ARKAROOLA WILDERNESS SANCTUARY

From the ARK

NEWSLETTER NUMBER 2 SPRING 2005

In August 2005 Arkaroola Wilderness Sanctuary launched its electronic newsletter ***From The ARK***. We emailed Newsletter Number 1 to more than four hundred addresses and were delighted to hear that many recipients forwarded the newsletter on to friends. Thank you to all those people who sent congratulatory messages back to us. Also for your suggestions of what we might include in future issues. Three months have passed and we now bring you our Spring 2005 issue of ***From The ARK***. Enjoy!

To join our mailing list just email us at admin@arkaroola.com.au
For a print-friendly download visit our website at www.arkaroola.com.au

A MESSAGE FROM MARG

Hi Everyone

We have had a beautiful spring after gentle soaking winter rains. Seed has already set on many plants replenishing the seed bank. We look forward to collecting a range for propagation and re-establishing more natives around the Village and Caravan Park. We have recently installed a water recycling system utilising grey water from the Caravan Park showers for drip irrigation. As soon as native trees attain reasonable height we will remove exotic tamarisks and pepper trees.

Weeds also responded well to the winter rains. We are very grateful to PIRSA for undertaking a recent weed distribution survey of Arkaroola targeting high impact areas and creek-lines so that we may strategically address weed management/control into the future.

Replenishment of waterholes has led to increases in Yellow-footed rock wallaby sightings. Our new ***Weetbix and Wallaby*** tours have proved immensely popular with visitors. Some lucky folk have even been privy to viewing males fighting and wallabies mating!

Cheers

Marg

IN THIS ISSUE

Design, Text & Images Lorraine Edmunds

NORTHERN FLINDERS RANGES SOUTH AUSTRALIA AUSTRALIA

NEWS FROM THE ARK

A SPRING TO REMEMBER

The best winter rains for twelve years have delivered Arkaroola the most colourful spring in more than a decade. Both annuals and perennials have been spectacular and once again our tracks have been graced with stunning Sturt's Desert Pea. Although the creeks did not flow, gentle soaking rains over several days in June and July triggered a great spring season. The Paralana Hot Springs road through Claude's Pass has been a picture, with emubushes, sennas, abutilons, sidas, groundsels, native hopbushes, nightshades and Sturt pea providing a full palette of vibrant colour. Rock fuschia *(Eremophila freelingii),* one of the most prolific plants on the sanctuary, has had one of its best years ever. Out on the plains thousands of streaked goodenias *(Goodenia calcarata)* have been charging the evening air with their delicate perfume.

And it is not all over yet! The elegant wattles *(Acacia victoriae)* are at their peak, smothered with showy lemon-yellow flowers. The striking Sturt's desert roses have begun to unfurl and the butterfly bushes *(Petalostylis labicheoides)* are stunning. Feathery mulla mullas are providing splashes of colour in drier areas where flowering has almost finished.

Plants clockwise from top left: 1. Rock nightshade 2. Pink mulla mulla
3. Rock fuschia-bush 4. Australian bluebell 5. Showy groundsel 6. Sea heath

BACK ON TRACK

Uniting Church Tours were in for a surprise when they visited Arkaroola in September 2005. The visitors were invited to launch two new Toyota Landcruiser Ridge Top vehicles, with a glass of sparkling white.

The new HZJ79's are the latest generation Landcruisers. Their features include the latest air-pollution minimisation technology, greater fuel efficiency, and they deliver a more comfortable ride for passengers. The new vehicles also have limited slip differentials that provide positive power independently to both back wheels, making them an even safer vehicle for Arkaroola's challenging Ridge Top Track.

Purchased as cab-chassies, Arkaroola's Ridge Top vehicles are fitted with bolt-on custom-made bodies for its specialised tour operation.

After the high life of Ridge Top touring, old tour vehicles are given part-time employment in the village. There they become rubbish trucks, and runabout vehicles. Ruby the rubbish truck, a veteran of many Ridge Tops has finally been put out to pasture and her 008 identity now graces one of the new Ridge Top vehicles. With ARK 003, ARK 008 now heads up Arkaroola's fleet of specialised vehicles for its signature tour.

PLANT PROFILE

THE BELL FRUIT TREE

Codonocarpus pyramidalis

The *Codonocarpus* genus is an Australian endemic. Two species are found in arid and semi-arid regions and the third in rainforest. The popular name Bell Fruit tree is a direct translation from the Greek words kωδων, meaning bell, and karpos, fruit.

Bell fruit tree was first collected on the Arkaba pastoral run, south of Wilpena, in 1851 by Ferdinand Von Mueller. He later became the first director of the Botanic Gardens in Melbourne.

Bell fruit trees occur as scattered individuals or in small localised stands. They are a rapid growing but short lived species. Mature trees often lean markedly to one side. They regenerate well after fire which may be required for germination. Bell fruit trees are listed as *Endangered* on the National Parks and Wildlife S A Schedule.

Codonocarpus have distinctive bell-shaped fruits that are segmented, each segment containing one seed. Female flowers are found on branches below those bearing male flowers. The timber of Bell fruit trees is soft, similar in appearance and texture to balsa wood.

A good stand of Bell fruit trees can be seen on the Arkaroola to Copley road.

FROM THE ARKHIVES

THE POETRY OF PETRICHOR

You've smelt it. That unmistakable and pleasantly refreshing odour that fills the air when it rains after a long dry spell. Where does it come from? How do you describe it? And what connection does it have with Arkaroola?

For decades scientists mused over the nature of "*the smell of rain on dry ground".* In 1964 Australian geochemists Richard Grenfell Thomas and Miss I J Bear, published an article in *Nature (993/2),* describing the origin of the distinctive odour.

The atmosphere contains volatile oils and other decomposition products from animal and plant matter. During long dry spells when humidity levels are low, rocks and soil particles absorb the oils. When rain falls the oily essences are displaced from the soil and pores in the rocks and are released into the air. The unique odour that results is the combination of some fifty compounds and, like perfume, is very complicated in its composition. The Australian geochemists were able to remove the oils from soil and rock by steam distillation and solvent extraction.

Clay-based minerals are the most common source of petrichor, the name created by Thomas and Bear for the pleasant odour. Pronounced **'pet-trê-kor'** the word is derived from the Greek word **petro** meaning *'stone'* and **ichor** meaning *'the fluid that was believed to flow through the veins of the gods in Greek mythology'.*

Petrichor is beginning to flow through our language in novel ways. There are over 9000 websites for petrichor, but most explore language rather than science. Poetic by nature, Dick Thomas would have loved the new applications of the word he created. Describing the characteristics of a French Cabernet Franc wine, Californian wine writer Robin Garr has written "*Full black fruit continues on the palette, a bit austere with its tart, lemony acidity; and swimming just beneath the surface is that lovely petrichor minerality like fresh rainwater running over limestone".* (www.wineloverspage.com) With a cultivated palette, a nose for wine, and adept at deconstructing unlabelled wines, Dick Thomas would have enjoyed Garr's description of the earthy French Cabernet Franc.

Richard Grenfell Thomas was a friend and colleague of Reg Sprigg, and like Reg a student of the geologist-explorers Sir Douglas Mawson and Dr Cecil T Madigan. With Reg and others, Thomas visited the Mt Painter uranium fields in the 1940's. He predicted that exploitable uranium would be found as a secondary uranium concentration, at shallow depth on the plains east of the mountains. But like so many people of vision Thomas was ridiculed by many of his peers. A quarter of a century later the rich sedimentary deposits of the Beverly uranium field were discovered north-east of Paralana Hot Springs. Heathgate Resources is currently extracting the deposit using In-Situ Leach Mining technology.

Reg Sprigg described Richard Grenfell Thomas as a man *"with a strong poetic turn of mind'* with interests *"from music and poetry to pottery, wood turning, natural history, conservation and his beloved geology".*

CREATURE FEATURE

CENTRAL BEARDED DRAGON

Pogona vitticeps

The dragon with scales but no fire

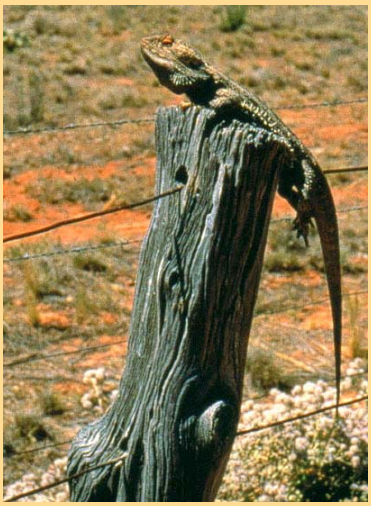
Photo by Georgie Green

Arkaroola has had a fantastic wet winter. Lots of plant growth is providing food and shelter for insects. Extra insects means plenty of food for birds, lizards and small marsupials. As a result we are seeing a lot of different species of lizards. Now that the weather is getting warmer the lizards are on the move.

One of the most common species on the sanctuary is the distinctive Central Bearded Dragon, a shy and normally elusive lizard that ranges across the inland sections of all of the eastern states.

The Central Bearded Dragon can be easily identified by its short tail and orderly spines, that run down both sides of its body. Central Bearded Dragons vary in colour across regions, from a light grey to reddish brown. If you are lucky enough to get a really close look at a Central Bearded Dragon you will notice that its throat has a pouch or beard, covered in long spiny scales, while the inside of its mouth is bright yellow in colour.

Considered to be semi-arboreal, Central Bearded Dragons feed mainly on insects. They can often be observed assessing their surroundings from the top of a fence post or perched on high road verges as they soak up the early morning or late afternoon sun. Occasionally they can be found basking in dead acacias, using their prickly fortress to protect them from predators, particularly birds of prey.



Watch out for a cheeky bearded dragon like this one photographed on the Arkaroola / Wooltana boundary fence.

Georgie

GEONOTE

LIESEGANG LINE ART

Pattern in nature has interested us since ancient times. For more than two thousand years we have tried to define and demystify the strict laws that appear to govern so much of Nature. The Golden Mean of the Classical Greeks and the Fibonacci Numbers * find countless expressions in the natural world as turtle shells, in the scaling of snakes, the arrangement of leaves on plant stems, the horns of antelopes and goats, the configuration of sunflower seeds, and in the spirals of molluscs. The dragonfly is a perfect expression of the Golden Mean. The ratio of its tail and trunk lengths is equal to the ratio of the overall length of its body to its tail length.

Pattern also defines the geological world. It is inherent in the atomic structure of minerals and is visibly expressed as crystals. Weathering and other processes also produce distinctive patterns in rocks and minerals. Concentrically banded 'Liesegangs' are among the most strikingly patterned rocks to be found on Arkaroola Wilderness Sanctuary. The colourful banding is produced by the rhythmic deposition of iron, manganese and other compounds in deeply buried material. Deposition occurs as compounds are precipitated from mineral-rich waters flowing through the buried rock. Liesegangs commonly exhibit iron mineralisation – haematite, goethite and limonite, each producing rusty-red weathering products. The rings are typically concentric and may appear as flat bands of differentiated colour or as raised bands of resistant material, like chimneys within chimneys.

Raphael Eduard Liesegang (1869-1947), was the first person to replicate the chemistry of liesegang formation. Although he never had a university education, Liesegang undertook independent research and published many papers on a variety of scientific subjects. He is best known for his investigations of the liesegang phenomenon. Although they can create liesegangs in gel solutions in the laboratory, scientists do not fully understand how the rings form.

***The Fibonacci Sequence** is determined by adding two consecutive numbers together, beginning with zero: 0, 1, 1, 2, 3, 5, 8, 13, 21, etc

If you would like to learn more about pattern in nature there are some great websites to visit: just type in Golden Section or Fibonacci in Google and GO.

CONSERVATION & RESEARCH

WHICH WEEDS AND WHERE?

Weeds have been part of the Flinders Ranges landscape for decades. The colourful exotics, Salvation jane and Rosy dock, have lured visitors to the ranges for more than fifty years. These and other **'wild'-**flowers out-compete native species, reduce biodiversity and damage ecosystem function.

With a comparatively short pastoral history and thirty-five years of sustained feral goat control, Arkaroola is relatively weed free. Rosy dock persists as scattered plants but no longer paints the mountains pink as it did in the 1970's and 80's. Other weed species such as Ward's weed, Horehound and Smooth mustard occur in low densities or as isolated plants along drainage lines, roadsides and in camping areas. But compared with other properties and protected areas, Arkaroola's native vegetation remains largely intact.

Funded by the commonwealth's **ENVIROFUND** program**,** Arkaroola engaged consultants to undertake a weed survey in August. Animal and Plant Control officers from Rural Solutions SA surveyed all high use tourist tracks, popular sites such as waterholes, selected creeklines, and the village area. Using quad bikes and 4WD vehicles equipped with mobile GPS units, officers surveyed both sides of tracks and made 50 –100 metre inspections along creeks where tracks crossed creeklines. Data was downloaded onto a GIS (Global Information Systems) platform at the end of each day's mapping.

The majority of weeds were confined to disturbed areas adjacent to tracks, at waterholes, camping areas and in high traffic zones. This suggests that visitation is a major factor in the spread of weed species with implications for weed management.

The weed survey data will be used by Arkaroola management to prioritise weed control activities. In particular, waterholes will be targeted over the next 12 months. A further weeds survey will be required, following a summer rainfall event, to develop a truly representative weeds inventory for the sanctuary.

Using the same methodology, Animal and Plant Control officers have recently completed a weeds survey in neighbouring Vulkathuna-Gammon Ranges National Park. By sharing data, Arkaroola and the Department for Environment and Heritage will be able to adopt an across-boundary approach to weed control.

GALACTIC GOSSIP

STAR PARTY DOWNUNDER 2006

Come and party with the stars at Arkaroola Wilderness Sanctuary on the 2006 Australia Day weekend. Arkaroola and the Astronomical Society of South Australia (ASSA) will jointly host the inaugural Star Party DownUnder from January 26-30. Accommodation packages are now available with the option of coach transport from Adelaide.

Described as an "Astronomer's Heaven" Arkaroola offers some of the best deep space viewing conditions in the world. And what better place to go for a party than the universe!

A stellar program will include lectures, deep sky observing, technical sessions and field trips. Professor Ian Plimer will deliver a Deep Time lecture and lead a Geology tour (with cocktails). Bill Bradfield, a seasoned hunter of comets will share his story. Jonathan Clarke will have his sights on the red planet whilst Joe Grida journeys to the Magellanic Clouds. Practical sessions in astrophotography will be offered. The Star Party will culminate in a Banquet under the stars.

Guest presenters will include:
Bill Bradfield –past president and life member of the ASSA, and discoverer of 18 comets.
Dr Jonathon Clarke - Director of the Mars Society Australia, member of the Australian Centre for Astrobiology and a research scientist at Geoscience Australia.
Joe Grida - past president of the ASSA with more than 30 years experience in astronomical education
Blair Lade -Instrument Officer for the ASSA and an electronics technician.
Professor Ian Plimer–Professor of Geology at the University of Melbourne, Chair of Geology University of Adelaide, author, and winner of many awards.
Tony Virgo–member of the ASSA, educator, astrophotographer, and teacher at the Australian International Space School.

Star Party DownUnder 2006 is an official event of the 2006 Year of the Outback

Contact Arkaroola or visit our website at www.arkaroola.com.au/events.php for a Star Party Information Pack.

ARKAROOLA WILDERNESS SANCTUARY

PRODUCT INFORMATION

One of our great successes this year has been the achievement of Advanced Eco-tourism accreditation for all of our guided tour products. In addition to our signature Ridge Top and Observatory Tours, Arkaroola Wilderness Sanctuary now offers several new eco-tours. With wildlife ecologist Georgie Green as part of our team, we are now able to give visitors some memorable wildlife experiences.

WEETBIX & WALLABIES

Join us on an early morning tour out to one of Arkaroola's permanent waterholes to see the beautiful Yellow-footed rock-wallaby. Visit prime rock-wallaby habitat and learn why the Yellow-footed rock-wallaby is a threatened species and what is being done to ensure its survival. Visitors also learn how to distinguish rock-wallabies from other kangaroo species in the area. A breakfast of fruit, pastries, juice, tea and coffee is provided as part of the tour.

*Visitors have been regularly seeing 10 to 13 yellow-footed rock-wallabies on the **Weetbix & Wallabies Tour.***

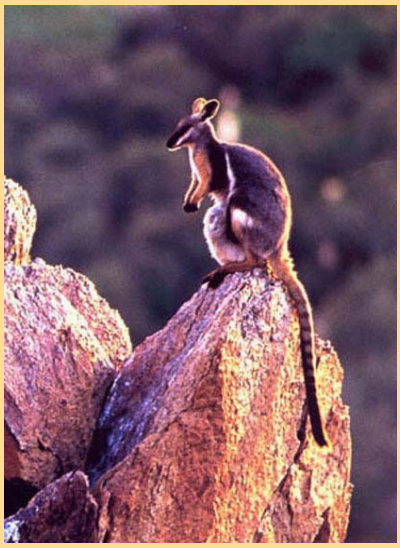


Photo from Arkaroola's image files

BATS & BOOBOOKS

Join us on an early evening tour out to Bolla Bollana Springs and enter another world. Watch as euros and yellow-footed rock-wallabies come to drink in the last light. Discover what your ears cannot normally hear, as your guide tracks the ultrasonic sound signatures made by bats, using a special 'Bat Box'. Learn about bat ecology over a glass of bubbly and some nibbles. As the light slips away and the stars appear, listen for the distinctive call of the Southern Boobook owl.

FROM THE ARK POSTCARD

Sturt's Desert Pea *September 2005*

NORTHERN FLINDERS RANGES SOUTH AUSTRALIA AUSTRALIA