SEGments

Journal of the Scientific Expedition Group

Volume 25 Number 1

SEGments

Scientific Expedition Group

Volume 25 Number 1, June 2009.

ISSN 0816 -6463

SEGments is the authorised journal publication of the Scientific Expedition Group INC., PO. Box 501, Unley SA 5061. It is published four times a year to promote articles about biodiversity, scientific exploration and ecological research.

Contact:
Scientific Expedition Group INC.
SEG email: segcom@telstra.com

SEG Secretary: Gina Breen
PO. Box 501, Unley SA 5061
Email: ginabreen@aapt.com.au

SEG treasurer: Graeme Oats
Email: gdoats@bigpond.net.au

SEG website: Http://www.communitywebs.org/ScientificExpeditionGroup/default.htm

Contents

Volume 25 Number 1, June 2009.

	Page
Editorial	**1**
GRaSP: part 1+2	**3**
Healthy Water Project	**6**
Vulkathunha: Gammon Ranges	**8**
Minniwarra Biodiversity Survey	**10**
A Scientist Profile: Dr. Catherine Kemper	**12**
AGM business	**16**

COVER: GRaSP Survey in 2009:
A twenty five year project monitoring the relationship between changing rainfall patterns, streamflow, vegetation and animals.
In a steep Gammon Ranges tributary, ephemeral pools form on 600 million year old sandstone after two inches of rain.
Photograph taken **Michelle Trethewey**

Editorial: Water in Australia

Water, water, everywhere,
Nor any drop to drink.
The Rime of the Ancyent Marinere by Samuel Taylor Coleridge

According to the President of the World Water Council (2000), access to clean drinking water and the rise in transboundry water conflicts will create many problems in the future.

Australia is a continent surrounded by oceans, and we know from the research that we live on the driest continent. So, is there a water scarcity in Australia? Frequently we see on the TV news where many parts of the continent are flooded, but in other parts, we see farmers with no rainfall due to the effects of El Nino. When it does rain, where does all the water go but out to sea! It is a problem of distribution and management.

The changeable rainfall patterns in Australia controls and affects the distribution of water in the catchment areas. Put simply, there is more rain in the north and the mountains and very little in the central desert areas. We should move more water from the north by pipelines to urban areas that require it.

According to (Davis, 2008) the management of urban water has entered the fourth generation where environmental, sustainability and business models will control the supply of water to urban Australia. The better management of water in the city could be helped by the capture of local run off water which could be integrated for use and supply after a purification process.

South Australia will have a water scarcity problem soon. The state government is spending millions of dollars to help secure a consistent supply for Adelaide by building a desalination plant as there is a lack of water in the Murray-Darling basin. The concept of recyling grey water needs serious consideration. However, public resistance to the idea of the water's purity needs to be resolved.

As individuals what can we do to help conserve the water we use. Ask yourself these simple questions.
Do you have a rain tank sytem at your house?
Do you have low flow shower heads?
Do you have a dual flush toilet?
Could you shower with a bucket or a friend?

The first joint article by Michelle Trethewey and John Love over the very wet Anzac weekend reports on the valuable ongoing work for monitoring animals and water by the Gammon Ranges Scientific Project.

The second article about the *Healthy Waters Project* by Linda-Marie Mc Dowell and Peter Pfennig addresses the ongoing objective to protect water quality. Community input is invited through the Environment Protection Authority website.

The third article by David Kemp is a follow up report on the previous edition's article on the distribution of water in the Gammon Ranges, which highlights the infrequency of rainfall in this region.

The autumn Minnawara survey report by Janet Furler also can add some valuable data to the flora and fauna database that has been building for the last eight years.

Finally, SEGments has started a new section in this edition called "A Scientist Profile". SEGments interviewed Dr. Catherine Kemper, the Curator and Researcher of Mammals at the South Australian Museum. She discussed her interest in science, mammalogy and her museum work with great passion.

We hope to bring you more interesting interviews with scientists who have shaped specific branches of science in future editions.

Andrew Barr

References and further reading:

World Water Vision (2000), Earthscan Publications.UK.
Davis, C.(2008) Sustainable Urban Water Systems, *Water,* Nov. p.44
http://www.worldwatercouncil.org
http://www.awa.asn.au

Correction

The animal on the cover of SEGments Vol.24, No 3 was a Stripe faced Dunnart (*Sminthopsis macroura*) not *Sminthopsis crassicaudata.*

You can email information, comments and articles to the
Co-editors:
Michelle Trethewey
Email: mtrethew@campbelltown.sa.gov.au
Andrew Barr
Email: andrew.barr@unisa.edu.au

You are invited to join us on an expedition to the Arkaroola Wilderness Sanctuary in the northern Flinders Ranges of South Australia. This area has been subject to major geological activity over the last billion years or so, resulting in a great variety of soil types and land forms which have a large influence on the flora and fauna to be found. 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
.
Standard biological survey methods will be used to identify, measure, document and release animals caught.

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 and seeing some amazing country along the way.

Dates:- The expedition departs early on the morning of Sunday 20th. September 2009 and returns on Saturday 3rd. October 2009.

Accomodation:- On this survey, we will be based at the old Arkaroola Station, with sleeping and bathing facilities in both the shearer's quarters and the homestead itself. We will also make use of the shearer's kitchen to prepare meals.
For those most happy under canvas there are also plenty of camping spots.
BYO tents.

Costs:- The total cost for each expeditioer is only $700 which covers transport, food and participation in all activities.

Numbers are strictly limited on this survey due to logistical and movement requirements particularly on the Ridgetop track so register your interest now!!
Please phone Trent Porter on 82789078 or email on trentasaurus@bigpond.com

BE QUICK - SPACES REALLY ARE STRICTLY LIMITED

STOP PRESS : Student concessions *may* be available, subject to grant approval.

Figure 1: Wild Ass creek

We had all been watching the weather leading up to our departure – after all it was Anzac weekend. We were leaving Adelaide at 6.00 am Thursday the 23rd of April. True to form we heard the news that Thursday late afternoon would bring heavy rains and Friday would be very windy, wild and woolly with more shower activity that was to continue on Saturday. The rain should be more to the south of us on Sunday, clearing up on Monday (of course – travelling home day).

We left home just after 5.00am on Thursday morning and headed down from the hills to Magill to pick up Alison Miller, drove into the city to collect Shintaro Tokimoto and then on to Thebarton to pick up the last of our passengers, Leila Macadam. After tidying up a mess of packs, chairs, tools and water containers, we were on our way by 6.15am. Chris Wright and David Kemp made their way to John Love's house where they all travelled in John's car, picking up Christine Arnold from DEH at Port Augusta along the way. We kept in contact with each other along the journey and met up for lunch at the Copley bakery, John's car pulling in within 5 minutes of our arrival. During lunch we were joined by Darren Crawford from DEH at Wilpena. He was to spend the afternoon with us on his way to delivering a quad bike to Balcanoona.

We split into three groups, two of the cars going to Arcoona Creek, and the third car proceeding to the Station pluvios to do the logger exchange. At Arcoona Creek, Chris Wright took Darren for a walk to the Quondong Exclosures, showing him some of the features along the way and was able to show him the types of things that the SEG V-GRaSP project does. Christine, Garry and I did the Wallaby walk up Wallaby Creek and down Evasive Creek and were lucky enough to see a rock wallaby glide by noislessly. There were plenty of fresh wallaby scats, providing evidence that the wallabies are around. There were more scats in Evasive Creek (than in Wallaby Creek), which is where we spotted the rock wallaby. The skies started to darken, a few spits were felt and the rocks were getting a touch slippery. We headed back to camp as quickly as we could and arrived on dark, around 6.15pm. Too late – we got wet, put up the tent by torch-light, ate a quick meal and then got into the soggy tent with soggy clothes, creating soggy sleeping bags. I wasn't feeling so flash and was pleased just to lie down and to forget about my pounding head and the thought of throwing up.

I think that the station pluvio car got in early enough to get their tents up in the light and dry. John and David being very resourceful, tied a line of string between trees and hung a couple of tarps together so that we could all eat underneath them. The big moths also wanted to be a part of of dinner which was not so great for the vegetarians. During the night, Shintaro's tent became flooded as he was on slightly lower ground, with all his gear, sleeping bag, clothes etc getting soaked.

On Friday morning, Brad from Oweandana came by on his motorbike and said that they had 37mm of rain overnight and that the tracks weren't good, putting an end to his mustering plans. He made an offer for all to spend the rest of the trip at the log cottage if the weather kept up. During the trip I made a Next G phone call from North Tusk to BOM and found out that Arcoona Bluff had recorded 41.8mm overnight.

The trip was to be split into two groups. Christine, David and John were going to be involved in rock wallaby observatons at various parts of the park and around Yankanina. The remaining six of us were to carry out the usual data logger exchange and check Next G reception at the Plateau. There had been so much rain that we all agreed to change the plans. As the rocks were too slippery and dangerous to carry out rock wallaby work, the three muskateers helped out our group by taking the data loggers for the Excosures

Figure 2: Changing the Data logger at Arcoona Bluff

and also Arcoona South and effected the logger exchange at these points.

Due to the expectation that there would be pools of water everywhere, our group was able to omit the usual extra day of walking to carry water to Vandenberg, 8 km up the creek and back again. This put us a day ahead, allowing our group to go straight to Vandenberg, Sambot waterhole and Sambot pluvio on Friday. At The Seeps, we found another mummified YFRW (total 4 in 18 months). We found plenty of water for our needs, with the best and clearest supply at Grandfield.

On Saturday, our group headed up to North Tusk and on to the Plateau, stopping to take the usual Vegetation photographs along the way. Chris Wright brought a kit of wires, a modem and a pole to see if The Plateau could receive Next G signals. With the Plateu Pluvio being just over the ridge from line-of-sight to Leigh Creek, the reception with the Next G Modem was less than usable which was disappointing.

Figure 3: Attempt at a next G modem check

Figure 4: Leaving camp heading for North Tusk

We had drizzle during the nights and for parts of each day, but the blessing was that it wasn't cold. As Chris pointed out, we also didn't have mosqitos, flies, ants or stinking hot weather. Our group walked out from Vandenberg on Sunday morning to our car at Arcoona camp ground and then headed to back to Adelaide. Chris and the Wallaby group stayed on at the cottage at Oweandana, departing for Adelaide on Monday morning. We achieved all the jobs and had a really enjoyable walk. The group was very pleasant and it was fantasic to see so much water everywhere.

Figure 5: Filling in Log Book at Sambot Waterhole

Contact : **Michelle Trethewey**
Tel: (08) 8366 9215

Figure 1: Expedition members

Figure 2: Flowing water !!!!

David Kemp, Chris Wright and John Love left Adelaide at 6 o'clock on Thursday 23 April, made phone contact with the Tretheweys at Port Wakefield, and went on to Port Augusta to pick up Christine Arnold. Driving north from Hawker, the ranges to the east were almost invisible because of dust in the air. After lunch in the Copley Bakery, Christine and Chris went with the Tretheweys direct to Arcoona Creek. Chris met up with Darren Crawford, from National Parks, and walked up to the Quandong Exclosures while discussing the water supply problem at Vandenberg. Leila, Alison and Shintaro went with David and John to change the data loggers at North Moolooloo and Pfitzners Well. Ian Ferguson had recently graded the roads - I have never had such an easy drive to Pfitzners. We had barely pitched camp at Arcoona Creek when it began to rain. Dinner was cooked and eaten huddled under a tarpaulin hung over a rope strung between two trees. John's tent was not as water-proof as he had thought. Shintaro found that the apparently flat place he had chosen was a shallow saucer, which filled with water.

Friday was too wet and misty to look for wallabies so the wallaby party, Christine, David and John, changed the data logger at Arcoona South. A steady stream was flowing along about two kilometres of Arcoona South creek but it went underground as soon as it reached the main creek.

Saturday was spent looking for, and finding, wallabies on the north side of Arcoona Bluff. On Sunday we did the usual journey to the Frome River, delayed a little by the very slippery mud on the river bank. More wallabies were seen, and a spangled perch, quite fresh, high and dry on the river bed. We three spent Saturday and Sunday nights in the log house at Owieandana, where we were joined by Chris Wright for Sunday night. Paul Doran's son Brad, who was in sole charge of the property at the time, had Sunday dinner with us.

After changing the data logger at Maynard's Well and a brief visit to Gina Nicholls, we had an uneventful journey home via Port Augusta.

Spangled perch found on bed of Frome River 26 Apr 2009.

Contact: **John Love**
email**: jhlove@internode.on.net**

Healthy Waters Project

Linda-Marie McDowell
& Peter Pfennig

Figure 1: Mouth of the Onkaparinga River

The *Healthy Waters* project, currently being project led by the Environment Protection Authority (EPA), involves local communities, industry and government working together to consider issues relating to protecting the quality of water in our rivers and creeks, underground water and marine environments across the Adelaide and Mount Lofty Ranges region from the Barossa Valley to the tip of Fleurieu Peninsula. A variety of community and stakeholder engagement methods including open house sessions, on-line forums, targeted workshops and a citizen's jury are being incorporated into the consultation process to develop community agreed environmental values and water quality objectives for waters across the region. To date several hundred people including community individuals and groups, private businesses and government representatives have participated in these opportunities to have a say about water quality in the region.

Every water resource in South Australia must meet the general water quality standards set out in the *Environment Protection (Water Quality) Policy 2003*, however, for the Healthy Waters project people are being asked to work together to identify more specific environmental values and water quality objectives to meet the needs of major water resources in the Adelaide and Mount Lofty ranges region.

Environmental values are the important uses or purposes of water the community agree water should be protected for. Environmental values for water do not just cover the uses that are about protecting aquatic ecosystems and the natural environment. They can include the whole range of values linked to protecting water for industry, agriculture, recreation and even cultural and spiritual values.

Water quality objectives are measurable targets that protect water quality. These might be: physical measures such as temperature and turbidity, chemical measures such as the levels of phosphorous or nitrogen found in the water, biological measures such as levels of bacteria or the variety of aquatic organisms present or aesthetic measures such as setting targets for odour and colour. Different water quality objectives will be set for different water bodies depending on the environmental values or uses the community has identified it wants water bodies to be protected for in the region. For example, water that is going to be used

Figure 2: Students bird watching

to support native fish and birds will require a different level of water quality to water set aside for industrial uses or irrigated food crops.

An important consideration in the Healthy Waters project is the trade-offs that may need to be made to strike a balance between the environmental, economic and social needs of the region and local communities.

The current condition of water resources is also being taken into account. To have your input into setting environmental values and water quality objectives and provide input into discussions on the trade-offs that may be required you can have your say on-line through the Healthy Waters website www.epa.sa.gov..au/healthywaters or email healthywaters@epa.sa.gov.au

The Healthy Waters project is a partnership project being funded by the Australian Government's Caring for our Country funding initiative and the complementary State NRM Program. It is being managed by the South Australian EPA, in partnership with the Adelaide and Mount Lofty Ranges Natural Resources Management Board, SA Water and the Department for Water Land and Biodiversity Conservation (including the Office for Water Security).

For further information on this project refer to the Healthy Waters website www.epa.sa.gov..au/healthywaters or email healthywaters@epa.sa.gov.au

Contact:
Linda-Marie McDowell, Project Leader for the Adelaide Coastal Waters.
Peter Pfennig, Manager Healthy Waters Project, Environment Protection Authority.

SCIENCE WEEK at the MUSEUM

Once again SEG has been invited to mount an 'interactive' display as a contribution to the South Australian Museum's **Science Week.**

We plan to make a full scale model pitfall trap and invite kids to extract plastic animals from it using tongs. This will be the focal point of our display this year. There will also be the usual photos, audio-visual DVDs projected on a screen and SEG brochures.

We need volunteers to staff the display on the two weekends:

15-16 August and 22-23 August 2009.

Please contact John Love at jhlove@internode.on.net or phone 8379 1172 (Leave a message on the answering service if I don't answer.)

Vulkathunha: Gammon Ranges

David Kemp

In the last edition of SEGments, Chris Wright discussed the occurrence of water in the Gammon Ranges. I would like to add to those observations, based on flood modelling, and my own observations on the ANZAC weekend trip this year, when 40mm or so of rain fell overnight, causing some of the creeks to flow.

I have been actively researching flood flows in the Flinders Ranges for the past 25 years, and there is no doubt that the monitoring of Arcoona Creek had given valuable information.

The flooding pattern in Arcoona Creek makes it difficult to do analysis to predict flood frequency. Flood frequency analysis is generally undertaken by fitting a probability distribution to the series of maximum annual flows, and using this distribution to assess flows for a range of probabilities. However, in the case of Arcoona Creek, the number of years with no flow means that the application of such an approach would require many more years of record to make up for the lack of flow in most years.

Table 1 summarises the peak recorded flows, in cubic metres per second (m^3/sec). It can be seen that there are more years of no flow than years when flow is recorded. It can also be seen that flow in Arcoona Creek tends to happen during the summer months.

Two flood flows, in January 1995 and March 1996, have been used in a hydrological model to gain knowledge on how the catchment responds during flood events.

The model represents the catchment in a mathematical sense by a series of storages that represent the movement of water both from the hillsides and along the stream channels. Rainfall is applied to the catchment, and losses are subtracted from the total rainfall for each runoff process. Up to three runoff processes have been found to exist in the Mount Lofty Ranges, and these same processes were assumed to exist in the Arcoona Creek catchment. These processes are base flow, where water moves down to the water table, and then into streams; slow flow where water moves through soil layers to the stream and fast flow, which is flow along the surface.

The model was applied with rainfall measured at the Exclusion Zone site (near the gauging station) and the Gammon Plateau (in the upper part of the catchment), and the outflow compared with the measured hydrograph (flow vs time) at the gauging station. The parameters of the model (catchment response time and losses) were adjusted to fit the recorded hydrograph.

The rainfall that caused both flood events was characterised by short duration, intense rainfall. In the

Year	Peak Flow Date	Peak Flow (m^3/s)	Comment
1993	12 December	6.0	
1994	-	-	No flow recorded
1995	16 January	47.5	
1996	15 March	92.7	
1997	7 February	10	Gauge not operating – estimated flow from flood level
1998	-	-	
1999	-	-	
2000	20 February	2.7	
2001	-	-	
2002	-	-	
2003	-	-	
2004	-	-	
2005	-	-	

Table 1: Summary of Peak Annual Flows

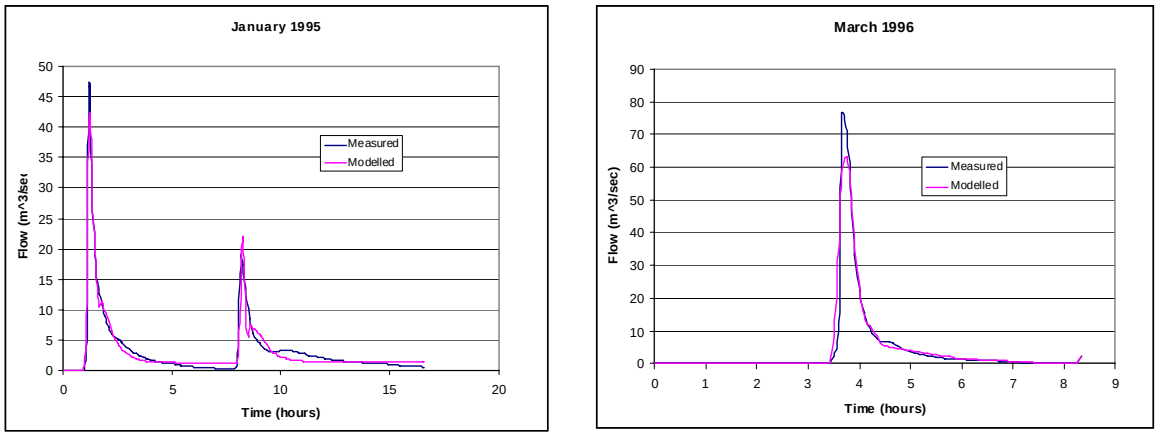

Figure 1: Arcoona Creek Fitted Hydrograph, January 1995 and March 1996

first burst of rainfall in the January 1995 event, and the runoff causing burst in the March 1996 event the rainfall were both of about 1 hour duration, and having rainfall totals of 17.6mm to 36.8mm respectively. In March 1996 runoff occurred after an initial rainfall of approximately 33mm, of 10 hours duration, but containing several bursts.

Figure 1 shows the recorded and fitted hydrograph for the two flood events. A significant fact is that for both floods the flow went from zero to the peak within 10 minutes, which is extremely fast given the size of the catchment. However, this is a characteristic of Flinders Ranges creeks which often surprise travellers and campers by the sudden arrival of a flood.
The results of the modelling confirm that Arcoona Creek behaves much differently to catchments in the humid areas of the state, for instance the Mount Lofty Ranges. The catchment response time is less, and the rainfall losses are higher.

The rarity of flows can be attributed to both the infrequency of rainfall, and the high loss rates in the catchment. It was noted that when looking through the records some high daily rainfalls did not produce significant floods. For instance, the February 1997 flood was caused by a daily rainfall of 106mm, but the peak flow was only of the order of 10m3/s. Steady rain does not produce creek flow.

Personal observation and that of others familiar with the catchment is that the hillsides, being quite rocky, have relatively frequent flow, but the creek channels have significant gravel deposits that soak up the flow. It takes a rainfall event large enough to overcome the storage capacity in the channel gravels to produce a flood at the gauging station. More often a rainfall event will fill local waterholes, particularly at rock bars across the channel. The pool that is formed at the gauging station has filled several times without flows occurring. Once there is enough flow to overcome the channel loss the response is very rapid due to the efficiency of the channels.

It was obvious on the ANZAC weekend that this observation remained true. Many of the smaller side creeks flowed, but not the main creek at the gauging station. Where the main creek did flow, it was at a location where bed rock was showing, this rock forcing water up to the surface.

Contact: David Kemp
Senior Stormwater Engineer
Department for Transport, Energy and Infrastructure
Phone: +61 8 8343 2534 (Internal 22534)
Fax: +61 8 8343 2747 (Internal 22747)
E-mail: mailto:david.kemp@saugov.sa.gov.au

Gammon Ranges Scientific Project (GRaSP) is 21 this year and to celebrate SEG is calling for Expression of Interest for the

Crossing the Gammons Walk

Following the approx. route by C. Warren Bonython AO from Mt. Serle to Arkroola in 1968.

Departing Adelaide 22nd September and returning 3rd October

This trip is for experienced walkers only. Applicants will need to be self sufficient in long distant walking. Costs yet to be determined – but up to $200.00 If you are interested and require more information please contact: Graeme Oats 8278 3179 or

Email gdoats@bigpond.net.au

Minnawara Survey

Janet Furler

A successful biodiversity survey was conducted at Minnawarra over the Anzac long weekend Autumn survey 22nd-26th April 2009. It involved a good number of volunteers, young children and secondary and tertiary students.

Personnel

There was a very successful working bee on 18th April, attended by Alun and Kathleen Thomas, Graeme Oats, Duncan Mackenzie, various Furlers and friends. Apart from renovating and weeding all the fencelines, the longdrop had a new door and floor and now has a little more knee room.

Figure 1: Volunteers processing a mammal

The traps were set up and opened on 22nd April by 6 volunteers. At each of the 8 sites were 6 permanent pitfalls, 15 Elliott and 2 cage traps. The survey went on for 4 days, and traps were closed on Sunday 26th April. Mammals were identified and processed by Janet Furler, and Jill and Eliza Tugwell. Christina Pahl and Loraine Jansen both helped for a morning, and probably both regret the offer! Loraine started a new sport – Extreme Parking. Quite a sight, according to the people watching as her Hilux gracefully descended into a gully. She did pick one with no trees, rocks or other obstacles, and a rescue was achieved with the tractor. Christina, her two girls and John L. were walking to sites 4 and 9 (too wet to drive) when they copped the deluge. Not only were they wet through but the paperwork was too wet to write on. Mark Darter gets an honourable mention as scribing beyond the call of duty. With Mark crouching under an assortment of raincoats and trying to keep the papers dry, Missy the dog decided that under his (shorts clad) knees was a good spot to squeeze herself.

The birds were monitored on the next weekend, in much nicer weather, by Denzel Murfet and Robyn Guy. The usual 32 species were noted.

Twenty five people, aged from 8 to 80, visited, helped and met the local beasties. 453 volunteer hours have been donated to help run this survey. Sincere thanks are due to all the volunteers who worked so hard to make this a success.

Weather

Wed 22nd April 09: fine, calm and clear. Still very dry Thurs 23rd: Overcast am, rain started at lunchtime. Yay! Fri 24th: 29 ml by 7.00am and continuing, we resorted to walking up and down hills Sat 25th: A midmorning deluge, 33 ml through the day. Sun 26th: still showers, cold

Although the forecast was not ideal it was decided to proceed as it is very difficult to reorganise volunteers. It is also useful to know what is out and about in different weather conditions. There were several pits that were covered early as they were not draining completely.

Mammals

99 native small mammals were captured, of which 82

Figure 2: Rattus fuscipes

Figure 3: Antechinus flavipes showing indentifying ear hole

were new and 17 recaptured from previous surveys. With repeat captures over this survey we handled 147 animals. Three visited traps every night, being caught 4 times each. The numbers caught at each site ranged from 5 (site 7, Gums, grass, bracken) to 26 (site 1, Dense swamp). There were 49 Bush rats *(Rattus fuscipes)*, 13 Swamp rats *(Rattus lutreolus)* and 19 Marsupial mice *(Antechinus flavipes)*. In addition 14 House mice *(Mus musculus)* and 4 Black Rats *(Rattus rattus)* were trapped and despatched as they are not native.

Figure 4: Janet Furler and Graham Boyce checking Rattus fuscipes

Other findings

There were 17 skinks in all, 12 Garden skinks *(Lamphrolis guichenotii)*, 1 Southern grass skink *(Pseudomoia entrecasteauxii)* and 4 Hemiergis *(H. decresiensis)*. In addition 4 scorpions and one spider were caught in pits. 12 brown froglets *(Crinia signifera)* were trapped in pits. One blackbird (*Turdus merula*) squeezed itself into an Elliott trap and one tree creeper (*Cormobates leucophaea*) crept into a cage trap. Indicative of the amount of rain was our first ever capture of 3 yabbies (*Cherax destructor*) in pits at site 8 (flat, edge of scrub near a creek).

Summary

Once again we can see that the weather during the survey plays a significant part in the types of creatures we catch. We caught skinks while the weather was warm, both dry and wet, but not once the temperature dropped. The frogs came out with the rain, as expected, as did the yabbies. Our different sites also show different populations, with skink and frog capture ranging from 0 (sites 2, 5, both a little way uphill of creeks) to 8 (sites 4, close to a creek and 7, gums, grass, bracken). Animal captures show Bush rats *(Rattus fuscipes)* are the most common species at all but site 9 (hilltop), which has more Antechinus. Swamp rats *(Rattus lutreolus)* are present at sites 1, 2, 5, 7 and 8. While 3 and 9 are away from creeks and not preferred habitat for swamp rats, site 4 is close to swamp and we would expect to catch some there, as we have done previously. Marsupial mice *(Antechinus flavipes)* are present at sites 1, 3, 4, 5, 8 and 9. Site 2 has previously yielded Antechinus. Site 7 has generally low numbers of mammals anyway. These differences will be very informative when we add them to the previous 8 years already collected.

The next Minnawarra Biodiversity survey is planned for early October.

Contact:
Janet Furler 08 8379 8907
Richard Willing – 08 8558 6381,
0408807517

A Scientist Profile

An Interview with Dr. Catherine Kemper ***Andrew Barr***

Dr Catherine Kemper

Dr. Catherine Kemper is Curator and Researcher of Mammals at the South Australian Museum. After completing her studies, she spent her first twenty years devoted to small mammal biology. In the late 1980's, she took a different direction in mammalogy beginning to concentrate on cetacean research. The South Australian Museum has an excellent collection of over nine hundred cetacean specimens and an active whale research programme. Carcasses are routinely collected and as a result there is much material available for study. The areas of cetacean research that Catherine has focused on are: Pygmy Right Whales biology (morphology, stranding record, distribution, growth), Bottlenose Dolphin taxonomy, Southern Right Whale status and movements in South Eastern Australia, sub fossil Sperm Whales, human interactions and marine mammals, and toxic contaminant levels in marine mammals. She heads the Dolphin Trauma Group, a multidisciplinary team of people studying dolphins in the Adelaide region.

An interview was held in Dr. Kemper's laboratory at the Museum of South Australia in May 2009.

SEG
Could you give SEG some ideas about who encouraged you in your early years, and especially your interest in science? Talking to you about science is very interesting.

Kemper
Well, I think I was lucky because neither of my parents were biologists. My father was an engineer and my mother was a musician but they both appreciated natural history. We used to spend quite a few of our summer holidays north of Montreal or down in the United States. Although we never camped because they didn't like camping, whereas I love camping, they had all of us out there appreciating and soaking up nature. I think that had a big influence on me, but I would say that there was probably something just in my genetics that really inspired me as well, or that was innate maybe to me, and then my parents attitude encouraged it.

Also very important to me was my older brother, who is a biologist as well. We were pretty close and we used to do a lot of things together. I was in the Girl Guides too and we used to go out camping, pretty serious camping, not like just going to made up camps. We really roughed it and I learned a lot of skills and an appreciation of natural history.

So those were the really early years if that's what you mean, or did you mean a little bit later on? Because I've got one person later on who is very important to me.

SEG
Well, we might talk about that in a minute as it's interesting to hear about your experiences in Canada. Now you have come to Australia, which is a very different place.

Kemper
Yes, well this person I'll talk about later, had a pretty big influence on me. There was a big reason for me coming here.

SEG
Can you describe some of your current work at the Museum of SA as the Curator of Mammals?

Kemper
Well, it's pretty varied. Mammals, of course, are anything from tiny little planigales, in Australia anyway, through to Blue Whales. I started out as a small mammal researcher, so I worked about 20 years as a small mammal person. I did my PhD on a little native

mouse in NSW and when I came to the South Australian Museum in 1983, I still was doing small mammal stuff for about maybe five years or so. I gradually got more and more into whales and dolphins and there were reasons for that. I just took it on I guess.

The Museum was very encouraging, very supportive of us doing this. The Museum had a very good collection although it wasn't nearly as big as it is now. And so I guess I just went for it really. My research still includes some small mammal work. I still try and get in every year on one terrestrial field trip, and in an odd sort of way, I think that's really where my heart is.

I love doing the whale and dolphin research on the dead animals that we have in, and I'm passionate about it, but I think I really love the arid zone actually. I love the peace and quiet of the arid zone.

SEG
The arid research that you are interested in, how does that get translated into what we see in the Museum?

Kemper
Well, I would do some field research but a lot of the research I do, for marine mammals anyway, is based on dead animals that come up that are collected either by us or by others. We basically take them apart and take out heaps of different kinds of samples and then study those to really work out what makes those species tick. It is learning from dead animals.

SEG
A bit of forensic science it seems?

Kemper
Well it is, and I do work with a forensic scientist. But forensic science really relates to humans. So yes, for some of the local dolphins, if there are certain injuries or diseases that maybe related to humans, Roger Byard is the man I have been working with quite a bit. So I wouldn't say that I do lots of field research. Really a lot of it is based on taking apart dead animals and learning what we can from them. The field work that I do is more just general collecting. The terrestrial field work that I do each year.

I've been away with SEG quite a few times and on what we call the Waterhouse Club trips - it's one of the friends' groups of the Museum. So it is more just general collecting. So how does it relate to the Museum? Well, that's always a bit tricky actually; because there is not as much communication between the front of house, as we would call it here, that is the displays and what goes on there, and behind the scenes at the Museum.

I've noticed it's kind of tailed off in the last 20 or so years. I suspect its partly because people are just so busy that you swing in your own little circles and you don't socialise as much, and socialising with your work mates is very important for communication. Having said that, a good example is, about 10 years ago we re-did the whale and dolphin display at the front of the museum in a major way. So of course I was heavily involved in that as the scientist. We worked with the exhibitions people.

The biodiversity gallery of the museum is being created now. This is a huge permanent exhibition and of course its taken years and yes, I've been very much involved on the science side of that, recommending different story lines, or what specimens might be good.

SEG
Do you have any contact with student classes then in that kind of way?

Kemper
Not so much – the Museum has two education officers. But they are the ones that really take on the school groups and they've got a huge school program, and it's marvellous actually. The two people that are involved, the senior people anyway are just wonderful. Occasionally I might contribute to that but most of my students would be post graduate students. So from a research point of view, yes I do lots with students. Occasionally we take students around our Bolivar facility where we have the whale and dolphin collection, and that's where we do our preparation and our dissection.

SEG
What would be your opinion on the future role of museums as far as it relates to the public or school children?

Kemper
I think that museums are incredibly important, especially the researchers. Behind the scenes in science there are all kinds of researchers in many different areas. I give a lot of public talks too, and I think that people are fascinated with what we do because its coming from us who really do it, rather than somebody

getting up there and giving a lecture on whales and dolphins or whatever.

If you speak from personal experience, of course people are much more fascinated because you're speaking, I suppose, from the heart a bit more and they know that. So when I give a talk, I occasionally might have a photograph or something from a book or the internet but hardly ever. I tend to use what we do as the example for educating people basically. And they are fascinated because most of them don't realise that we're behind the scenes. You see, they think that the museum is just what's on North Terrace.

Actually this room that were are in right now - this maybe is a good example. About 10 years ago this was all re-developed, this whole building and so the public are allowed to come into this area now between 10 and 4 weekdays. They put in this window before, it was just a wall. It's not used as much as it probably could be, but occasionally we'll get school groups coming through and we might be in this lab doing a little dissection of a dolphin. Because if we've got a small fresh one we can do it right here rather than doing it at Bolivar that's, you know. half an hour's drive away. So they will be all standing there and occasionally, if I've got time, I might go over and explain what I'm doing and why.

SEG
It is valuable for the public to see the way the Museum works up front and behind the scenes. I think that is very progressive.

Kemper
Well, they're tax payers, you know, and we're a State public institution. So we are being paid by the public and they have every right to know and hopefully support us.

SEG
You mentioned earlier about somebody that was influential in your early work or in your coming to Australia?

Kemper
Yes, both! She was one of my lecturers at the University of British Columbia in Canada and she was in zoology and she worked on native small mammals. I started working part time for her and then I ended up doing my Graduate thesis with her. So I guess over a period of about 2 years I was working with her, or for her. She did a Fullbright scholarship from the United States to Australia in the 1950s and worked on native rodents in Australia. She used to talk about it all the time saying how much she loved coming here. I was keen to travel, so not long after I finished at UBC, I came to Australia in 1971.

I thought it might be nice to go back and do some more study but I hadn't counted on it. Once I did, I got into Macquarie University in Sydney and you know, one thing leads to another...She's very important in my life, she's my mentor really.

SEG
With all these projects that you're working on, what gives you the greatest satisfaction in your work? Do you like working on dead animals?

Kemper
I do actually. I know that sounds a bit odd. I do, and I'm passionate about the need to collect specimens which, of course, not everybody agrees with these days. But we have very good, I believe, arguments for doing it. We, I'm saying we because there are many others with the same views at the Museum - we believe that for the long term integrity of the information, it is extremely important to collect. If surveys don't collect, what happens is that in 5, 10, 20 years time, the taxonomy might change or our knowledge of how to identify animals might change. So if there's no specimen to go back to, there's nothing to validate the work that went on 20 years ago. And I think people find that really hard.

My reasoning here is that humans are funny critters. We humans always think that we know everything right now. We can't believe that in 20 years time were are going know more and I think that it's even more so these days because of the internet and because of communication. In many ways it has speeded things up, but it hasn't really changed the way we look at science, the technology has, but the process hasn't.

Humans think, "Oh! we know everything" and we've got these species all in their little pigeon holes and they are going to stay that way for the next, you know, many more years. Well, it's not going to work that way. The more that genetics gets into it actually, the more things are split. This change is making life a little bit difficult for us at the Museum.

SEG
There are some people who figure that evolution has stopped, but it is continuing actually.

Kemper
Yes! but don't you think that's sort of a human characteristic. We're a bit arrogant really. Well more than a bit. We are arrogant. But the other side to that one is that it isn't just that the information will be longer lasting. It's a benchmark. And it does not affect the conservation of those animals out there and most people don't see that. They think that taking a few individuals might harm the species. Well, it doesn't. Unless you are down to a 100, yes, taking a few would, but the animals that we are dealing with, its not.

So it is the dilemma between conservation and preservation and the life of every individual versus the conservation of species. It's a really hard one, and animal ethics, I certainly agree with animal ethics, but I think it's a bit naive sometimes to think that we can do everything by just taking a bit of hair or whatever.

So, you asked what I am passionate about. You can see what I am passionate about, the need to collect specimens and the need to study. Especially, these dead marine mammals, in order to find out more about the live ones, because you can learn so much. Look at the stomach contents, you can find out what they're eating. Because marine mammals live out in this big ocean, it is so hard for us to get to them and study them. It's a bit different from terrestrials, so we really rely on these dead ones that wash up in order to learn more, how old they are.

SEG
You seem to have a lot of people that help you when there are stranded whales. We see it on TV a lot. Who are the people that are involved in this kind of activity?

Kemper
Everybody really! Department of Environment and Heritage SA would be the single most important group in our volunteers because without them we wouldn't hear about a lot of the strandings. We wouldn't have the help that we do. They have just been so supportive. Really the museum owes a great deal to those National Parks guys and I really feel for them because like everybody else, they're just running around like chooks with their heads cut off because they have way too much to do. And yet most of them will take time out.

In fact there's a dead whale right now floating around in Boston Bay and David Stemmer is going to go get it tomorrow. And of course that report came through from National Parks. But on top of that, there are all kinds of volunteers – the general public, students - because I do teaching at the Universities, they hear about us, they want to get involved so we ask them. Yes, just people in general, they're super keen.

SEG
When we work with SEG we notice that a lot of new university students and even high school students are wanting to come on these kind of trips. They are becoming passionate about the environment and also want to come on these trips and learn. Thank you very much for your time you are giving SEG for the interview!

Kemper
You are welcome! I would like to say how supportive the Museum is in general to what I do because it is so labour intensive and can be expensive, although we operate on the smell of an oily rag. So, I think it's important that it keeps going after I'm not here.

That's one of the problems of being so passionate about what you do because you tend to think that when you're not going to be there any more, it's all going to fall in a hole, though it probably won't. Hopefully the museum will keep up its wonderful collection.

Scientific Expedition Group
Nominations are called for the
2009-2010

COMMITTEE VACANCIES

Owing to a number of committee personnel moving interstate or changing their interests there are several vacancies for those interested in a committee position. All committee positions are declared vacant and any person can nominate for any position. Where there are more more nominees than vacancies for a particular position an election will be held under the terms of the constitution of Scientific Expedition Group.

The present Committee consists of : President Dr Richard L Willing, Chairman Mr Alun Thomas, Vice-Chairman (position vacant), Secretary Miss Gina Breen, Treasurer Mr Graeme Oats, Committee members Mrs Michelle Trethewey, Messrs Graham Hill, Trent Porter, Duncan Mackenzie, Bruce Gotch, John Love, Kevin Burrett, Andrew Barr.

Messrs Peter Love, Phil Cole, Chris Wright will not be seeking re-election.
Mr John Hayes has already tendered his resignation.

All other members are eligible for re-election. A nomination form must be signed by the proposer and the nominee and sent by post by September 11, 2009 to:

Gina Breen
The Secretary,
PO Box 501, Unley 5061

SCIENTIFIC EXPEDITION GROUP NOMINATION FORM

Committee membership for 2009-2010
(closing Date for this form is September 11, 2009)

I, ... being a member of the Scientific Expedition Group

nominate .....

for the position of .....

I accept the nomination

Signed: .....

DATE: .....

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

SUBSCRIPTIONS

Adult member - - - - - - - - - - - - - - - - - $25.00

Concession cards/ unemployed - - - - - -$12.00

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

Organisation membership - - - - - - - - - $30.00

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

The Journal of the Scientific Exploration Group

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