to one mountain range  
*Hemichroa mesembryanthea* – rare and confined to areas in the vicinity of mound springs in SA

#### **RESEARCH & MONITORING**

Research and monitoring was carried out by the creation of enclosures to test the effect of grazing animals. In the examples given, the enclosures were designed to provide comparative areas which had no exclusions, those which excluded goats and those which excluded goats and rabbits.

The results of the monitoring gave complex correlations which were not directly tied to the effects of goats or rabbits.

In the case of a test area for *Codonocarpus pyramidalis* the exclusion of rabbits and goats resulted in the increase of mature plants.

In the case of *Senecio megaglossus* the correlation was more complex. It appeared that the decrease in grazing lead to the proliferation of other native plants which in turn inhibited the recovery of *Senecio megaglossus*. It

was thought that a change in fire frequency may have caused this result.

#### **SALT PIPEWORT**

A detailed study as part of a PhD dissertation was carried out on the Salt Pipewort *Eriocaulon carsonii*. Salt Pipewort occurs around the Great Artesian Basin at mound springs

Analysis of DNA indicate that there appears to be five genetically discrete groups within the *E. carsonii* complex. This appears to be born out by morphological characteristics. Complex consist of three threatened species one of which contains three subspecies. The populations of highest conservation priority are located on Edgbaston Station (Qld) which contains three of the species including two which are endemic to springs on the station. These are critically endangered because of the small numbers of plants located on the one geographical location.

#### **Translocation Of Propagules**

Translocation of plants is being considered to reduce risk of extinction of only known NSW population of *E. carsonii* and in other areas.

Concerns were raised in the proposed program as translocations between spring groups could reduce existing levels of genetic differentiation and possibly result in reduced plant fitness due to outbreeding depression.

There appeared to be no urgency to undertake translocations to increase genetic diversity, since high reproduction rates despite many populations being genetically depauperate (suggesting an evolutionary history of frequent population bottlenecks). Even though genetic diversity was very low, there was a high germination rate.

However translocation would help to reduce risk of chance extinction for very small isolated populations.

#### **Burning Trial**

Following the removal stock from Hermit Hill Springs 1983 there was an increase in cover & abundance of *Phragmites australis* and the area of *Eriocaulon carsonii* decreased by half and shifted from the vents to tails of the mound springs where they were more vulnerable to any future grazing.

A trial burn was considered to change the balance of power since there had been recolonisation by *Eriocaulon* in a spring burnt 1993-1994 and it was also traditional aboriginals practice to burn mound springs. The hypotheses was that currently *Eriocaulon* was being out competed by *Phragmites* & *Baumea*, that the burning of the mound spring would favour *Eriocaulon*

The conclusion was that winter burning resulted in no immediate decrease in *Phragmites* root biomass, *Eriocaulon* plant death, or change in seed germinability. It resulted in a decrease in *Phragmites* height (but not density or biomass) **but** also a decrease in *Eriocaulon* frequency and *Fimbristylis* cover after one year

There were no significant differences after two years

## CONCLUSION

This lecture gave me a better idea of the basis for the classification of plant populations. It also reinforced the idea that complex interactions between several factors operate within ecological systems, as shown in the exclusion trials carried out with *Senecio megaglossus* and also with the burning of the mound springs.

## TRIP REPORT

### RINGWOOD STATION

Part 2. A collaboration  
Easter Long Weekend  
6<sup>th</sup> to 9<sup>th</sup> April, 2007

by Rhondda Tomlinson

Last month we left off at our 2<sup>nd</sup> night's camp among the Coolibah Trees. Next morning Colleen and Helen had to leave us to head back to Alice Springs. After breakfast we walked up into the Collins Range behind our camp and saw several varieties of *Ptilotus* and lots of other plants.



Photo: Rhondda Tomlinson

Our lunch stop was at the Todd River where the dry curling mud made extraordinary patterns in the dry river bed. Our wheel tracks were quite distinctive.



Photo: Rhondda Tomlinson



Photo: Rosalie Breen

Lunch over and headed to Steel Gap to look for fossils without success. The day was getting quite warm and we decided to move on. We found some very interesting country and dust. Our predominately white vehicles turned to red.



Photo: Rosalie Breen

A walk up into the hills gave us an interesting view of the Todd River flood plane and a rest beside a very large water tank above a bore area where we saw lots of budgies.

Our 3<sup>rd</sup> night's camp was in amongst the Ironwood with a background noise of cattle and the chiming wedge bill (not so popular early in the morning). It was decided that the camp needed a name and among the suggestions was 1. Fly Camp as we shared the experience with very many flies. 2. Easter Egg camp as we ate so many Easter Eggs that weekend. I am not sure of the final name resolution but both fitted the situation very well.

Next morning on day 4 the Arookara Range was our next challenge. We climbed up the hills and it was quite flat on top so we spent a while looking at the flint stones and the aboriginal petraglyphs, plants and panoramic views.



Barb on the way up the Arookara Range

Photo: Rosalie Breen



Petroglyph

Photo: Rhondda Tomlinson



Across the top of the Arookara Range

Photo: Rosalie Breen

Our descent down the range was a little rough and by the time we reached the bottom the thought of a shower and a hot meal was becoming the topic of conversation. We still had a ways to go and a lunch stop was made on the way back to St Teresa where some of us decided to head home while others were talking about the spinifex country on the way back and a bird that is common there. We almost made it to the bitumen at the airport when

would you believe another puncture which was soon taken care of and the thought of that nice hot shower was well and truly on our minds.

Thank you to Bob Read and all the time and effort that was put into organizing this really great trip. A special thank you to the people from Ringwood Station for giving us permission to camp and spend time in their area.

**Creature Feature**

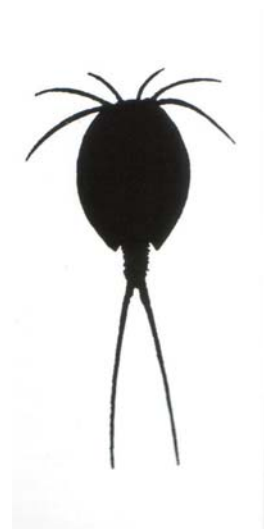
**SHRIMP SHIELDS**

by Rosalie Breen

The Shield Shrimp belongs to the class Crustacea, in the order Notostraca (flat back). There are two genera and one species of each in Australia.

In our area, north and the drier areas, only the *Triops australiensis* is found, which hatches at any time of the year given suitable pools of water. (The other is *Lepidurus apus viridus*)

Similar to fairy shrimps, they like freshwater habitats such as rain pools and slightly salty lakes which dry up periodically, which means their eggs are very resistant to long periods of dry conditions. Around Alice Springs they frequent muddy claypan areas, such as Iparpa and the swamp opposite YMCA, appearing soon after rain fills these depressions.



At Ndhala Gorge, visited recently, the pools of the creek were clear water with nardoo growing. Here were lots of shield shrimps, very big and coloured green. They have a dorsal shield covering the thorax, attached at the front only, so it can be lifted clear of the body. A pair of sessile compound eyes is at the front of the shield and a third eye (hence the name triops) not so noticeable in-between. This is a remnant eye from the larval stage, acting as a light sensor so the animal can tell which way is up. (In captivity if you put a light under their tank and darken the top they will swim upside down). Behind the eyes is a small lump or nuchal organ (like a nostril). The body is

long and of many segments, the last having a pair of long tails. (Lepidurus has a protruding plate between the tails, Triops has none). The thorax segments, about 11, bear leaf-like appendages which in these specimens were quite red and beat frantically, propelling the animal through the water, or just crawling along the bottom. These "legs" also act as gills and when the shrimp swims upside down near the surface it is collecting oxygen. The foremost or first thoracopod has visibly three longer branches, which look a bit like antennae and do have a sensory function. More appendages occur along the abdominal segments. There can be up to 70 segments. Length is the body but not counting the tail. These were around 40mm



Shield Shrimp

Photo: Rosalie Breen

A generalized life cycle for a shield shrimp would be - eggs are laid in the sediments of the pools, the ponds dry out, the adult dies but the eggs remain dormant and can also be blown around by the wind to colonize other areas. After sufficient rain these hatch into a microscopic larval stage or naupalid. Development is very rapid, undergoing a few moults to adult form in days. Then they moult their shells (shields) to be fully mature in a few more weeks. Lots of discarded shields are found on the edge of the pools. The adults dig around in the mud for food, using

the front part of the shield, for microscopic organisms, bacteria, algae, protozoa, and insect larvae, tender plant roots and shoots, even tadpoles.

I find them a fascinating animal. They can be considered the oldest living species because they have changed very little in appearance to similar animals of the Triassic era 220 million years ago. They are found all over the world except Antarctica.

## **ANNOUNCEMENTS**

### **NOTICE OF AGM**

The Annual General Meeting will be held at Olive Pink 7:30 pm August 8th.

I would ask all members to seriously consider standing for a committee position. With the possible exception of the Newsletter Editor, none of the officer's positions are very onerous. We generally have about 4 committee meetings a year. The committee has been stable for some years, and it would be good to have some new faces.

### **Secretary**

We need a Secretary to replace Connie who is standing down after a commendable period of service. The job is not very difficult, requiring keeping minutes, collecting mail, sending one letter a month, and a bit of filing.

Bob Read, President.

Copy deadline for articles for the next newsletter Friday 3<sup>rd</sup> August 2007

<p><b>PHOTOCOPYING</b></p> <p><b>COURTESY</b></p> <p><b>LJ HOOKER REAL ESTATE</b></p>
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**ALICE SPRINGS FIELD NATURALISTS CLUB INCORPORATED**  
**Minutes of the General Meeting held at Olive Pink Botanic Garden**  
**Wednesday 13<sup>th</sup> June 2007**

- Open:** Rhondda Tomlinson welcomed members and visitors. Speaker: Rick Davies from the CSIRO to talk on Endangered Plants in the Australian Arid Zone. Business meeting chaired by Jenny Purdie opened 9:15 pm.
- Present:** As per attendance book (12 members and 3 visitors).
- Apologies:** Leoni & Bob Read, Bev Dawson, Liz Carpenter, Barb Gilfedder and Connie Spencer.
- Minutes:** The meeting resolved to accept the minutes of the previous meeting held Wednesday, 9<sup>th</sup> May 2007 as a true and correct record of that meeting.

**Correspondence In:**

TSN	Newsletter <i>The Web</i> Autumn 2007
WANC	Newsletter <i>The Naturalist News</i> June 2007
Nature Territory	Newsletter <i>The Field Naturalists</i> – Darwin June 2007
UBC (WA)	2007 Fungi Photographic competition & exhibition
Symposium	Katanning 2007 National Malleefowl Forum
Bush walkers program	Central Australian 2007 schedule June to August
Westpac Statement	Closing balance \$2,683.43
Olive Pink Botanic Garden	Letter from Colleen O'Malley – read by Jenny

**Correspondence Out:**

Rick Davies to be sent a thank you card.

**Business arising from the correspondence:**

None

**Treasurer's Report:**

Jenny Purdie reported that \$100 donation was sent to the Victorian Club and two new memberships to the value of \$55.00. Bank statement closing balance \$2,683.43.

**General Business:**

Helen Geier – Artist in residence at “Watch this Space” invited the members to come to view her exhibition.

**Outings:**

Sat 9- Mon 11 Jun 07	Ruby Gap. Trip was cancelled
Wed 13 Jun 07	FNC monthly meeting 7:30pm OPBG – Rick Davies
Sat 16 June 07	Day walk. Climb Mt Everard. Leader: Rosalie Schultz Meet 8.00am Sargent Street
Sat 23 June 07	Celebrate the Winter Solstice on Spencer Hill. Meet Goss Street playground @ 6:45 am Contact Rosalie Breen on 8952 3409
Sat 30 June & Sun 1 July 07	Overnight walk Larapinta Trail Stage 9 from Serpentine Chalet Dam or Ochre Pits to Ormiston Gorge. To be confirmed. Contact: Rosalie Breen on 8952 3409
Fri 6 & Sat 7 Jul 07	Alice Springs Show
Wed 11 July 07	FNC monthly meeting 7:30pm OPBG – Peter Belbin on conservation work in East Timor
Thu 12 Jul to Sun 15 Jul 07	Kings Canyon and overnight Giles walk. Contact Bob Read on 89521935
Sat/Sun 28/29 Jul 07	Camp at Redbank Gorge to climb Mt. Sonder. Contact: Rosalie Breen on 89523409
Sat 4 Jul – Mon 06 Aug 07	Mordor Pound. Contact Bob Read on 89521935
Wed 8 Aug 07	FNC AGM

**Secretary:** Rhondda Tomlinson will be doing the meeting minutes for June and July while Connie is away.

**Gate Opener for June:** ?

**Supper for July:** Jenny Purdie

**Note taker for July:** Note taker needed

**Sightings:**

- ❖ Ian Archibald sighted a black shouldered kite near OLSH.

**Meeting closed:** 9:37 pm.