SEGments

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SEGments

Scientific Expedition Group

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COVER: ***Rattus fuscipes*** Photograph taken **by** a student on the Minniwarra survey in October

Editorial

Science in the Future

The United Nations has declared this year to be 2010 **International Year of Biodiversity!**

"It is a celebration of life on earth and of the value of biodiversity for our lives. The world is invited to take action in 2010 to safeguard the variety of life on earth: biodiversity"

SEG helps build understanding of science by running biodiversity expeditions and encouraging students of science to gain greater understanding of our environment.

Australian school students will welcome the release of the draft National Curriculum which confirms the move by Science back into the "top 4" areas of study. Along with English, Mathematics and History the study of Science at school is back where it belongs at the top of the agenda. SEG has a role in keeping it there and not just in the International Year of Biodiversity.

The Deputy Prime Minister recently announced the release of a document that will eventually guide all students studying science in Australian schools in years R-10. We know and love science and that passion, that experience and that insight must help guide future generations of Scientific Expeditioners. By helping students attend biodiversity expeditions science can be illuminated with practical experience of real consequence. The biodiversity we study now will be the basis of work taken on by students in the class, in the lab and in the field.

South Australia faces many challenges in managing the natural environment. Water and the impact of mining represent two real challenges that currently confront the state. Building a strong and rich understanding of this beautiful environment we live in starts now and will be aided by engaging the students of South Australia in every part of the work done by SEG.

I was lucky to travel with a large group of students to Woomera late last year to see a rocket launch, visit the weather station and the observatory on a trip organised by the Junior Science Club run by the CSIRO. The enthusiasm of the kids aged 8-16 was infectious and convinced me that the future of science as a career and a pursuit was in good hands. This club takes students away twice a year (KI in January and Woomera in October) to give then a "hands on" experience of a scientific expedition. All over the state students are exploring the wide range of environments from Kangaroo Island to Lake Eyre and beyond.

Figure 1: Rocket Launch at Woomera 2009

Last year's SEG expedition to Arkaroola contained a number of students, many of their first SEG expedition. These students gained valuable experience in detailing the biodiversity of this rich natural environment.

This edition of SEGments includes Student's Arkaroola reports. The authors are Max Barr, Supriya Lath and Elisa Tugwell. Each report summaries the experiences and reflections of students as part of a SEG biodiversity survey.

Also this edition contains a report from Nalia J Ahmed on "Inverterbrates at Arkaroola ". The report forms part of Nalia's work for SEG in collaboration with the South Australian Museum. The report makes some important conclusions .

Other articles of interest include reports from Minnawarra, Vgrasp and a dip into the archives to look at preparation for the first SEG expedition to Chowilla in 1985.

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SCIENTIFIC EXPEDITION GROUP

EXPEDITION BIMBOWRIE 2010

You are invited to join us on this years Expedition to Bimbowrie Conservation Park near Olary in the eastern part of South Australia. This area is not only rich in mineral and geological interest but is home to some rarely seen birds (Plains Wanderer & Thick-billed Grass Wren), Yellow-footed Rock Wallaby colonies, and a variety of interesting and unusual plants (Purple-wood etc). The purpose of the Expedition is to conduct a comprehensive biodiversity survey of all the life forms of the area and will include vegetation, invertebrates,reptiles, mammals (including bats at night) and birds.

This is a great opportunity for people of all ages and expertise to observe and participate in professionally conducted field survey work with experienced biologists and natural historians.

You won't need any special scientific skills - just a love of exploring the bush and learning about its many inhabitants in an area not generally open to the public.

Dates:- The Expedition departs early on the morning of Sunday !0th. October 2010 and returns on Saturday 23rd. October.

Accomodation:- On this survey,we will be based at the Bimbowrie Shearer's Quarters with all the home comforts including showers. We will also be able to make use of the shearer's kitchen and dining room.
For those who prefer things a little tougher, there are plenty of camping spots.

Costs:- at present, total cost including food,transport and all activities is estimated to be about $650.

To register your interest please phone Trent Porter on 82789078 A/H or e-mail trentasaurus@bigpond.com

Student concessions may be available depending on sponsorship.

Seeking a Balance for Arkaroola

Richard Willing and SEG members

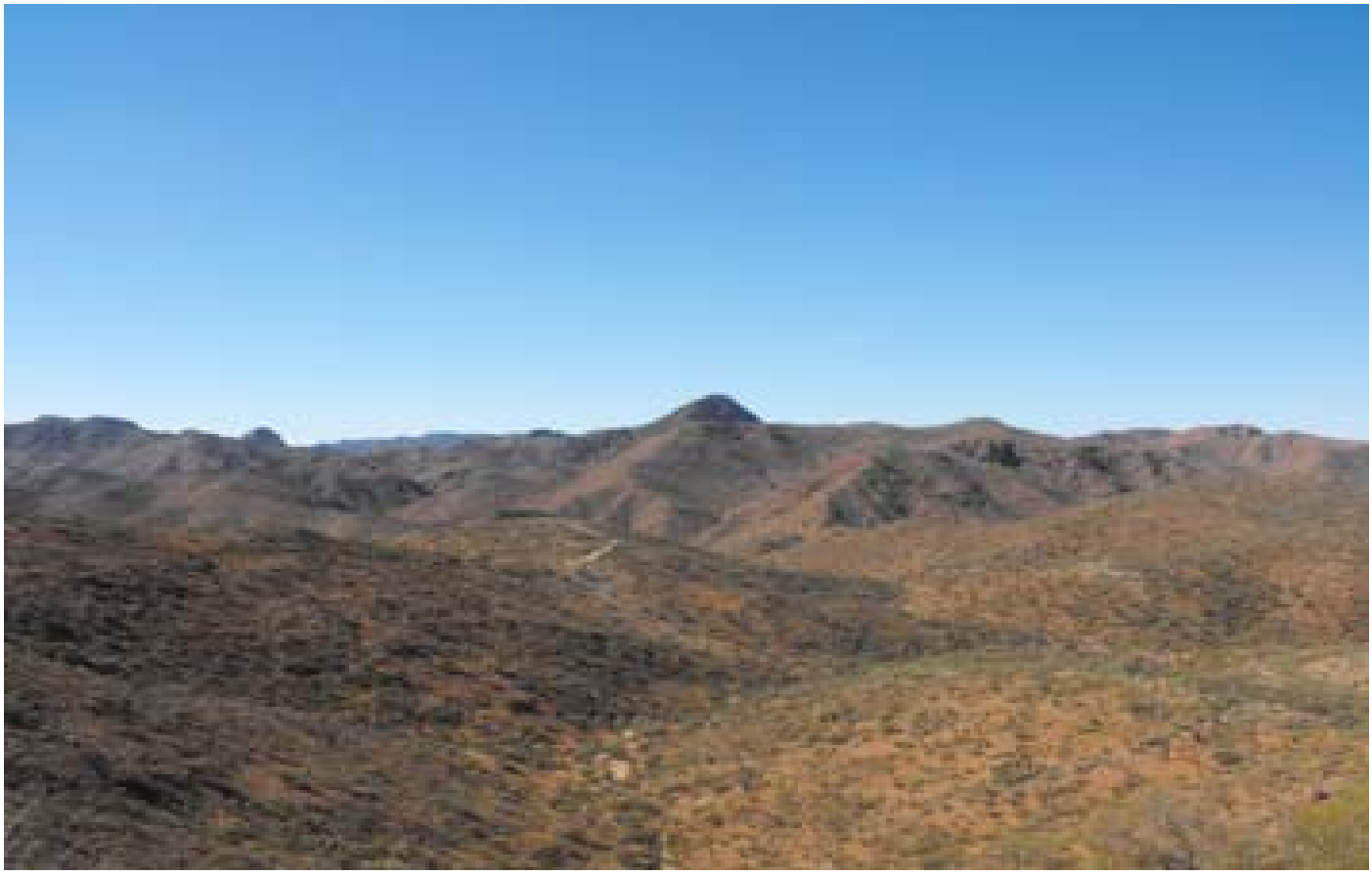

Figure 1: Arkaroola Wilderness Sanctuary - Mt.Painter

Scientific Expedition Group

The Scientific Expedition Group (SEG) is an organisation which, annually for the past 25 years, has taken groups of volunteers, and specialists in appropriate disciplines, to remote areas to conduct biodiversity surveys. Previous expeditions and surveys include the Vulkathunha-Gammon Ranges, Mawson Plateau, Gawler Ranges, Boolcoomatta (near Broken Hill) and Marqualpie (north of Innamincka). As well, small groups of SEG volunteers have made about 100 quarterly trips to the area over the past 21 years, as part of the Vulkathunha- Gammon Ranges Scientific Project. In September of this year (2009) SEG conducted a comprehensive biodiversity survey at Arkaroola, involving 16 trapping sites both south and north of Arkaroola Village. With the three preliminary trips required to set up the survey sites and install traps, a large number of hours have been spent observing the area. We feel that SEG has a good understanding of the remote areas of northern South Australia, and is well qualified to make valid comments about this document.

Arkaroola Management - overview

Over several decades the Sprigg family has done a wonderful job preserving this unique area of SA. Arkaroola Wilderness Sanctuary (AWS) is the jewel in the crown of South Australian outback tourism, attracting large numbers of overseas and interstate visitors each year. Managing this asset requires a balance of allowing access to tourists to experience the grandeur of the (almost) untouched wilderness and preserving that same wilderness for the future.

One management tool used by AWS is restricting access to the northern areas to those vehicles which have been individually cleaned underneath for weed seeds. This has prevented any significant spread of weeds into sensitive areas.

AWS is also mindful of the potential danger to tourists if there is increased vehicle access to the steepest and most rugged areas in the future, caused by a network of mining tracks in various states of disrepair.

The irresponsible behaviour of recent mining exploration in the area is well known. In the sensitive areas of the heartland of Arkaroola the plethora of tracks cut into hillsides has already permanently damaged the landscape.

Mining – overview

The document refers to 'high prospectivity for copper'. This needs to be viewed with some caution. The history of copper mining in the far north Flinders Ranges is a story of repeated failure. Typically, a prospector would find an outcrop of rich ore, a company would be formed and mining would begin, only to find that a few metres below the surface the ore was not worth raising. The company would collapse. Few ore bodies persisted at depth and even those that did were too small to show a profit. During the copper boom of the early 1970s, some of the mine sites were revisited and costeans bulldozed but without payable results.

Copper mining in the far north Flinders Ranges has enticed a good many men to the area but it has never been of much significance to the South Australian economy, unlike the great mines at Kapunda, Burra, Wallaroo/Kadina/Moonta and Olympic Dam. The prospect of further viable copper mining in the Flinders Ranges would seem to be slight. It is evident that the main attractions now are uranium, and possibly hot rocks.

Arkaroola has suffered considerably from the deeply flawed mining exploration practices undertaken in recent years. It is obvious that the dice are heavily loaded in favour of mining companies, many of whom have a poor record of environmental protection, with minimal subsequent site restoration and rehabilitation. There is great concern that resumption of exploration will have a deleterious effect on the environment of the sensitive areas of Arkaroola.

Historically, mining at Arkaroola over the past century has been small scale and low impact. A few mines that produced small quantities of high grade ore ran out after a short period and were abandoned. In the modern world mining methods are more aggressive, large-scale and environmentally damaging, as has been seen with the recent exploration history at Arkaroola.

Access to mines in the Arkaroola area poses considerable logistic problems. It could well involve road access from the plains east of the ranges and tunnelling. This would involve infrastructure at the surface, and produce large amounts of spoil which would need to be dumped somewhere. This does not seem to provide the right sort of environmental protection that a sensitive area like Arkaroola deserves. Subsequent rehabilitation would be difficult to achieve without leaving permanent scars – the norm for disturbing this fragile country.

It is hard to understand why exploration or mining should be considered in this sensitive environment when there is a successful uranium mining operation at Beverley on the flat plains east of the ranges, only a short distance from Arkaroola, and another at Olympic Dam, also in much more accessible country. Mining at Arkaroola is definitely ***not*** a high National or State priority, preservation of wilderness is.

2009 SEG Biodiversity Survey

This recent survey is the first of a series planned for Arkaroola. The full report will not be available for some months. Numbers of Yellow-footed Rock Wallabies were seen, but the net collection of vertebrate animals was reduced, most likely because of the very dry conditions prevailing over recent years. Opportunistic observation of increased animals after rainfall events suggests that a more accurate picture of the wildlife present will be obtained with subsequent surveys planned by SEG, especially following rains. The low numbers at this time suggest that wildlife is easily placed under severe stress with changes in conditions, a situation which could be made worse by the further intrusion of mining exploration.

Opportunistic findings

Small mammal bones found in 1993 were found to belong to 3 species of *Notomys (longicaudatus, amplus* and *fuscus)* as well as *Pseudomys australis* and *Rattus villosissimus.* Some of these are endangered or possibly extinct, but more research is needed to determine the status of these species. There may even be a chance of some of these creatures living in remote parts of Arkaroola. It is perhaps too early to be making long-term decisions about biological topics when this country previously supported a diverse collection of animals, and global climate appears to be changing.

The Seeking a Balance document - comments

This document is well presented, but does not establish a good balance between mining and conservation. This is particularly relevant for AWS. Referring to the Development Act 1993, most of the land north of

Arkaroola Creek was included in the Class A Environmental Zone. The proposal outlined in this document alters this so completely that the previous areas of importance are now downgraded, while those that were then considered less important are more protected. This is a radical change in a few years.

This Act also mentions '*the protection of the landscape from damage by mining operations and exploring for new resources'* where *'Mining operations* ***should not take place in the Environmental Class A Zone*** *unless the deposits are of such paramount importance and their exploitation is in the* ***highest National or State interest that all other environment, heritage or conservation considerations may be overridden.****'* Again, in view of the successful Beverley mine nearby on the plains, there does not appear to be a high National or State interest to be considered here.

Classification of the Mawson Plateau and Freeling Heights as Zone 1 is applauded. Classifying as 2A and 2B the areas around the Armchair, Mt Gee and Mt Painter undervalues the heart of AWS as these areas are most important from the view point of wilderness, scenic, tourist and geological values.

On the Biodiversity Values map the areas of biological interest are fragmented into multiple small areas. It is well known that animal populations suffer and decline if their living areas are reduced. In such harsh country animals need larger territories to survive. There are few linking corridors to enable animals to move freely about the Wilderness Sanctuary. In fact, splitting into small areas makes nonsense of the term 'wilderness.' Also on the Biodiversity map is an area south and southeast of the village which is home to the endemic species *Acacia araneosa*, the spider wattle, which grows nowhere else in the world. This should attract the highest level of protection.

The Adnyamathanha people are dismissed in a paragraph. They have a long relationship with the area, and have been closely associated with the Sprigg family since they began managing Arkaroola. It is to be hoped that they will not be marginalized, and any attempt to resume exploration without input from them would, at least, be premature.

Summary

■ The Scientific Expedition Group considers Arkaroola Wilderness Sanctuary an area of great biodiversity, wilderness, scenic and cultural importance and considers further exploration or mining to be extremely detrimental.

■ In tourist terms, Arkaroola is the jewel in the crown of the South Australian outback tourist industry, and should be protected from further damage, including visual pollution from more mining tracks.

■ Evidence of a previous much broader range of small mammal species exists, in spite of recent small collections. It would be unwise to add to existing stress on biodiversity by permitting further exploration in AWS.

■ Increased mining traffic increases the chance of bringing in unwanted plant, animal, fungal and other invaders. By strict policing of vehicles AWS has managed to avoid a lot of these problems, but opening it up will increase the risk of accidental introduction of unwanted biological material.

■ Most of the area north of Arkaroola Creek should be reinstated to an Environmental Class A Zone, or equivalent, (Zone 1) in order to preserve natural corridors and free access for fauna.

■ More recognition should be granted to areas where endemic species grow.

■ No further exploration should be considered without significant input from the local Adnyamathanha community.

Recommendation

For reasons outlined, the Scientific Expedition Group considers that the Arkaroola Wilderness Sanctuary should be protected in the long term by permanently banning future exploration and mining there, unless there occurs *the highest National or State priority* that requires reconsideration.

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Minnawarra Biodiversity

Janet Furler

The Spring survey for the Minnawarra Biodiversity Project was held from October 7th to 11th. We had cool but fine weather, enthusiastic participants and another collection of useful results.

Personnel

Once again we were able to introduce new people to our small native animals, and the process of scientific survey. As one of the aims of SEG is to explain what we do to novices, it is pleasing to be able to so.

There was a core of 5 adults and 4 teen boys who were there for the whole survey. Additionally, 7 adults and 3 families totalling 4 adults and 4 children, from 7 to 12 years, came for periods of half a day to 3 days.

The kids especially enjoy the treasure hunt at each site, seeing how many traps are occupied. They also get to "guess the catch" by weight, smell and type of site before we get the animal out. For instance we don't catch many swamp rats on the tops of the hills!

A total of 416 volunteer hours was donated. Thanks to all those who helped. A huge vote of thanks needs to go to Jill and Eliza Tugwell for dedication to SEG. Having survived, and enjoyed, Arkaroola for 2 weeks they spent three days at home then came up for the whole Minnawarra survey. Impressive!

Weather

October		
7th	9-13	Mild-cool, partly cloudy, light SW breeze
8th	8-11	Cool-cold, partly cloudy, moderate SE wind
9th	7-11	Cold-cool, partly cloudy, moderate SE wind
10th	8-16	Cool-mild, slight cloud, moderate SE wind
11th	13-20	Warm, slight cloud, light air

Mammals

74 mammals were caught a total of 126 times. Fifty two were new catches, 28 were caught on previous surveys. No feral mammals were caught. Sites 1 (dense swamp), 2 (near a swamp) and 8 (near a creek) each had 16 or 17 animals caught. The other 5 sites had from 3 to 7 animals each. My impression is that this is more evenly spread than in some years, possibly due to the decent spring rain producing a good amount of growth and allowing the animals to disperse. Site 1 had 17 this survey, compared to 26 last autumn, at the end of a long dry summer.

Other findings

Nine Garden Skinks (*Lamphrolis guichenotii*) and 2 froglets (*Crinea signifera*) were caught. The generally cool weather meant there weren't a lot of coldblooded beasties about. Our biggest haul of 6 skinks at Site 2 was on the afternoon round of the 10th.

Three White Browed Scrubwrens were caught in the Elliott traps at different times at two different sites. All were released unharmed, and we suspect one came back for a second go at the peanut paste and oats that we use for bait.

Figure 1: Scrub wren

Figure 1: Rattus fuscipes from the traps

Summary

Our pit fences have now been in place for 2 years (5 surveys) and are generally surviving well. They do need standing up and sometimes reburying in parts, but the saving in time and effort is huge. Leaving them in place also overcomes the problems we were finding with erecting fences in the same place over and over, creating awkward trenches. We will, however, need to replace fences gradually as they become too bent and broken. Any offers of help gratefully accepted, as usual.

2010 marks year ten of this project, and acheiving a useful body of data. I hope the project continues for many years yet.

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Minnawarra Biodiversity Survey

Our Autumn survey is coming up!

It will be on the **14th -18th of April** . It is at Minnawarra, near Myponga. We will be looking at the usual mammals, reptiles and other animals over the five days. There will also be bird surveys, but they may be at a different time. Any and all interested people, from 8 to 80 years, are welcome to come and visit for one day, or the whole time.

Details are available from

Janet Furler 0419 842 667
Email: furlers@optusnet.com.au

VGRASP report

John Love

Figure 1: Chris Wright at the Arconna Bluff pluviometers

Chris Wright, Ray Hickman and John Love were the only venturers. The sole purpose was to service the data loggers. John Love also took a heat shield to put on one of the modem boxes at the water level gauge. Some measurements with thermometers had revealed a weakness in the design of the shield, necessitating some modifications to it and possibly others already installed.

We serviced the Maynards Well and exclosure pluviometers and the water level gauge on Friday and Arcoona South and Sambot on Saturday, spending the hot hours doing nothing! Following good rain in November, there was water in the pool a little way upstream from Woodcutters Well and also in Wild Ass Waterhole but none in Grandfield. On Sunday we walked up Grandfield Creek, to the Plateau. The creek turns into a pretty little gorge which forks south and south-east. Up the south-east branch there are two nice little waterfalls, about 4m each. After doing the pluvio, we went over North Tusk summit and down the ridge to Arcoona Creek near the junction with Grandfield Creek. This is an easier descent than scrambling down into Grandfield and balancing on all those round stones in the creek bed. After lunch and a bit of a spell we walked out to the car. On CW's suggestion, Jonh Love found using two walking sticks made walking along Arcoona Creek much easier for old legs.

On Monday Chris and Ray did the Arcoona Bluff pluvio while John tidied up the chaos in the car, then on to North Mooloolo and Pfitzners Well. We spent that night in a cabin in the Hawker caravan park. Back to town early Tuesday afternoon. There were a few light showers while walking down Arcoona Ck, and very unusual cloud formations. The weather report on Wednesday 3 Feb. said Arkaroola got 44mm on Wednesday, and Arcoona Bluff about 35.

My GPS odometer said I walked 55.7 km, not counting pottering round camp. We all found that hard to believe but we measure from point A to point B while the GPS records every step. In that sort of country, dodging round bushes, rocks, etc, can double your walking distance!

Figure 2 : After more than 55 kms, a man needs a short rest in the shade!!!!!

Inverterbrates at Arkaroola

Naila Ahmed

Figure 1: Arkaroola- Mt.Painter Wilderness Sanctuary

It was through the SA Museum and the Nature Foundation SA inc. that a position on SEG's Arkarooola expedition was offered to me.

Prior to departure, I spent several days planning with Annette Vincent, a long-term volunteer at the Museum and SEG leader. Being inexperienced at several of the field techniques we corresponded with Mark Stevens on specific methodology use and the relevant equipment. I calculated the volume of ethanol required, made an inventory of and packed required materials. My position with SEG was as an assistant leader of the entomology group. Annette and I together coordinated a general biodiversity survey targeting invertebrates. I learnt and successively demonstrated use of equipment to volunteers, collected specimens using a variety of field methodology techniques, cleaned and organised equipment for field use, and learnt how to effectively kill and preserve, then label and store specimens.

Aims

Our aim was to survey a vertical profile of three trees per site across various habitats. Across the Arkaroola sanctuary, 16 survey sites in different habitat sites were established using the Biological Survey of South Australia methodology. These were divided into two sections to allow for the logistics of coordinating all the separate disciplines. Sites 1 through to 8 were allocated to the bird, vegetation and invertebrates group in week 1, and sites 9 through to 16 were assigned to the vertebrates and physical vegetation groups . This arrangement was then switched around in the second week of the expedition so all sites were covered. We were allotted two hours per site at two sites per day. This allowed for time spent travelling to and from sites, and time required for other procedures back at base camp.

The vertical profile survey of invertebrate habitat involved:

- Obtaining tree samples for identification,
- Painting dilute honey solution on a branch of each selected tree,

Figure 2: Annette Vincent setting up inverterbrate capture bags at Arkaroola homestead.

- Beating foliage for arboreal invertebrates,
- Collection of small invertebrates by means of an aspirator and larger invertebrates by hand,
- Collection of leaf litter for use in Winkler Extractors and Burlese funnels
- Collection of soil for soil-dwelling organisms beneath the afore-mentioned leaf litter,
- Sweeping for large flying insects using butterfly nets,
- Use of UV light against a white sheet for trapping nocturnal flying invertebrates,
- Active searching at each site e.g. lifting rocks and logs
- Opportunistic collection at anytime, anywhere within the sanctuary
- Installing 10 micro-pits along a 10 metre transect line parallel to the vertebrate pit line targeting ground-dwelling invertebrates.

Other factors such as time, date, GPS coordinates, altitude, slope (where applicable) and weather was recorded at each site in a logbook by Annette. Habitat type had previously been assessed and a description of the vegetation community.

Figure 3: Graeme Oats conducting a tree sampling procedure

Results & Discussion

As this was a general biodiversity survey, one can only speculate on the results due to the vast amount of data that still requires processing. Results will not be readily available for several months until specialists at the SA Museum sort and identify the specimens collected. This is a time-consuming process and many of the experts are volunteers themselves. Sorted material will eventually be collated into a report to be submitted to DEH and the SA Biological Database. It was observed that predators and opportunistic scavengers were widespread across all study sites, possibly reflecting the characteristic low productivity of these nutrient poor ecosystems (Goldsbrough, Hochuli & Shine, 2003). These are only speculative judgements and are not indicative of any real results. Observations of possible environmental and sampling bias affecting the subsequent analysis of these results have been included as follows:

Effectiveness of collecting techniques and methods of extraction

Due to the elusive nature of some species, there will always be sampling bias in collecting invertebrates. Favour is given to larger, slower and more visible species, thereby creating bias when estimating species density (Standen, 2000). Species may be present at sites where certain collection techniques can't be used, for example, drawbacks of sweeping in a dense paperbark shrub land compared with an open Spinifex grassland. It is assumed that the micro-pits will capture a wider suite of ground-dwelling taxa not necessarily captured via active/opportunistic means. Sampling bias may also be seen in the trees selected for height and foliage within convenient reach (5-10 feet high).

Seasonal variance

Seasons influence the occurrence and abundance of a species, as a dominant part of their lifecycle may only be visible during certain seasons. Low numbers of invertebrates captured were observed to be connected to drought. It was observed that negligible spring rains in the sanctuary contributed to low numbers of spring blossoms. A correlation however, was observed between flowering plants and trees and greater numbers of invertebrates collected. Both prey and predatory species were observed on these flowering plants by comparison to a larger number of scavengers and predators (e.g. ants and spiders) collected throughout all sites.

Weather

Fluctuations in weather dictated use of some equipment. Dust-storms and high winds prevented the use of butterfly nets and UV light trapping for large winged insects. Effective leaf-litter collection may have been affected by these dust-storms, displacing the original invertebrate occupants. Some invertebrates were observed to be temperature-dependent, with cool and windy versus warm and mild days yielding different specimens.

Conclusion

Invertebrates constitute most of the world's known biodiversity and play an integral role in ecosystem and economic stability.
In conjunction with SEG, the SA Museum is currently processing and analysing the invertebrate field material collected from Arkaroola. Until this is completed, only speculations on invertebrate density and structure can be made. It is hoped that some measure of invertebrate species abundance, composition, and diversity can be gained from this survey, however due to the sheer amount of unprocessed data results will be unavailable for several months.

Possible variables influencing the effectiveness of invertebrate collection include seasonal variance, weather, habitat type, and sampling bias. Future, more comprehensive surveys should identify and evaluate these as possible factors influencing species abundance and occurrence.

Figure 5: Some specimens were collect ed using UV light at night.

As this biodiversity survey is the first of its kind in Arkaroola, the specimens collected are of great value

Figure 4: Some specimens collect for the museum

to the Museum. These biological surveys are significant in establishing the biodiversity in a variety of ecosystems (Barr, (ed.) 2009). All information gathered will be collated and entered into the SA Biological Database, providing base line data for future use in many areas.

My role on this expedition afforded me valuable insights into the complexities of mounting a survey of this kind, in terms of the organisation of teams, logistics of coordinating the needs of a group of over 40 individuals as well as of course the issues involved in data collection during field work. I was able to learn about different methodologies and equipment used to collect, treat and preserve specimens, at times with limited materials and supplies.

The Arkaroola Wilderness Sanctuary supports a unique and fragile ecology that is home to several endangered species, and surveys of this kind are important to determine the extent of its biodiversity. The proposal of future mining exploration harbours bad news for the sanctuary and it is hoped that the information gained by such surveys can help ensure its vulnerability will be protected.

Summary

1. Invertebrates are essential for economic and environmental stability and make up nearly 95% of the worlds known biodiversity.
2. The South Australian Museum undertakes significant entomological research on material collected from expeditions organised by groups such as the Scientific Expedition Group.
3. In conjunction with the SA Museum, the Scientific Expedition Group conducted the first biodiversity survey of the Arkaroola-Mt Painter region.
4. A vertical profile of invertebrate habitat was surveyed, incorporating several types of field techniques.
5. Results can only be speculated on until identification and analysis is complete but field observations indicate greater numbers of predatory and scavenger species. Invertebrate collection was possibly influenced by environmental variables and sampling bias.An account of all work will be submitted to the SA Biological Database. It is suggested that further research and replications of this survey will yield more comprehensive results.

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Student's Arkaroola reports

Conrad Denyer

Arkaroola Biodiversity Survey 2009 Student Report by Elisa Tugwell

The SEG Arkaroola trip was a wonderful experience and opportunity to learn about a variety of aspects of nature. It was also an amazing experience to see such wonderful scenery there and during our travels to and from. As well as having vast opportunity to speak with and learn from very knowledgeable and experienced scientists and locals. Over the days we were there, groups were swapped around to different activities including such things as reptiles, mammals, invertebrates, birds, cooking, tourists, etc. So we got to be involved in a variety of tasks and interests. The weather was also an interesting experience with a combination of heat, cold, wind, dust-storms and even a bit of drizzly rain which arrived as mud.

My first day checking traps was with the focus of reptiles, but we shared responsibilities around and I was helping re-set and bait Elliot traps for the mammals and making sure the traps had plenty of shelter from the harsh sun. Although we didn't find much, there was still plenty to learn as we had discussions while working on traps and fixing the trap fence-lines which were damaged by the ferocious wind.

The next day I spent with a mammals focus, which I had learnt a bit about the day before. We found a few things, but most exciting was a sighting of a Yellow Footed Rock Wallaby, which I took photos of. We also went and looked at an old mine near one of the sites and another one on the way back to camp called 'Lively's Gold Find.' As well as our searches and repairs along the way, we set up a bat net at one of the sites in a creek bed.

The following day was a beautiful bright sunny day with a beautiful cool breeze, and what better way to spend it, but bird watching. The scenery was absolutely amazing and it was great wandering through sites or just sitting quietly. We also visited a waterfall and an old barometer. There was a pile of a variety of rocks near the barometer which were really interesting too – many shapes, colours and sizes.

Another day I spent with a focus on inverts, not quite my 'cup of tea,' but I enjoyed it anyway. Whether it was shaking trees and collecting, collecting leaf litter, searching and catching creepy crawlies, or even wandering around with a butterfly net it was really interesting and quite exciting to catch a very beautiful butterfly.

I also took part in a day of cooking and a tourist day as well as other bird, reptile, mammal and invert focus days. There was also chance to visit the Arkaroola village and some stops on the way to and from sites at lookouts and learning some history of the local and surrounding areas. We also had talks some nights to update us on the progress of the findings and to explain what was expected or hoped for as well as providing information about some of the findings. There was also a presentation from Mr. Ian Pilmer, who spoke about Arkaroola village and the hills and formations surrounding. This was on the night of a party for SEG's 25th birthday, which we had up in a building at the village.

SEG Arkaroola was an amazing experience and I would recommend it to anyone and everyone. I would love to participate again as it was a wonderful learning experience in so many aspects and such a fun adventure.

Arkaroola Biodiversity Survey 2009 Student Report by Max Barr

I am currently in 3rd year of a Bachelor of Science majoring in Marine Biology at Adelaide University. I was invited to join in on the 2009 SEG expedition by my father (Andrew) and the student scholarship received from the Nature Foundation helped pay for the cost and was greatly appreciated.

As a student at Adelaide University I have been taking courses such as Ecology, Botany, Zoology and Evolutionary Studies. Ecology subjects in particular are an interesting subject and many examples from text books and studies performed by lecturers themselves are giving in class and tutorials. After having the chance to go on some day studies down to the Coorong with a fellow students, I learned how text book examples are used in the field.

The Arkaroola expedition and the opportunity to work closely with Science experts in the various fields of botany, entomology, zoology, ornithology and vegetation maps over the 2 week period helped me with my studies to are to be learnt in the classroom.
As an aspiring Ecologist, the opportunity to have things explained in the field as they are happening is a huge advantage and will strengthen my practical knowledge. Having step by step processes explained as we worked, sometimes long days, in the field showed the importance of experimental design and for the purpose of the biological survey itself. Learning in a class room and reading books can take you so far but to actually apply the concepts in the field reinforces that knowledge.

I learnt about the plants of inland arid South Australia and the underlying geology that has a direct impact on what flora grows there. This in turn dictates what fauna could be found in the fragile arid ecosystem.
During the rotation of scientific groups I was able to practice many different methods of catching invertebrates and vertebrates and collecting plant matter for identification by the group science leaders. I learned about the herbivore/plant associations, bird identification, bird species in the area as well as the methodology in recording physical vegetation at the selected sampling sites.

Mostly I developed a lot of local knowledge about the Arkaroola Sanctuary and the surrounding areas as well as information on the founder and his family. The name Reg Sprigg is tied to parts of Adelaide University and pioneer ecotourism. His brilliant discoveries and his passion for science has inspiring all in his wake.

Arkaroola Biodiversity Survey 2009 Student Report by Supriya Lath

I have recently completed studies in Biodiversity from Flinders University and attended the Arkaroola Expedition along with SEG. I was very keen on gaining some hands-on experience in conservation and biodiversity, and the student scholarship from Nature Foundation made it possible for me to attend this expedition.

Arkaroola is known for its rugged and spectacular landscape and diverse flora and fauna, but since there had been no official survey ever carried out in the region, the aim was to conduct a comprehensive baseline biodiversity survey covering plants, birds, mammals, reptiles, insects and even bats. Several experts and enthusiasts from each field attended and there was a wealth of information to gain from just talking to them and accompanying them on the surveys.

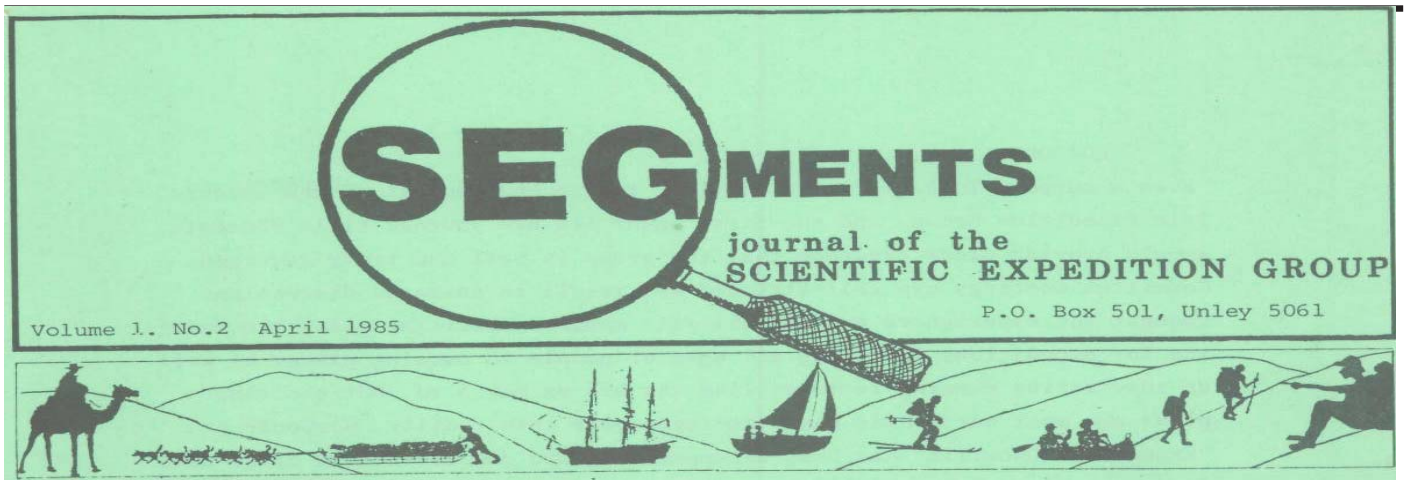
While I had been involved with animal surveying in the past, it had never been as extensive as those that were carried out at Arkaroola. It was fantastic to see such comprehensive surveys being carried out at number of sites in a way that the information collected would be representative of the whole region. Survey techniques involved the use not only of pitfalls, but also cage traps, collapsible funnel traps, as well as Elliot traps. Most of my experience in the field prior to this expedition was based around mammals and reptiles using pitfall traps, but this time around I got the opportunity to be involved in the survey of bats, birds and insects as well. Carrying out vegetation surveys gave me lots of opportunities to take a closer look at lot of the native flora that I had only heard the names of before, and familiarise myself with their characteristics and scientific names. Attending this expedition has not only given me the chance to gain knowledge of the local flora and fauna of this region, but it has also given me more confidence in animal handling and carrying out surveys using a host of techniques.

There was a lot to experience even outside the realm of biodiversity. Arkaroola is a haven for geological enthusiasts, and for good reason. Some of the massive quartz crystal masses I got to see one of our field sites near Mount Gee were like none I have seen before. There was a lot of concern about the mining propositions at Arkaroola which gave me an insight into the management and political aspect of things. The SA Museum visited Arkaroola on their annual 'Out of the Glass Case' roadshow and conducted free talks and walks. It was quite interesting to watch Professor Ian Plimer deliver a Sprigg Lecture and learn about the works of Regg Sprigg and his discovery of Ediacaran fossils in the Flinders Ranges, in the surrounding of the same areas that we were conducting our surveys in. I also got to hear a bit about Plimer's views on the Earth and climate change. All in all, this Expedition experience with SEG was fantastic and I really appreciate all the work that had invested by volunteers and committee members to organise everything and see it through.

Arkaroola Biodiversity Survey 2009 Student Report by Naila Ahmed (see article this edition)

SEGMENTS Vault

Conrad Denyer



EXPEDITION CHOWILLA

Preparation for SEG's first expedition is well underway. Leaders have been selected and a number of applications for expeditioners received. However more expeditioners are needed. The expedition is now open to anyone 15 years and over, so all members are eligible to apply. The trip will run from Tuesday, 21st of May to Friday the 31st, and the cost, which includes transport from Adelaide, food, equipment, etc., is $120.

Chief Leader is Kevin Smith, assisted by Jim Riley, both from Glossop High School, who will oversee organisation in the Riverland. Joc Schmiechen and Doc Willing will help co-ordinate things at the Adelaide end along with the group leaders. Rosemary Wilde is the expedition treasurer.

The group leaders for the trip are:-
Ken Davis (teacher at Urrbrae High School) and holder of Grad. Dip. In Outdoor Education),
David Lloyd (teacher at Oakbank Area School),
Felicity McEwen (teacher at Morphettvale Kindergarten, and studying the Grad. Dip. In Outdoor Education,
Tony Woolford (Adelaide University Student),
Tony Flaherty (studying Assoc. Dip Wildlife and Parks Management.

As well as being capable canoeists they all have a variety of other outdoor skills, natural history experience, scientific interests and qualifications.
The expedition will start with a brief orientation and skills development stage where participants will be exposed to canoeing, environmental skills, survey techniques and other "tricks of the trade". Local people will also talk on aspects of the area.

Details of the scientific phase are yet to be finalised. These aspects, along with the choice of a base camp will be discussed by the leaders on site, prior to the trip.

As well as general ecological and cultural data collection a number of more specific objectives are to be considered. Some of these include:-

*comparison of freshwater mussel species in old Aboriginal midden sites with living populations to assess possible fluctuation in the status of the two species which occur in the area.

*chemical and physical analysis of water characteristics in the area.

*location and documentation of historical and cultural features of the area. The Heritage Unit has no site records for the area so any finds would be significant.

*comparison of bird populations and habitat and quantitative surveys of bird numbers.

*it is also hoped to try out some of the canoe t rails being developed by the Department of Sport and Recreation and obtain information for future trails.

If there are any aspects of the expedition you would like to discuss, feel free to speak to one of the leaders at the Social Evening on Friday, 3rd May. However, if you want to join in as an expeditioner, don't wait, please get your application in now!

Edited from the original journal April 1985 by Conrad Denyer

Volunteers Needed for next Vgrasp Expedition

April 20 - 27th. 2010

Contact: michtreth@bigpond.com

SEGments

SCIENTIFIC EXPEDITION GROUP

The Scientific Expedition Group (SEG) came into being at a public meeting on 21st August 1984. Members receive regular information on SEG activities and expeditions. Membership is open to any persons, family or organisation interested in the following aims:

* The promotion and running of expeditions of a scientific, cultural and adventurous nature.

* The furthering of knowledge, understanding and appreciation of the natural environment.

* Promotion of the values and philosophy of wilderness.

* Enabling people to learn the skills required for planning and running expeditions, and to develop sound field techniques.

APPLICATION FOR MEMBERSHIP AND MEMBERSHIP RENEWAL for 2010

SUBSCRIPTIONS

Adult member - - - - - - - - - - - - - - - - - $30.00

Concession cards/ student------ - - - - - -$15.00

Family membership - - - - - - - - - - - - - $30.00

Corporatemembership - - - - - - - - ----- $35.00

Name. . . . . .

Address . . . . . .

. . . . . .

Telephone (H) . . . . . (W) . . . . . .

E-mail . . . . . .

Details of scientific, cultural, and adventuring or other relevant skill or interests you may be prepared to share

with the group:

. . . . . .

Send a cheque (Scientific Expedition Group Inc.) with a Photocopy of this page to

The Secretary

Scientific Expedition Group Inc.

P.O. Box 501

Unley S.A.

5061

Visit the Scientific Expedition Group Website

http://www.communitywebs.org/ScientificExpeditionGroup/default.htm

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