

# SEGments



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***Volume 27 Number 4***



# SEGments



## Scientific Expedition Group Inc.

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The Northern Flinders Ranges is the focus of three articles in this edition of SEGments. School students Kozel Carthew and Brittany Porter have provided excellent accounts of their experiences as part of the 2011 Arkaroola expedition. Garry Trethewey writes of his fascinating rare finds whilst exploring the many caves and holes to be found at Arkaroola. An article by Ray Sinclair-Wood provides a plausible white fella explanation for the rumblings and explosions which are to be heard reverberating around the Northern Flinders Ranges.

Andrew Barr has provided a second part to his “Road Trip in America”, describing the palaeontological sites across the central part of North America. A successful working-bee held in February is described by Janet Furler in “Minnawarra’s Poplar Day”.

In our feature article “Birdsville”, published author Alastair Wood writes an engrossing and informative description of many aspects of the Coorong and Lower Lakes bird surveys conducted during 2011. Flood waters had filled the Lakes and for the first time in many years the Barrages had been opened during spring 2010. The sudden inflow of river water to the Coorong resulted in the fresh water sitting on top of the briny water, rather than the more typical gradual dilution of the saline Coorong water. Salt tolerant brine shrimp were abundant in the south lagoon and as a consequence large flocks of Banded Stilts were found feeding on these. Alastair’s description of the sight of thousands of stilts in a flock that “stretched for hundreds of metres” is extraordinary.

Since January 2009, I have taken part for a few days each summer in these bird surveys of the Coorong which Associate Professor David Paton conducts for two weeks with students, science leaders and volunteers. The extreme salt levels which had built up in the Coorong over the dry years had vastly reduced the Hardy-head fish population which in turn had prevented Fairy Terns from successfully breeding. As a consequence the numbers counted were even fewer in 2011, and “this south-eastern population of Fairy Terns is on the brink of extinction” [Ref].

By January 2012 salinity levels in the south lagoon had dropped, and as a consequence at Salt Creek the brine shrimp were gone and hundreds of Hardy-head fish were caught in long nets by students and volunteers. Prior to this the fish had not been seen in any numbers in the south lagoon since 2006. I had never previously seen Fairy Terns

at the Coorong, but in 2012 I saw them in small numbers hovering and diving for food in the shallows. I was delighted to see a courtship display with a male diving for food in the shallow water and returning to feed his mate waiting on the shoreline.

Salinity levels and water levels are two critical factors in the health of the Coorong and so 2012 looked like a perfect year. We were catching fish, seeing Terns, waterfowl, small and large waders, and not seeing (or smelling) brine shrimp. However our optimism was tempered when we discussed the situation with David Paton. On this survey and for a number of years there has been little evidence in the south lagoon of the aquatic grass (*Ruppia tuberosa*). The seeds, turions (starch filled organs) and foliage of *Ruppia* provide an important food resource for waterfowl. The foliage also provides an important habitat for aquatic organisms, such as Chironomid Larvae (midges), ostracods and Hardy-head fish, which are vital food resources for many of the birds using the Coorong. Mud sampling undertaken as part of the survey has resulted in very few viable *Ruppia* seeds being found in the south lagoon on the current survey and for many years prior to 2012.

Just when it seems that there could be some hope to turn around the ecological health of the Coorong, you discover that the ecological damage is far more serious and that the Coorong functions in a far more complex way than you thought.

The science and extensive databases that underpin David Paton’s deep understanding of the Coorong and Lower Lakes are clearly explained in his beautiful and informative book “At the End of the River”, which should be essential reading for those who decide the future for the Murray-Darling Basin.

Ref: ” *At the End of the River*” David Cleland Paton, 2010, ATF Press, Hindmarsh, SA 5007

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**Figure 1: Coorong Habitat**

Heads down, hunched over, we pushed on, shouting to be heard above the racket of driving wind and flapping clothing. It was late afternoon and the summer sea breeze had hardened and blew with a vengeance straight up the Coorong.

Ahead, the salty water of the south lagoon tapered into a slender tongue then disappeared. Pausing, we turned our backs to the wind to check on our colleagues, an undergraduate, a volunteer and a technician on the far shore, Youngusband Peninsula. Distance was hard to judge against the glare of a setting sun. They'd slipped behind and turned into a mirage; distant shimmering silhouettes that walked in mid air, along the edge of the lagoon.

We meandered along the mainland shore, side by side, absorbed in our thoughts. There wasn't a bird in sight. Eventually Colin stopped and peered through his binoculars. 'A couple of stints –hardy little buggers!' I focussed my glasses. Sure enough, in the distance a pair of stoic little birds huddled together on the water's edge, their heads bowed into the wind. Strands of weed whipped past. With

his back to the wind, Colin sank to his knees, fumbled under his jacket and pulled out a folder. I moved upwind and stood behind him, a windbreak of sorts. Pages flapped wildly and threatened to blow away as he struggled to make the recording. Under the column marked 'Red Necked Stints', he entered the time, the number of birds observed and their attitude, which in this case was 'resting'. It was the first day of the annual Coorong, Lower Lakes and Murray Mouth bird survey and it had begun with a long morning. A winding walk north from the Ten Mile that followed the mainland shore. The day got warm quickly as we scuffed along the water's edge with the powerful stench of a zillion dead brineshrimp in our nostrils and salt crusting white and hard on our citylicker boots. The rotting shrimp formed an endless pile that stretched along the high water mark as far as the eye could see. By the time the 4WD appeared to take us home for lunch, we'd covered at least eleven kilometres.

As the afternoon wore on our legs felt a touch sluggish. A mirage shimmered in the distance, beyond the tongue of water. It was a long way off. The southernmost transect in

the month-long survey would be much further, so I lowered my head and pushed on. The way we were going, it would be close to dark before we reached it. A crested tern wheeled downwind and was gone. Colin shouted something but it disappeared with the tern. I shrugged and kept trudging.

After a while, a different sound could be heard above the racket. I turned my head to listen. A delicate lilting babble, high pitched but pleasant, floated in and out of the wind. Easy on the ear, it grew louder, so I stopped and looked around. To the south, not a solitary bird in sight, nothing but windblown lagoon and hazy sandhills. Across on the peninsula side, not that far away, one of the biggest flocks of birds I'd ever seen! I grabbed Colin's arm. 'Wow! Check that out!' I shouted, pointing. He nodded and we fumbled for our glasses.



**Figure 2: Banded stilts**

*Cladorhynchus leucocephalus*

What a sight! Thousands of banded stilts in a flock that stretched for hundreds of metres along the peninsula shore. We took our time and glassed it from end to end. The flock was ever-moving. All birds faced into the wind and all birds were busy. Knee deep, many were foraging, stooping on delicate long legs, heads moving from side to side as beaks probed the bottom, while others were content to preen and fluff their feathers. But those at the front, exposed to the full force of the wind, were never comfortable. They had a shifty look and ruffled feathers as they struggled to forage and didn't linger. With a slight opening of the wings they were lifted into the air and carried effortlessly over their fossicking colleagues by the big breeze, before fluttering down to a graceful landing at the rear. In the lee of the flock, sheltered and comfortable again, they'd hardly started to forage when others would float down and settle in behind them.

It was a magnificent sight; a flock in perpetual motion. A fluid mixing of colours; whites, blacks and pinkish greys – thousands of birds in a constant gentle rhythm.

Years of hypersalinity had killed off everything in the south lagoon except brine shrimp. Introduced by unknown sources, possibly birds, they'd found a home and quickly reached plague numbers in a paradise with little competition. Good luck to the stilts! – the only bird that can tolerate such an extreme diet.

We put down packs, picked up glasses and set about counting. Starting at one end of the flock, we counted ten birds and let our eyes get a feel for the size of the 'capsule' they represented. Extrapolating that capsule ten times over, we counted a hundred, then extrapolating that hundred 'capsule' ten times over again to get a thousand birds.... and so on! The trick is to count quickly; make snap judgements and estimations as birds wheel and flit about.

The stilts must've known. As soon as I started to count they wheeled and flew in all directions, swirled, settled and resumed foraging. A blur of birds. I didn't get very far, getting just a few thousand before stopping and trying again. Counting was hard going, but I finally settled on seven to eight thousand birds. It didn't matter in the end. The flock was on the far shore, the responsibility of the other group. My counting skills weren't required, Colin kept the folder under his jacket and we pushed on.

Later that night, as we lounged in the cool of the patio over a beer, I asked Lynn, the gun bird watcher on the other shore, about the banded stilts. He'd also had difficulties. Forced to make four separate counts as he approached the flock, he finally came up with eleven thousand birds. I confessed my score to him and we had a laugh.

In the past, when conditions were different and the estuary flowed as it should, this very same flock numbered up to eighty thousand birds! But after years of dwindling fresh water and skyrocketing salinities, the south lagoon ran out of food and the stilts flew away.

Late the following afternoon we changed tack and switched from bird counting along the Coorong to bird banding in the scrub, not far from Salt Creek. The day's heat had gone as we walked back and forth in the lengthening shadows, looking for likely spots. Streams of bullants crossed our paths, forcing us to stamp our feet and keep moving. Along the way, butterflies, dragonflies and locusts flew up from dry grass into our faces. We blocked off several likely looking alleyways, natural corridors where birds flew between clumps of mallee scrub or boobialla with four purpose-built mist nets. They were high slung, suspended between long metal poles and resembled giant volleyball nets that stretched towards the sky. Horizontal

strings bunched the nets into loose-hanging bags that wrapped up a flying bird with little damage.

Returning to the 4WD, we set up a bush ‘lab’ of sorts on a card table beneath a mallee tree. We waited, while Lydia kept moving between nets, low key, out of sight, checking. But nothing much happened while the sun stayed high. A bronzewing caused a flurry when it blundered into a net at speed, almost bringing the flimsy structure to the ground. But it bounced, rolled out and was gone in a flash, winging off low through the bush. It was the calm before the storm. The sun had long gone and the light was fading into dusk, when birds flew in all directions. We scrambled to man the nets where fluttering, struggling balls of feathers were bouncing about. Extracting them quickly and carefully, without losing too many feathers, is an art form. It takes plenty of practice, especially for those with large clumsy hands. Scrub birds and honeyeaters have large bony feet and long toes. When threatened or trapped, they instinctively lock these around the nearest object, the gossamer-fine meshes of the net. And it’s surprisingly difficult to release their grip before attempting the delicate task of extricating the rest of the bird.

In the process, most birds lost a few feathers before being stuffed headfirst into small cloth bags that were hung from our belts. By the time we’d finished it was dead dark.



**Figure 3: Silvereye in mist net (*Zosterops lateralis*)**



**Figure 4: Taking head measurements of a New Holland Honeyeater (*Phylidonyris novaehollandiae*)**

Laden with bagged birds and netting gear, we blundered off through cobwebs and spiky bushes and made our way back to the ‘lab’. Time wasn’t on our side. Birds had to be processed as quickly as possible and released back into the night.

Working in the dark didn’t help, so the vehicle was manoeuvred closer to provide light as the team gathered around the table. We’d just got to work with scales, rulers and other gear when hoards of buzzing mosquitoes came out of nowhere and homed in on exposed flesh, sending us scrambling for insect sprays.

Honeyeaters, finches, silvereyes and fairy wrens were weighed in their bags. Head length (including beak) was recorded and the first ten primary feathers examined. These gave a good description of the bird’s life; its age, general health and moulting history. A numbered/coded band was snapped around a leg and the bird thrown away into the darkness. The scribe, cramped amongst cluttered gear, worked overtime at the table, trying not to confuse the data barked out by an assembly line of three.

Honeyeaters were the stars of the evening – a purple gaped was recorded as were a number of outstanding ‘singers’. New Hollands were plentiful as well as silvereyes and a range of less colourful but more common scrub birds.

Birds are good barometers for the environment’s health. The data collected that night is added to what has been collected for two decades, to form a valuable tool in how we manage the environment. It also helps to compile an accurate picture of the entire eco system, not just birds. The survey also gathers data on small animals and mammals.

The following week we moved onto Lake Alexandrina, choosing to count birds from a jetboat. The year before, the lake level was at an all-time low, with thousands of hectares of dried, sunbaked lakeshore making bird counting difficult. But after a year of abundant rains throughout the entire Basin, the lake had filled to overflowing. Conditions were ideal for a shallow-bottomed craft to cover plenty of ground quickly and get into all its backwaters, nooks and crannies. While the crew of two were kept busy watching and counting, the skipper idled the boat as close to shore as possible, plumbing for depth with a boat hook, creeping up on skittish birds that gathered at the water's edge.



**Figure 5: Author plumbs the depth while Phil counts birds**

Late one afternoon we headed north from Pelican Point, aiming to count the Narrung Peninsula shore as far as Point McLeay, before heading across the lake to Point Sturt. From there we'd work our way west, counting the shore all the way to the finish at Clayton. The night before, I'd studied the map in detail and focussed on the shore's main feature, Loveday Bay, a large indent in the bay. I totted up the kilometres and calculated the fuel I'd use to cover its shores. There seemed to be no reason why we wouldn't be home in good time.

Birds were scarce as we left Tauwitchere barrage, so I ran my eye over the gauges, opened the throttle and kicked her along. A few kilometres later the first inlet appeared so I slowed her back to an idle. Glancing at the spare fuel container on deck, I turned into a reed-lined canal.

The day was sunny and warm, with a gathering sea breeze that kept the temperature down. I plumbed the bottom and found good depth, so we idled past towering stands of reeds and rushes (*typha* and *phragmites*), close to our starboard side. Flocks of black duck and teal gave the boat a wide berth; flying off with a clatter of wings or swimming into the reeds. Another narrow entrance appeared ahead, so we headed through it, motor burbling quietly. The counters, Phil and Tom, were standing on the

seat, craning with their binoculars to get a look above the reeds. We continued on an easterly heading, scoring a few ibis and whiskery terns. The terns, delicate little birds, fluttered along shorelines and dipped into our wake.

I was kept busy plumbing the bottom as we reached the end of the reed-lined corridor and a large lagoon opened up before us. Birds resting on the far shore were tiny; so far away they could only be identified through the glasses.

We continued on at a steady idle as reeds gave way to flat open pasture and swamp. Our course had swung round to the southwest, on a direct heading for the barrage that we'd left behind over an hour ago. Loveday Bay was in the opposite direction.

Another opening appeared. Barely wide enough for the boat, we eased through at the limit of our shallow draught. Black mud swirled in our wake. I looked at the fuel gauge and did more mental arithmetic. The boys were busy. Flocks of waterbirds dotted the far shore. It was flat, open country and small flocks of black duck, teal and ibis dotted the swamp, pasture and straggly clumps of lignum. Most were resting but the ibis were busy foraging in soggy ground beyond the water's edge. Great egrets and white-faced herons stalked the shallows, making the occasional darting stabs with their beaks. While excellent data was accumulating on the sheets, I scanned the horizon, wondering how to find a way out of this wetland maze.

Time slipped by as we continued southwest. Yet another opening appeared in a shoreline of reeds and lignum. Depth was good and shadows deep, so we continued through as the compass heading swung back to the south. The narrow channel opened into yet another wetland lagoon.



**Figure 6: Bird counting using a spotting scope**

Loveday Bay and a whole lot of shoreline was still ahead. My mind went back to the map. How could such a tiny section of black line on a map translate into so many endless bays and inlets? I shook my head and tried to block out the thought of being marooned in some distant backwater. It was time for a rethink.

I cut the motor and the boat drifted sideways to a halt. While the reserve drum syphoned into the fuel tank, I had a talk to the boys. We decided to cut and run. Get back onto a northerly course, glass distant shores as best we could and head for Point McLeay.

By the time we had finished the Narrung shore and turned for Point Sturt, the setting sun was low in our eyes. The sea breeze had swung back to the south and filled in. I throttled back as the boat punched into endless whitecaps, the crew huddling forward to escape sheets of spray that swept the deck.

Beyond Point Sturt, in the remote backwaters of Marshall's Bight, the setting sun blinded through the windscreen as it bounced off calmer water. Weariness and optical delusions took over. Deep within the bight, I steered west by the compass, looking for the channel, but there was nothing but shallow, glittering water. The sun flared above the horizon. Shorelines had merged to become an unbroken line of black. The crew, unaware of my doubts and confusions, continued to score. But birds were scarce; a few terns and gulls winged downriver, heading home for the night.

Eventually, after a long backtrack to escape the glare, we blundered upon a channel marker, turned west and sped downriver to Clayton. We'd been on the water for more than twelve hours and were exhausted.



**Figure 7 : Dusk at Coorong**

Bird work in winter is different. It's a static, exacting exercise that focuses on individual sites (or cells) in strategic locations around the estuary. Such cells may even be ephemeral; micro wetlands that are more part of a farm than a major water body. But when full, they can still support colonies of waterbirds.

Before the survey begins the team spends plenty of time wandering around in the 4WD, looking. If all goes well and weather doesn't intervene, it takes two full days to complete the survey for each cell.

Before sunrise on the first day, the team of four leave the warmth and comfort of the 4WD, rug up, load up and separate. Lone figures in the early morning light, they trudge out across paddocks, through swamps or along farm tracks to cover the one kilometre of shoreline that makes up the cell. Perched on cliffs, banks or anywhere with a good view across the shoreline, they slump into deckchairs and pull out data sheets.

It is just going 7.30am and the first recording is due. Freezing fingers fumble with glasses. The sun rises and the glare off the water is straight into my eyes. A compact flock of silhouettes wing across the sky. I'm hardly awake, let alone organised. I scramble up for a better view, sending data sheets and pencils sliding into wet grass. I know they're shags, but what sort? All I see are blinding light and black shapes that quickly fly out of range. No glimpses of colour, or distinguishing marks. I make a mental note that they're greats, but have a niggling suspicion they could be peds and sweep the glasses downriver, just as a bigger flock disappears into the glare zone. My heart sinks; hundreds of shags are heading upriver and I haven't counted a bird yet. ....

After this brief flurry, the early morning traffic drops off. A silence settles over the water. Sharp calls of purple swamp hens and gentle buzzes from golden headed cisticolas come from deep within the reeds, but these birds are invisible. ... I take a punt and score them as 'resting'.

Birds must be counted and their attitudes recorded on the data sheets every five minutes. It's quiet along the shore and out across the water. Not a bird in sight. Regardless, I must remain here in one small spot, alert and on duty, all day. I look at my timer and it's just gone 7.45am. There's a hell of a lot of five minute intervals until last light .... My mind convulses then goes blank.

The first day is the easy one, observing the birds. The next day we trudge about and gather serious data about the habitat. Transects that obey the GPS are followed from

shore to a water depth of eighty centimetres. And the GPS is God. If it points through the thickest and tallest of reeds, or wild patches of lignum or boxthorn or rocky channel openings, that's where we must go. Tom, the bearer of the GPS, is next to God and leads the way. We ordinary mortals follow in a line astern.



**Figure 8: Phil out of his depth in Phragmites**

It's another early start; we clamber into waders and wet weather gear, abandon the vehicle and trudge to the first transect. Being able to correctly predict the day's weather before the sun is up is a big bonus. With twenty transects to do before dark, we're on our feet and on the move all day and wearing too little or too much can become a problem. So can leaky waders.

Slogging our way through shoreline swamps in clumsy waders can be tricky. The boggy bottom, potholed and churned up by years of grazing cattle, is covered with thickly matted, luxuriant grasses. At every step you may slip into a chasm or topple over an invisible peak and end up on your moosh in the slush. Same with reedbeds and lakes. Shuffling through murky shallows, you never know when you'll strike a rocky outcrop when you're leaning and off balance. You're likely to end up in the drink. The trick is to walk like an Egyptian - lean back and slide your feet along

the bottom and let them feel out a safe path for you. It's not much fun to go for an early spill in the freezing water and spend the rest of the day in sodden clothing.

Reedbeds are deceptive and look innocent from the shore. But once inside they're a different matter. In parts they are stacked so dense and high with towering stalks and matted material that there's only one way through. The leaders must throw themselves at the wall, bodily, to crush it down beneath their weight, before clambering over and making a path for the others to follow.



**Figure 9: The winter team, Phil, Sally, Tom and Tom waist deep in a swamp.**

Following the GPS line, the team is fastidious about recording all aspects of plant life and water quality along the way. Digital cameras are whipped out at the drop of a hat when an unusual or unknown plant is found. Time ticks by. Waist deep in ooze, we gather around, examine it from all angles, pull out reference books, thumb through endless pages checking this plant against that plant, debating the correct identification and then finally making a recording.

For Phil, the team leader, the day never ends. After dinner, while the rest of us lounge by the fire, he settles down with the day's sheets and writes up data until after midnight. And he's first out of bed in the morning to rouse the troops.

**Photos by: Alastair Wood, Geoff Carle, Lydia Paton, Lynn Pedler, Tom Hunt.**

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Twenty or so years ago the Willings bought the Wilparinga block, a lovely piece of land, however there was an erosion gully. It was successfully controlled with fencing and planting with a species recommended to hold the soil together. All was grand for years, with no washout, indigenous species moving in and happy wrens. Recently we became aware that this useful species – Poplars – was spreading through the scrub, threatening to take off down the steep and rugged creekline to Inman Valley below, ultimately to take over Victor Harbor (well, maybe not quite that far).

What to do? The poplars had to go, and it was recommended they were all removed at the same time to

minimise suckering. After that the suggestions ranged from major earthworks to divert the flow, to “Wait and see”. The course we chose was to create a couple of water calming devices whilst waiting for new plantings of *indigenous* species to get established. So, there was the theory.

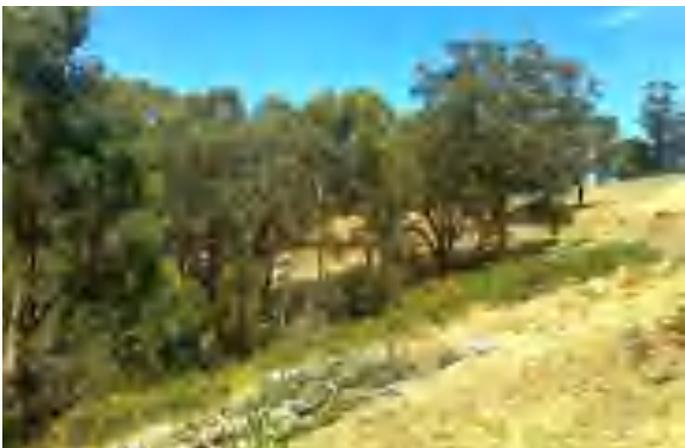
A grant seemed to be the way to proceed, so a Caring for our Country grant was successfully applied for, under SEG administration. All that was needed for a transformation was a few supplies (hay bales, shadecloth, poison, etc) and an army of unsuspecting volunteers.



**Figure 1: The Job – Before the 2000 poplars from 5 cm to 15 cm were cut and moved off site. The stumps were then poisoned as they were cut so they don't sucker.**



**Figure 3: Most of the trees, including the biggest ones, had to be shifted over the fence by hand.**



**Figure 2: The Job – almost done. There are still a few waiting to be dragged up the hill to the burning heap.**



**Figure 4: The poplar removal team (aka El Presidente and The Chairman)**



**Figure 5: Each stump was poisoned within 15 seconds of cutting.**



**Figure 6: The Chain Gang – 2 sawers, one shifter**



**Figure 7: The troops were kept on side with morning tea al fresco and lunch in comfort.**



**Figure 8: Erosion control is achieved by slowing and dispersing water flow using hay bales, wrapped in shade cloth, held in place by old droppers.**

So, a weekend was booked, the supplies were collected over a few weeks and the volunteers were lured with the promise of a barbeque in pleasant country surroundings.

Fortunately the weather was reasonable, although a bit warmer than preferable. Twenty people turned up, starting with Alun and Kathleen who arrived the night before. We got an early start, with people joining in as they arrived. There were 2 chainsaw and poisoning gangs, various cut and swab teams crawling through the bracken and the cutting, dragging and stacking chopped trees.



**Figure 10: The impressive heap!**



**Figure 9: Big thanks to the kitchen team**

By the time the mobile food wagon arrived with morning tea there was a visible difference to the view, and relief at the excuse to stop for a while. By lunch time there was not a standing poplar to be seen! A comfy seat and a hamburger (cooked by the one-armed chef) were gratefully received by the outside team. A large thankyou is due to the inside team for providing sustenance to all.

Stage two involved laying out the hay bales, wrapping them in shadecloth (holds the hay together but lets the water through) and fixing them in position with droppers. This was the minimum we were hoping to achieve so that, if there was a heavy fall of rain the gully was protected.

Stage three was fencing the area to keep the cows from eating the hay, and was the job we had hoped might get finished on Sunday. To have the whole site cleared, trees stacked, control measures in and wires strung by the end of Saturday was an absolutely astounding and impressive result. The effort made by all participants was huge and we are really thankful to everyone.

Stage four will be to plant the Trees for Life plants which are currently being grown for us. There were also suggestions of a big bonfire. It may be a fitting end to the poplar grove!



**Figure 11: This is the end of the day – poplars gone, erosion control in, fence up and nearly finished.**

A large vote of thanks to all the workers on that day.

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## **Wanted Volunteers**

### **Minnawarra Biodiversity Survey**

**18th -22 April 2012**

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Having read Graham Medlin's "*Field Guide to Chambers Gorge, Flinders Ranges*", I'd always been interested in what sort of relics and remnants might be found in caves. I'd envisaged large tidy picture-book walk-in caves, with fascinating bones of diprotodonts and thylacines lying on display on the floor, probably with labels attached.

I was also fascinated with the idea of rare traces of the extinct stick-nest rat, and apparently huge deposits of amberat, (dried urine solids), containing DNA, sticks, and other traces.

On our SEG 2010 Arkaroola trip I got a chance to poke around in some holes & cracks, and find that the reality is a bit different, and if anything, even more interesting.



**Figure 1: Loehne's shallow overhang cave**

Number one, it's not hard to find interesting things. It seems that just about any tiny crack in any rock is likely to hold something interesting. Two, you don't just find one sort of thing. It seems that a huge number of tiny animals use all sorts of holes, cracks, openings and shelters for a huge number of purposes. So what did we find?

Loehne Doube and I went for a wander down a gorge near Ochre Wall looking for caves. I identified several big holes and gullies, but too far up cliffs to be convenient. About to start the return journey, Loehne motioned toward a shallow overhang. I noticed a fresh owl pellet on the floor, so had a look. In the back were a couple of cracks,

a tiny overhang, a shallow depression, lots of dirt and broken stone, and a beautiful basin for some lucky animal to sit in on hot days. Off to the side were some tiny bones covered in dust. With a bit of scratching around, we found that the best, that is, most abundant and intact, were in a tiny pocket, about 10cm high, and protected from the larger animals.

We spent till nearly dark there, and I returned later with Amber Morris and Michelle Trethewey, digging, sieving, putting things in bags. Later at home, Graham Medlin helped me with his more professional sieves, and retrieved many rodent bones. What I found most interesting was a Greater Bilby jaw. Bilbys have been extinct in the Flinders Ranges since the European invasion.

We'd already tentatively identified some amberat (dried accumulations of stick-nest rat urine) at the cave at SEG Site 7, and at Wooltana Cave, so I had at least an idea of what it looked like.

So when I poked in a tiny cave half way up a cliff, I was pleased to find a small amount of amberat, seemingly deposited over a long time as the roof collapsed, and so coating the top and bottom surfaces of flat plates of rock.

We had a look in a more photogenic cave, into which Trent Porter could walk without bending, but found little there, presumably because animals and perhaps people had trampled on everything.

One interesting find was a number of short 2 – 3 cm



**Figure 2: Amberat with embedded sticks at Site 7 cave**

diameter sticks tucked into a pocket at the back of the cave.

Michelle, Amber, Duncan McKenzie & I went to look at a small valley full of rocky outcrops and caves that we'd seen near Siller's Lookout. Once again, big photogenic walk-in caves proved bereft of interesting things. But nearby, on a long but shallow overhang, we found several deposits of amberat. Lots more clambering and looking into & under things, until we chose a cave with a view for lunch, and found a pillow-sized lump of amberat tucked behind a fold of rock.

On the way back to the car, Amber found a shallow "crawl in and get your head stuck with no room to move your arm or camera" cave with the remains of a stick nest, cemented together with amberat.

Next day, Michelle and Amber found a similar "break



**Figure 3: Amber's amberat find near site 4**

your arm to get it round the bend" opening in a cliff near SEG Site 4, with a similar deposit.

For something totally different, Brian Blaylock told me



**Figure 4: Brian's fresh stick-nest rat find**

of a rock he'd found that had a big hole containing vegetation that must have been carried, not blown in. I looked at this, and found two sizes of sticks, as well as quandong seeds nibbled open in a way unique to stick-nest rats.

This deposit was far fresher than the extinction of stick-nest rats, so is a bit of a mystery. Perhaps a different animal has more recently brought more sticks in to add to the stick-nest rat material.

Then Michelle told me that she'd found three collections of amberat on the big rock that overlooks SEG Site 9, the Jasper Twins. Just goes to show how much we all miss by not looking.

More pictures at [https://www.dropbox.com/gallery/23269836/2/SEG\\_Ark2/caves?h=4852c0](https://www.dropbox.com/gallery/23269836/2/SEG_Ark2/caves?h=4852c0) until mid 2012.

**CONTACT: [garrytre@bigpond.com](mailto:garrytre@bigpond.com)**

## **Wanted Any old GRaSP records, reports, photos.**

Now that we've retrieved and systematised every known GRaSP photopoint photo, (2500 of them) we're working on doing the same with all those old reports, records, happy snaps, diary entries that might exist in bookcases, old diaries, or forgotten filing cabinets. Any info, no matter how scrappy & disorganised, would be appreciated.

Contact: Garry Trethewey [garrytre@bigpond.com](mailto:garrytre@bigpond.com)

# Student reports from Arkaroola

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I am a thirteen year old boy and am very interested in learning more about mammals, reptiles, birds and insects. So, recently I was part of a scientific expedition to the Arkaroola Sanctuary.

On two different days we set up pit lines and helped put out Elliot traps and dig holes for setting up micro-pits. For ten days we drove to the sites and checked the pit-lines, and at some sites where harp traps had been set, we checked for bats as well.

After all the traps had been checked we would search the site for reptiles that hadn't been trapped; anything we would catch would be weighed, marked and recorded. Occasionally if we found a species that hadn't been recorded in Arkaroola, one of the scientists would inject the animal so it would die (they called it 'euthanized'). Then this scientist would cut the liver out of the specimen for DNA sampling at the Museum of South Australia. After the liver had been removed the scientists would inject the specimen with formalin to preserve it.

Whilst searching I found a *Lialis burtonis* (Burton's Legless Lizard), *Morethia boulengeri* (Boulenger's Skink), *Ctenotus robustus* (Eastern Stripped Skink), *Ctenotus pantherinus* (Leopard Skink), *Underwoodisaurus milii* (Barking Gecko), *Eremiascincus richardsonii* (Broad Banded Sand Swimmer), *Pogona vitticeps* (Bearded Dragon), *Ctenophorus vadrappa* *Eremiascincus richardsonii* *Eremiascincus richardsonii* (Red Barred Dragon), *Idiommatia blackwalli* (Brush-footed Trap-door Spider) and lots of other reptiles spiders and insects.

When I went out with the bird group we went walking through the *triodia* looking for short tailed grass wrens that hadn't been recorded at some of the sites we were searching. I am also very interested in taxidermy and was given a *Tyto alba* (Barn Owl) to do. In my spare time I practiced the art of taxidermy on this bird.

Once the surveying had been done I helped pack the pit lines, Elliot traps, and micro-pits. On two of the days I helped on kitchen duties which included cleaning the bathrooms and toilets. On this scientific expedition I have learnt lots about reptiles, mammals and insects. I am now able to identify different species of lizards that look much the same if you don't know what you are looking for. I have also learnt how a scientific survey is conducted. I now use the scientific name for things as much as the common names.

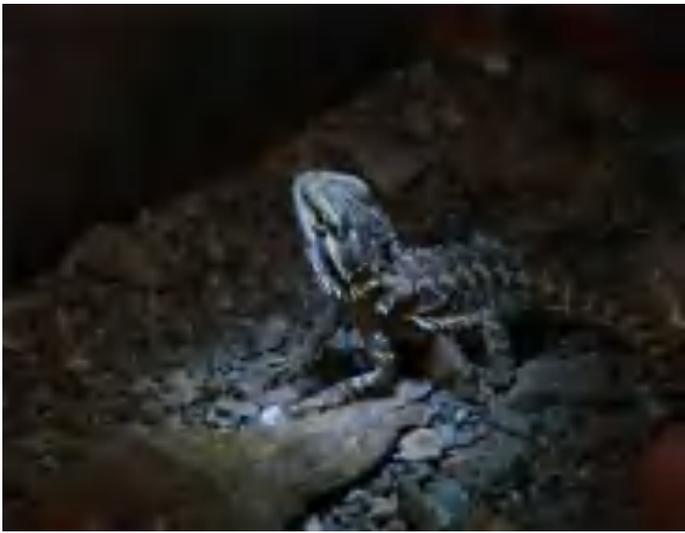
**Kozel Carthew**

I attended the 2011 Arkaroola Expedition with the Scientific Expedition Group. The Arkaroola Expedition carried out a census of the plant and mammal species in the Arkaroola area. Part Funding for the Scientific Expedition Group's Arkaroola Expedition 2011 was provided by Nature Foundation SA Inc.

I learnt many things from the Arkaroola trip. This included animal and plant species, how to set trap-lines, how to handle animals, how to prepare specimens for museum records, the kinds of jobs that are linked with this type of work, and much more. Every day was a new learning experience. I enjoyed the beautiful scenery, and throughout the two weeks I worked with each group, Mammals & Reptiles, Birds, Botany and the Cooking & Cleaning team. The experience taught me a lot, and has shaped my future goals.

Arkaroola's ridge-top track was the access to half of our sites and I was amazed by the landscape of Arkaroola and fascinated with the history behind it. I saw many amazing displays of the wildlife of the area, including flocks of Budgerigars, Goshawks skimming the track and Euros crossing the road. The sites were just as interesting, varying greatly from site to site, each offering new chances to learn. The Arkaroola Expedition was an amazing and valuable learning experience, well worth the hard work. I learnt much about the animal species, such as how to handle them, their habits and habitats and their conservation needs. I also learnt about the plant species, where they grow best, how they link with each other and the fauna of the area. I also learnt how to set up pit-fall lines, cage traps, 'Elliot' traps, and funnel traps and how to check each one. I also learnt about the geological history of the area, how I can get involved with the expeditions further, and the kind of work that the Scientific Expedition Group carries out.

I enjoyed meeting the people on the Arkaroola trip; they were extremely interesting, friendly and knowledgeable. The personalities were colourful and varied, and I had a great time getting to know everyone. There were many stories shared, especially at dinner when everyone congregated to discuss the day's progress. I enjoyed being able to talk to the other group members, and despite being the second youngest in the group, I feel I was accepted and welcomed. The group leaders had so much knowledge to share, and they were more than happy to answer all my questions and elaborate on them. It was a great experience to work with these people, and it really inspired me to learn more. Learning more about the types of work these



**Figure 1: Bearded dragon (*Pogona vitticeps*)**

people do, and the other jobs that are available in similar areas has reinforced my aspirations to one day work towards species conservation. The routine was tough work, waking up early and heading straight out to work for the day. Although the work was tough and I was always exhausted after every day, I enjoyed it thoroughly, and it felt great to be out in the fresh air, helping the people around me and having fun while I was at it.

As well as being exhausted, I felt refreshed at the end of the expedition and had a great sense of achievement. I enjoyed working with the mammals the most, though reptiles and birds were very interesting too. I was especially excited to handle Stripe-Face Dunnarts, as I had been looking forward to seeing dunnarts for weeks before the trip. On my first trip with the mammal and reptile group I was able to hold three male stripe-face dunnarts, and was shown how to fill in the data sheets for them, which was very interesting. Stripe-face dunnarts were commonly found in our traps throughout the two weeks. We captured many reptiles on our Expedition, and it was interesting to see which species were predominant and it was great to check traps and find species we hadn't seen yet. When I was working with the birds group it was surprising to see just how many birds were around when you quietly sat and waited for them. My favourite sightings were Mulga parrots and a pair of nesting Kites with a chick. Working with birds was more difficult for me because I had to find patience. This became easier as time progressed after seeing the positive results.

Botany was the hardest group for me, as I knew nothing of the species growing in Arkaroola. Even though I found it difficult, I learnt many species quite quickly and was pleased with myself when I was able to identify many plants on my own. I helped set up 'elliot' traps, pit lines, cage traps, funnel traps and a Harp trap. It was interesting to



**Figure 2: Mistletoe bird (*Dicaeum hirundinaceum*)**

see how each of them worked, and the results were interesting because some species were only caught in specific types of traps. It was interesting to see that the only thing we caught in the cage traps was a feral cat, which we believe was responsible for the destruction of a native birds nest on the same site, which we had observed the day earlier. It was always interesting checking the traps and handling the specimens caught. I learnt how to fill in data sheets while on site, and that was a great insight into the kind of data that is kept.

This trip has been a wonderful opportunity for me, and has encouraged my desire to work with animals as a career and has developed my interest in conservation-related job options. I thoroughly enjoyed the Arkaroola Expedition and hope to join more similar expeditions in the future.

**Brittany Porter**

In the December 2011 edition, I described the wildlife parks and animals that my brother and I saw on our road trip in America. We also visited the Agate Fossil Beds National Monument, Toadstool Geologic Park and Fossil Butte National Monument.

Our first stop at Agate Springs was highly educational. The fossil deposit was found when a rancher was out chasing his cattle in the late 1800's. The National monument was created to protect the Miocene mammal fossils that were mainly excavated in the early 1900's by Yale University and the American Museum of Natural History. Upon arriving at the well displayed museum visitor centre, we saw two hills like buttes in the middle of open short grass prairie, about 3 kilometres away. The trail to the hills has been structured for wheel chair access, so walking is very easy.



**Figure 1: Agate Fossil Beds Hills.**

Visitors can still see small sections of bone protruding from the Miocene layer that has been covered by volcanic ash from the Nevada and Utah volcanic eruptions many millions of years ago. Agate Springs was once a shallow water hole where animals congregated and died as the climate



**Figure 2: Author examining the fossil layer at Agate fossil beds**

changed to drought. The Miocene was 20 million years ago and fossils of the mammals represent early ancestors of the horse, rhino, bear-dogs and gazelle-camels. I found it interesting to realise that these types of mammals originated in North America.



**Figure 3: Miocene fossil reconstruction of a Bear-dog at the visitor centre.**

The rich educational display at the visitor's site has many reconstructed skeletons of these large mammals. The herbivores became trapped in the mud at the shallow water hole and the carnivore also died as they tried to feed on the trapped animals. The whole landscape was then covered with volcanic ash and silt.

The central part of North America is rich in paleontological sites of fossilised bones of mammoths, sloths, sabre-toothed tigers, fish, giant bears and earlier dinosaurs. This so called "fossil freeway" stretches from Nebraska to the Black hills of South Dakota. Most of the plants and animals were embedded after a variety of ash falls from volcanic eruptions.

The scientists who study these remains remind us that the geological history is very long and humans are now accelerating this rate of extinction of animals and vegetation..

Our next stop was Toadstool Geologic Park in Chadron Nebraska. This formation was very stark, grey and gravel-like, but if you looked closely you could see bone fragments and in some places animal footprints. The erosion of the formation over millions of years has exposed many fossils from the Miocene era.



**Figure 4: Author examining animal bone fragments in claystone.**

As the climate changed, this area became more arid and the forests became grassland. Some animals did not adapt to the new conditions and became extinct while new animals evolved, such as the modern precursors families of dogs, cats, camels and deer.



**Figure 5: Fossil Butte National formation.**

The last fossil site we visited was Fossil Butte Monument in Wyoming. The site was discovered in 1870 and in 1972, was made a national monument to preserve the highest concentration of fossil fish in the world. Fossil Butte was a site of fresh water, and the remains of many plants, large insects, and numerous fish are preserved and displayed in the educational visitor centre.

There are many processes of fossilization. In a fresh water lake environment there are two essential conditions for fossils to develop. Firstly, the lack of oxygen probably caused by blue green algae blooms would prevent the rapid decay process. Then there could be deposition of calcium carbonate over the plant and animal remains that had sunk to the bottom sediments. The high quality of preservation at Fossil Butte is amazing as some soft tissue as well bone and scales are still visible in the fossils.

The greatest variety of fossils on display was the diverse range of fishes. Many of the fossils are recognizable as ancestors of today's species, such as trout and perch.



**Figure 6: Part of the Visitor centre display of fossils**

Photographs: **Geoffrey Barr**  
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# The Arkuru's Rumbling Stomach

Ray Sinclair - Wood

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The Adnyamathanha people of the Northern Flinders Ranges tell a story about the Arkuru,<sup>1</sup> a giant serpent that drank Lake Frome dry, then crawled into the Gammon Ranges to sleep. Every now and then its stomach rumbles from all the salty water that it drank. This rumbling can be heard all around the Gammons, but especially to their south-east. And sometimes the ground shudders as well. It's the reason why the Adnyamathanha apparently never went into the great fan of south-eastern Gammons gorges that are bounded by the eastern half of the Blue Range to their north, the South-East Range to their west, and the McKinlay Massif to their south.

Many reasons have been given for the rumbling and shuddering in the past. In 1946 Ronald Stewart wrote that Bentley Greenwood of Arkaroola station had heard it 'from a distance of 20 miles', and put it down to 'wind currents in the narrow gorges'; that Keith Lillecrapp of Yankaninna station believed it was caused by 'earth tremors or volcanic eruptions of a restricted nature'; and that Sir Douglas Mawson believed 'the sudden splitting of the great quartz masses which form the Gammons' was responsible.<sup>2</sup>

In 1988 Dorothy Tunbridge wrote about 'Winmiindanha ("whistling", Bunyip Chasm)', that 'The north wind whistling across the top of this great chasm today echoes the sound of the Ararru woman screaming as she fell to her death'.<sup>3</sup> That might be similar to Bentley Greenwood's 'wind currents in the narrow gorges', but 'screaming' is hardly a rumbling sound. Bunyip Chasm is off the upper Balcanoona Creek, and just above Bunyip Cranny.

Ralph [Bill] Beckwith, who crossed the Gammons in May 1947, 'believed he had solved the mystery of Arkaroo, "the big black snake of the Gammons". He said that the rumbling noises...were caused by earth tremors'.<sup>4</sup> Warren Bonython installed an Adelaide University seismograph during his August 1947 crossing of the Gammons, but said on 6th October 1947 after he'd retrieved it that it 'showed no evidence of earth movement'.<sup>5</sup> In 1984 Reg Sprigg wrote that seismologist Dr David Sutton 'torpedoed the mystery finally. In 1957 his delicate earthquake recording equipment, set up in neighbouring Umberatana, recorded 56 local, minor earth tremors in just one year'.<sup>6</sup>

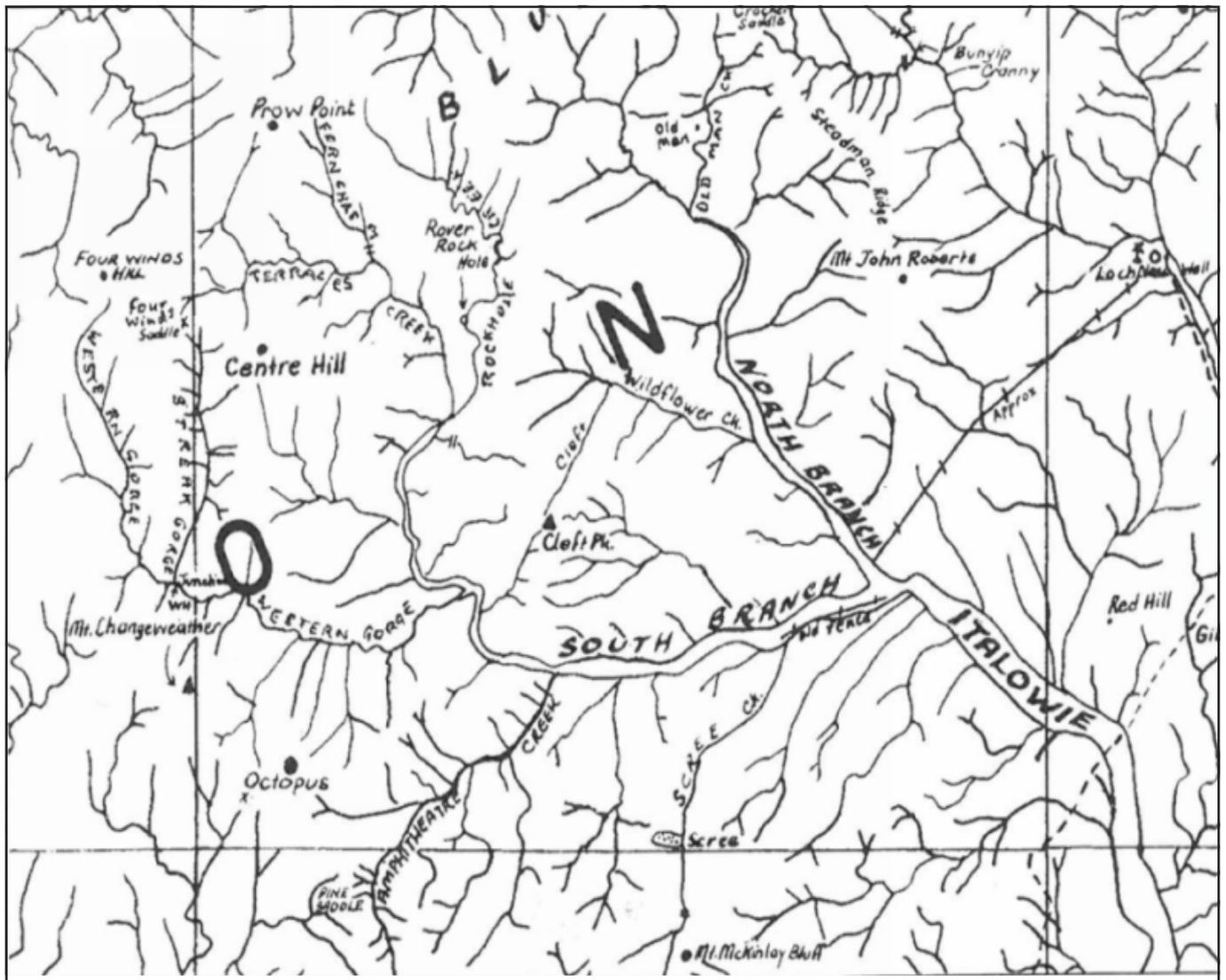
In 1948 Bonython wrote that the sound of falling rock in 'the many miles of gorges' seemed the most feasible explanation, and that in August 1947, just east of Mt McKinlay, 'a rumbling sound, faint but definite, was heard [by his party crossing the Gammons]. It sounded like quarry-blasting miles away, and lasted about a second'.<sup>7</sup>

I heard the Arkuru first in 1960 on the Balcanoona plains towards Lake Frome. It was a low muttering, grumbling sound that continued for maybe five seconds or so. The night was still, and clear to the horizon as well as clear right over the Gammons, so it wasn't thunder.

Then on 5th September 1967, leaving Peter Wyld on Four Winds Saddle, I ran down Streak Gorge, and came across the waterhole where it joins Western Gorge. I named it Junction Waterhole at the time, which I thought appropriate because of where it's located, a name that's stuck. I then ran a little further down Western Gorge. A short way in front of me I saw a small slab of rock fall down from the top of the cliff lining the Gorge. It hit the rocks in the creek bed, and then as if the shock had set them off, several other much smaller pieces of rock fell about a hundred metres further along. The loud explosions of them hitting the creek bed echoed briefly along the Gorge around me.

Decades of observations in these South-Eastern Gammons gorges have shown that Western Gorge often suffers from rock-fall. And on the map you'll see that Western Gorge, and the Italowie South Branch from where they join, down to the junction of the North and South Branches, form roughly a straight line to the east. All those south-eastern gorges but especially this one must become in effect megaphones that direct the echoing, rumbling sounds far out towards Lake Frome. The echoes must bounce back and forth between the walls of these gorges.

Newly-fallen rock in the gorges is almost pure white when it breaks apart, and often has knife-sharp edges caused by shattering on impact. It gradually turns orange, and then darkens, faster at first, and then slower. I've seen more such recently-fallen white rock in the part of Western Gorge between Junction Waterhole and the Italowie South Branch than in any other parts of these south-eastern gorges.



**Figure 1: South-East Gammon Ranges, showing Bunyip Cranny, Western and Streak Gorges, Italowie North and South Branches, Four Winds Saddle, Junction Waterhole, Amphitheatre Creek, and Pine Saddle that are referred to in the article. Portion of Peter Wyld's 1 inch : 1 mile August 1967 *Mount McKinlay Gammons* sketch map, 3rd edition May 1971, © 'Us' Hikers.**

I've lived in North Quorn for the last three decades, am a DENR volunteer, and in particular look after the hiking trails in The Dutchman's Stern<sup>8</sup> and Mt Brown Conservation Parks. I especially walk the trail in The Dutchman's Stern Park about once a week (for example, 56 times in 2011). And in October 2008 around 8 pm sitting in my lounge, I heard a continuous rumbling sound.

Occasionally I hear road trains passing through Quorn, but almost immediately I thought that this rumbling was definitely not a road train. In particular there wasn't the usual Doppler effect that you get with the sound of vehicles moving past you fast. At the same moment I thought in surprise that it was the sound of rock-fall. It lasted for close to ten seconds, and I immediately thought of the Arkuru.

The very next day I happened to walk The Dutchman's Stern trail. And at the 7 km way-marker pole I was surprised to see on the opposite side of the Stony Creek Gorge a brand new scree alongside an older, and far bigger one. I'd walked past there only three days before, and it hadn't been there then. Part of the steep hillside had fallen away to form the new scree, and there was now a perfectly smooth, pure white cliff above it. The rocks in the new scree were white, too, in contrast to the dull-coloured rocks in the old scree alongside it.

It was obvious to me at once that this new scree was what had caused the rumbling sound the night before. Stony Creek Gorge faces almost directly towards North Quorn six km away, and had therefore acted as a megaphone to funnel the sound to me.



**Figure 2: The old, darker scree on the left, and the new, whiter scree on the right, in Stony Creek Gorge in The Dutchman's Stern Conservation Park near Quorn. The cliff above the new scree was formed when the hillside fell. © Ray Sinclair-Wood**

I blundered in not photographing this new, pure white scree at the time, and I took the accompanying photo only recently, over two years after the new scree appeared. Already the rocks in it have darkened, and what had been a smooth white cliff above it is also now much darker, and roughened with age. But you can see that the rocks in the new scree on the right are still a lighter colour than the ones in the old scree on the left.

In the last two decades hiking frequently in The Dutchman's Stern Park, I've heard brief explosions something like rifle shots four or five times. At first I thought that's what they were, but shooting isn't allowed in these parks, and as well they've mostly sounded as if coming from the big basin enclosed by the walking trail circuit. Chute Creek inside this basin is lined by high vertical cliffs along one side for about 1½ km, and from time to time I've seen shattered white, sharp-edged rocks in its creek bed. They're clearly the remnants of rock-fall. But these sounds were short because there

aren't similar major cliffs on the creek's opposite side to bounce echoes from side to side. I've also heard the same short sound once in the Mt Brown Conservation Park.

From these experiences in The Dutchman's Stern and Mt Brown Parks, and from when I actually saw rock falling in Western Gorge, I'm now certain that the rumbling sound of Arkuru's stomach is caused by various kinds of rock-fall.

There are, it now seems to me, two different sounds made by the Arkuru's upset stomach. One comes from simple rock-fall, where a single large rock falls clear from high up a cliff, and causes a short sound when it explodes at the bottom, such as I heard in The Dutchman's Stern and Mt Brown Parks, and such as Bonython heard in 1947. And the second occurs when a new scree forms, causing a much longer, sustained rumbling, such as I heard from Stony Creek Gorge. Or a similar longer

rumbling occurs when several large rocks close to each other fall clear, but sequentially from a high cliff, such as I both saw and heard in Western Gorge in the Gammon Ranges.

The Gammons are full of screes. They must form fairly often. Peter Wyld and I named Amphitheatre Creek on 15th May 1971 because of the great amphitheatre at its upper end, which is almost completely surrounded by big screes. You can also look down into this amphitheatre to the west from Pine Saddle, which is where the South-East Range joins the McKinlay Massif at The Breaking Wave.

As well, screes continue to develop. Only recently in the Stony Creek Gorge I saw superimposed on a different scree a new, long, white patch of larger rocks. This old scree is much bigger, and much more darkly-coloured than the new white patch on it.

So I'm now certain that of all those early theories, Bonython's in attributing the Arkuru's stomach rumbling to rock-fall is the correct one. But I'd add to this the distinction that I make between the shorter sound of a single rock falling, and the longer sound caused by the formation of a new scree, or by multiple sequential rock-fall.

Whether the rock-fall is caused by moisture slowly seeping down inside cracks, and later expanding rapidly from the sun's heat, or from minor earth tremors, or both, is of course another question, but the prolonged rumbling noise *itself* seems certainly to me to come from scree-formation or sequential rock-fall.

On Bonython's first attempt to hike in the Gammon Ranges in July 1946, one of his two companions, Bob Crocker, broke his leg when his foot slipped off a rocky ledge. He was stretchered out of the Ranges by local people from the surrounding stations, and there were several newspaper reports of the rescue. One, perhaps from *The Advertiser's* correspondent in Copley, finishes with this:

*The natives say that Arkaroo will never allow anyone to learn the secret of the Gammons. They can never be persuaded to venture anywhere near the range.*

*Periodically station people hear great rumbling noises and explosions which seem to come from the heart of the ranges. The origin of the sounds has never been explained, but the aborigines*

*say they come from Arkaroo complaining and turning over in anger.*

*He is supposed to have a favorite trick of making people swoon and fall off ledges by sending jets of sulphur into their faces.<sup>9</sup>*

The 'rumbling noises' mentioned there therefore correspond to the longer-sounding scree-formation or sequential rock-fall, and the 'explosions' to the shorter-sounding single rock-fall.

Incidentally, so many statements such as in the above article, that the Adnyamathanha people could 'never be persuaded to venture anywhere near' the Gammons because of the Arkuru, seem to cover far too big an area. I imagine that the only part of the Gammons that they never ventured into would have been just the south-eastern Gorges, where rock-fall and scree-formation are so common. The presence of Indigenous rock paintings on the western side of Gammon Hill itself indicates how much in error such statements are.

I'd often thought that as there are among other peoples, there must have been a few more rebellious Adnyamathanha people, who dared to go into those south-eastern Gammons gorges in spite of the Arkuru's presence. But Gordon Coulthard told me most emphatically in September 1994 that not a single one would ever have done such a thing.

**Endnotes:** The articles from Adelaide's *The Advertiser* were collected by Bob Buckerfield.

<sup>1</sup> There are numerous spellings: Arkaroo, Arkuroo, Arkuru, Akarru, Akurru, Akurra, Acaru, Arcaru. A footnote about some of these is in Bernhard Schebeck, 'Some remarks on placenames in the Flinders', <<http://epress.anu.edu.au/wp-content/uploads/2011/03/ch1010.pdf>>, 143.

<sup>2</sup> 'Arkaroo, Great Snake Of The Gammons', *The Advertiser*, Adelaide, 15th June, 1946, 5.

<sup>3</sup> *Flinders Ranges Dreaming* (Canberra: Aboriginal Studies Press, 1988), 119.

<sup>4</sup> 'Crossed The Gammons: Return Home Of Expedition', *The Advertiser*, 5th June, 1947, 3.

<sup>5</sup> 'Noises In Gammon Ranges: Earth Tremor Theory Disproved', *The Advertiser*, 7th October, 1947, 4.

<sup>6</sup> *Arkaroola—Mount Painter in the Northern Flinders Ranges, S.A.: The Last Billion Years* (Arkaroola: Arkaroola Pty Ltd, 1984), 44. Umberatana station homestead is 30 km north of the Yankaninna Range, which lies along the Gammons' northern edge.

<sup>7</sup> 'Crossing the Gammon Ranges', *Walkabout*, 1st December 1948, 30, 31

<sup>8</sup> This name has been treated abominably and wrongly by having the 's' removed from 'Dutchman's'. Yes, it's correct to remove it from names such as St Mary's Peak, and Dutchman's Peak, since the geographical feature 'Peak' doesn't belong to either St Mary or to the Dutchman. But the 'Stern' in 'Dutchman's

Stern' is not the name of a geographical feature like 'Peak', 'Creek', or 'Gorge'; it's the stern of a Dutch East Indiaman sailing ship, which is what The Dutchman's Stern is presumed to have been named after. Hence Dutchman Stern or Dutchmans Stern (both are in use today) are misleading. Many Dutch people visiting Australia climb The Dutchman's Stern simply because of its name, and from time to time I've been asked by them, 'Why is the Dutchman so stern?' or 'That "-mans" in "Dutchmans" isn't correct English, is it?' The romance of the correct name has therefore been spoiled by this blunder.

<sup>9</sup> 'Curse Of Arkaroo The Snake: Explorer Injured', *The Advertiser*, 2nd August, 1946, 10. Its byline is: 'From A Staff Representative Copley, August 1'. Other articles in *The Advertiser* about Crocker's accident and rescue are: 'Rescue Of Explorer: Night Climb in Gammons', 3rd August

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### Addenda: Early Hikes in the Gammon Ranges

Subsequent to this article in the December 2011 *SEGments*, pp 15–17, Peter Beer of the Adelaide Bushwalkers Club found a three-part article in that Club's newsletter, *Tarndanya*, (since 1970 titled *Tandanya*) for May, June, and July 1949. It's 'Story of a Gammon Range Walk', by A.L. [Lin] Richardson. I had written that, 'In May 1949 the Crisp brothers Colin, John and Lionel, with Adelaide Bushwalkers member Lin Richardson hiked in the Gammons, but we don't yet know their route.' That was the information I had been given at that time.

We therefore now know that this hike was for twelve days from 28th May to 8th June 1948, *not* 1949, from Yankaninna homestead to Beltana township. They hiked in the Gammons for six days, over the Yankaninna Range to Yackie Waterhole, then across the Blue Range, and down through Fern Chasm into Terraces Creek. From two base camps in the Italowie South Branch, they climbed the western side of Cleft Peak, and Mt McKinlay. They then crossed to Grindell Hut, and exited through Italowie Gorge to Italowie Gap. One of the names turns out to be wrong too. There were *two* Crisp brothers, not three: Colin and John; and Lionel was Lionel *Lever*, not Crisp. As well, all four were members of the Adelaide Bushwalkers, not only Richardson.

I'd also written about the baffling 'move' of Fern Gorge from above Bunyip Cranny just off the upper Balcanoona Creek, where Warren Bonython placed it, to where it is today five km to the west. This has puzzled hikers for many decades. Bonython, in his *Walking the Flinders Ranges* (Adelaide: Rigby, 1971), p 133, says that on his August–September 1947 Gammons Hike, 'We also visited Fern Gorge, that secret place near the head of the Balcanoona Creek discovered by the Greenwoods [Bentley and Gordon 'Smiler' Greenwood] decades earlier'. So the Greenwoods originally located and named

1946, 1; 'Explorer's Injuries: Party Now At Hawker', 5th August, 1946, 1; and there's a photo, 'Rescue Of Injured Man From Gammon Ranges', 6th August, 1946, 1. It's captioned 'Mr. R.L. Crocker, chief soil ecologist of the Waite Agricultural Research Institute, who broke a leg on a high ledge while attempting to penetrate into the unexplored portions of the Gammon Ranges, being carried out through rugged country by a rescue party, comprising volunteers from stations surrounding the ranges.' Crocker was carried down from the top of the Blue Range via its northern flank into Mainwater Pound, and to the Pound's eastern entrance, from where a vehicle took him to the Yankaninna homestead.

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Fern Gorge, though Gorge of Ferns may have been the actual name that they gave it—it's the name that Bonython uses in his article, 'Grandeur of the Gammon Ranges', *The Advertiser* (Adelaide), 27th September, 1947, p 11.

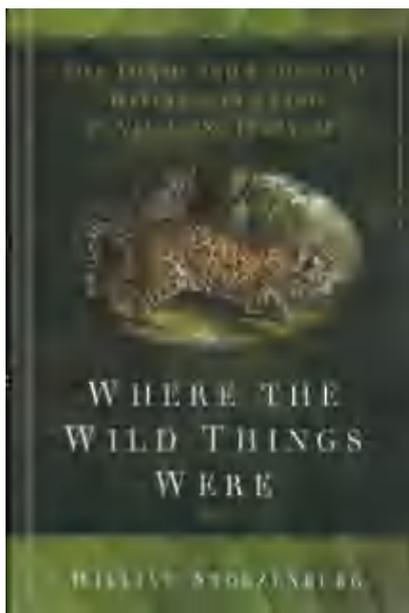
Lin Richardson's article solves this puzzle about the moving Fern Gorge too. When the four hikers came down off the Blue Range through the present-day Fern Chasm:

Very soon we came to the lip of another drop and here we were amazed to see ferns growing at the bottom. By scrambling along one wall, around a corner of rock and then climbing down, we reach[ed] the ferns. . . . These ferns were of interest, as further east under Benbonyathe is 'Fern Gorge'. There are no ferns [there] now but ferns grew there when it was found. We called this place Fern Chasm and the creek after it.

On this hike they did not visit the Bunyip Cranny area where Bonython placed Fern *Gorge* originally, but Lin says in his article that '...on April 29th Lionel saw Warren Bonython who planned to be in the Gammons a few weeks before us and who gave us information about waterholes'. So perhaps Bonython told Lionel about the ferns disappearing from the original Fern *Gorge* above Bunyip Cranny. It's worth mentioning that, in fact, the ferns disappear and re-appear at *both* locations, presumably depending on the year's weather. Colin Crisp's 1:83 inches : 1 mile Gammons sketch map made some time after this hike (probably in the early 1950s) is the first sketch map that shows Fern *Chasm* where it is today. And later sketch maps made by other hikers followed suit, except for a photostat sketch map sold by the Adelaide Scout Shop in the early 1960s that still shows Fern *Gorge* above Bunyip Cranny.

Therefore the *Illinawortina* 1:50,000 Topographic Series map for the 1977 first, and subsequent editions, presumably adopted the present location of Fern *Chasm* from Colin Crisp's early 1950s sketch map, or from later sketch maps based on his.

# Book Review



## Where the wild things were.

Stolzenburg, W.  
(2008) Bloomberg,  
New York ; 221 pp.

The subtitle to the book is “Life and death and ecological wreckage in a land of vanishing predators”. The author presents a variety of examples about the effect of overpopulation of herbivores which causes ecological damage. Any astute farmer knows that overgrazing a paddock is foolish on so many levels.

What causes a population explosion of native or feral herbivores? There is one simple answer, as the book proposes; the lack of top level predators in the environment is damaging to the ecology. The theory of predator importance is described in twelve chapters based on scientific case studies.

In chapter one, Robert Paine conducts research on the tidal pools of the Pacific Northwest of America. The starfish *Pisaster ochraceous* is a predator on mussels *Mytilus californianus*. His research was very simple but elegant, remove the starfish to see what happens to the tide pool. Room for other species became less and less as the mussels exerted their dominance; seven of the fifteen other species were gone by the end of the experiment. A top predator is needed for greater biodiversity.

In Chapter three the predator theme continues. The return of sea otters assists in the maintenance of the health of a kelp forest. The sea otters eat the sea urchins which if left unchecked, eat all the young kelp. So the gradual increase of sea otters as predators restores the ecological balance in the kelp forest.

In chapter eight the restoration of wolves to Yellowstone Park is discussed and researched in some detail. I spent a week in Yellowstone park in October 2011, so reading this chapter was particularly interesting to me. Eight grey wolves, *Canis lupus* were reintroduced to the park in 1995, after nearly a decade of debate and protest. The first change noticed was that the coyote population reduced from being the top predator. The aspen, cottonwood and willow trees returned to the meadows as they were not being browsed as regularly by a huge elk population. In 2003 the studies of biologists Ripple and Beschta published some positive results about the recovery of vegetation in Yellowstone park. This was another study that supported the top-predator in the ecology theory.

Chapter ten raised the issue about the place of humans as the apex predator on the planet. After the last Ice Age humans extended their migration on to the continents of Europe, Australia and America. The extinction of the “Mega-fauna” coincided with the arrival of humans on all three continents. I suspect these events are beyond just coincidence but there is no definitive proof as yet.

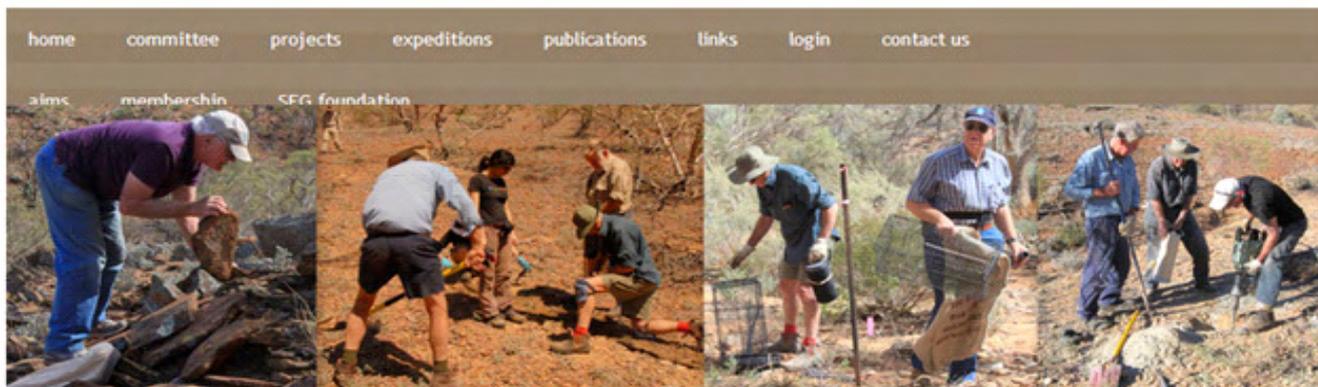
The author’s last chapter summarised the main thesis of the book. Fifty years ago, three ecologists stated that the planet was green due to the effect of top predators in balance with herbivores.

So what is the future for predators in the world’s modern ecosystems? It looks bleak! The shooting of predators by humans due to fear still encircles the globe. The only likely positive scenario is that parks will just become wildlife zoos with the populations heavily managed.

I would like to add a few of my comments about predators in Australia. According to our history, the last Tasmanian tiger died in the Melbourne Zoo in 1936. Pastoralists built a dingo fence across a large tract of Australia. Now the top predators in Australia are feral cats and foxes which have killed or endangered most of the small marsupial populations. The large feral populations of herbivores such as rabbits, goats, camels, deer and pigs do not have predators so they have increased exponentially with devastating results on plants and their regrowth. Many Australian ecosystems are dangerously out of balance which needs to be redressed now.

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# The new SEG website



## Items of Interest

### Our Next Expedition to the Nullarbor

SEG has a great future with strong activities planned. The most interesting of which at this stage is the expedition to re-survey the Nullarbor nearly 30 years after a previous survey using the same sites.

The survey is being done in conjunction with the Alinytjara Wilurara Natural Resource Management Board and will require four separate teams. The teams are presently oversubscribed for participants. In the likelihood that there are some dropouts, if you are interested please give your name and details to [Trent Porter](#).

### A Bit of a Writer?

If you have been on any SEG activity lately or have been a past member thinking about returning to the fold, perhaps you would like to write about your experience. This might have been taking part in an Expedition or one of our on going projects. [Andrew Barr](#), our SEGments Editor would love to hear from you.

### Spot any Problems

If you find a problem with our website, please contact [Michelle Trethewey](#) or [Garry Trethewey](#) and we will endeavour to fix it as soon as possible.

## Contact

Scientific Expedition Group Inc.  
PO Box 501  
Unley S.A. 5061  
email: [Scientific Expedition Group](#)

## About

The Scientific Expedition Group Inc. is a non profit organisation which aims to promote and run expeditions of a scientific, cultural and adventurous nature, to encourage knowledge and appreciation of the natural environment, and to develop interpersonal skills by living and working towards a common goal!

The current SEG website was created by UniSA Media Arts student, Ross Novak, as part of his course work in *Electronic Publishing on the Internet*. Each year, students in various web major courses create websites for volunteer based organisations through the *Sustainable Online Community Engagement (SOCE)* program. *SOCE* is a partnership between the Office for Volunteers and the UniSA School of Communication, International Studies and Languages, in which students build websites and create brochures and other print or e-publications for non-profit organisations. The aims of this program are

- to provide richer learning experiences in which students work with real clients;
- to enhance the ICT capacity the non-profit sector;
- and to build relationships between younger people and organisations in an ageing volunteer sector.

There is an emphasis on sustainability and enabling organisations to manage their websites independently, whilst providing support and guidance. The websites are put into a content management system so that people can update them without special software or knowledge of coding. Free training in editing the website is provided at the university and hosting is provided for free on a university server. Alternatively, the organisation may take the XHTML website for hosting elsewhere. Students also provide advice and assistance to organisations in using social media to enhance their web based communication. If you are interested in applying to be part of this, or learning more about the program, please visit <http://www.communitywebs.org> or contact *SOCE* at [soce@unisa.edu.au](mailto:soce@unisa.edu.au)

**Alice Dodd;** Project coordinator and PhD Candidate  
Sustainable Online Community Engagement  
School of Communication, UNISA



# 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 2012

#### SUBSCRIPTIONS

Adult member - - - - -	\$30.00
Concession cards/ student-----	-\$15.00
Family membership - - - - -	\$35.00
Corporatemembership - - - - -	\$35.00

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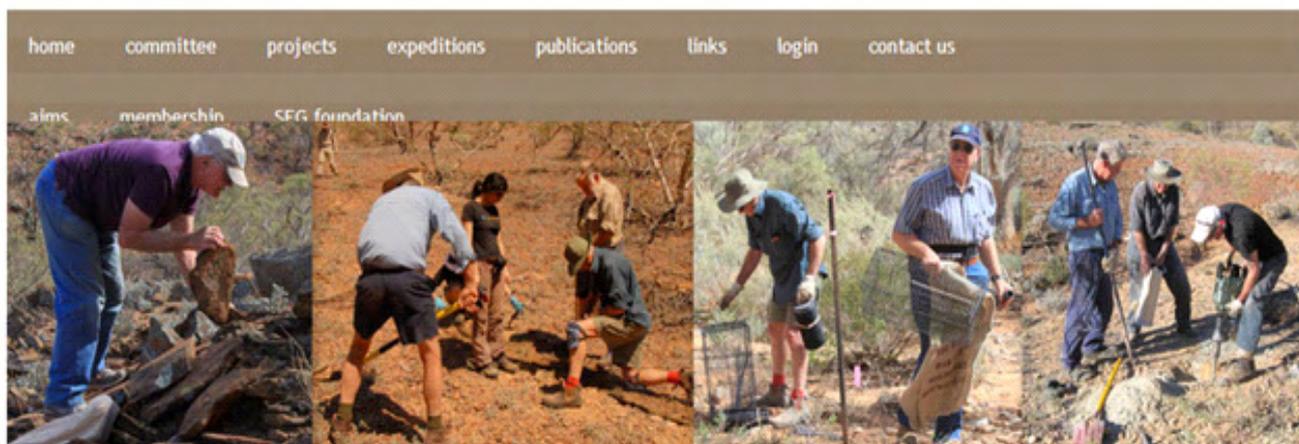
Details of scientific, cultural, and adventuring or other relevant skill or interests you may be prepared to share with the group:

.....

**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 NEW Scientific Expedition Group Website



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